

**TECHNOLOGY HISTORY**

For over 130 years, Toshiba has been a world leader in developing technology to improve the quality of life. Our 50,000 global patents demonstrate a long, rich history of leading innovation. It might surprise you to learn about some of the things we've invented.

<b>1915</b> Japan's first X-ray tube	<b>1990</b> First helical CT scanner	<b>2002</b> First 400 ms CT scanner
<b>1954</b> First digital computer	<b>1993</b> First real-time CT fluoro	<b>2004</b> First Quantum Denoising Software
<b>1977</b> First cardiac ultrasound scanner	<b>1995</b> First DVD	<b>2007</b> First <b>dynamic volume CT</b> scanner
<b>1985</b> First slip-ring CT scanner	<b>1999</b> First quiet MRI	<b>2009</b> First 160-row Helical
<b>1986</b> First laptop computer	<b>1999</b> First 0.5 mm multidetector CT	<b>2010</b> First iterative recon technique for 320 Detector Row CT



**TOSHIBA MEDICAL SYSTEMS CORPORATION**

<http://www.toshibamedicalsystems.com>

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**Aquilion**  
CX EDITION

**128-slice CT SCANNER**



# Maximize the potential of today's clinical resources

In today's demanding healthcare environment, you need a CT system that satisfies all your requirements on a day-to-day basis. Aquilion™ /cx meets your needs like no other system on the market. Keeping pace with advances in medicine with one of the most cost-effective and versatile diagnostic solutions ever developed, Aquilion has continuously evolved to meet the needs of patients, clinicians and facilities worldwide. Based on a sophisticated platform featuring proven technology, Aquilion /cx now gives all the advantages you need to optimize workflow, improve image quality, enhance dose management and elevate the level of care you provide both now – and in the future.



## FASTEST DATA TO DIAGNOSIS

From performing exams to distributing data, Aquilion /cx accelerates the process of providing the information you need to make the best treatment decisions.

- Achieve industry-leading image quality with Quantum Detector technology
- Access information almost instantly using powerful information technologies
- Streamline procedures by automating manual processes with Toshiba's SURETechnologies™ software
- Increase patient throughput with unique, built-in, ergonomic-enhancing features

## PROTECTING YOUR CT INVESTMENT

Aquilion /cx lets you utilize healthcare resources efficiently by giving you the ability to perform more procedures more efficiently and support a wider range of applications. A proven record of product reliability, backed by support from local customer service teams, means less down time for a more cost-efficient operation.



Standard dual independent scanning and reconstruction consoles with keyboards enhancing multi-tasking productivity.

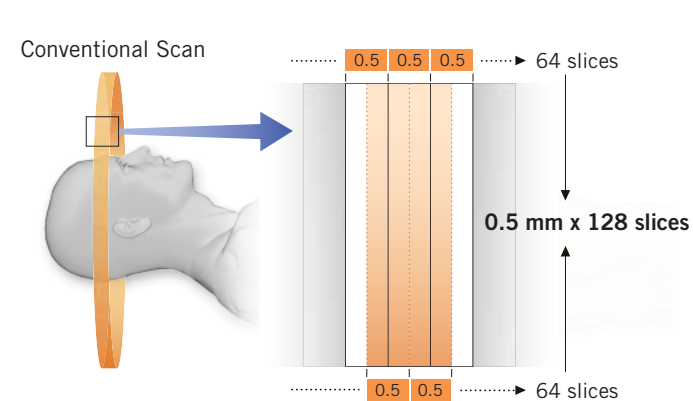
# High definition 128 slices in a single rotation

Aquilion *cx* presents the latest state of technological innovation in Multi Slice CT technology. With the new coneXact algorithm the Aquilion *cx* is able to generate 128 unique slices per rotation with more detail than ever before.

## CONEXACT™ RECONSTRUCTION

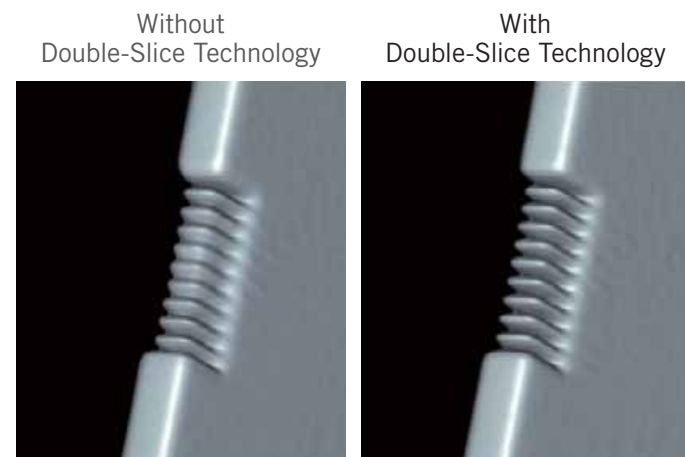
Developed for Aquilion ONE™ dynamic volume CT, new proprietary algorithms using the coneXact technology are now available for Aquilion *cx*.

As a result, partial volume effects are minimized, leading to more detailed images while maintaining superior low contrast detectability.



## DOUBLE-SLICE TECHNOLOGY

Taking full advantage of the coneXact technology, acquired volume data can be reconstructed in double density, resulting in a more true-to-original reconstruction in MPR and 3D rendered images.



## Double-Slice Technology

### High Fidelity

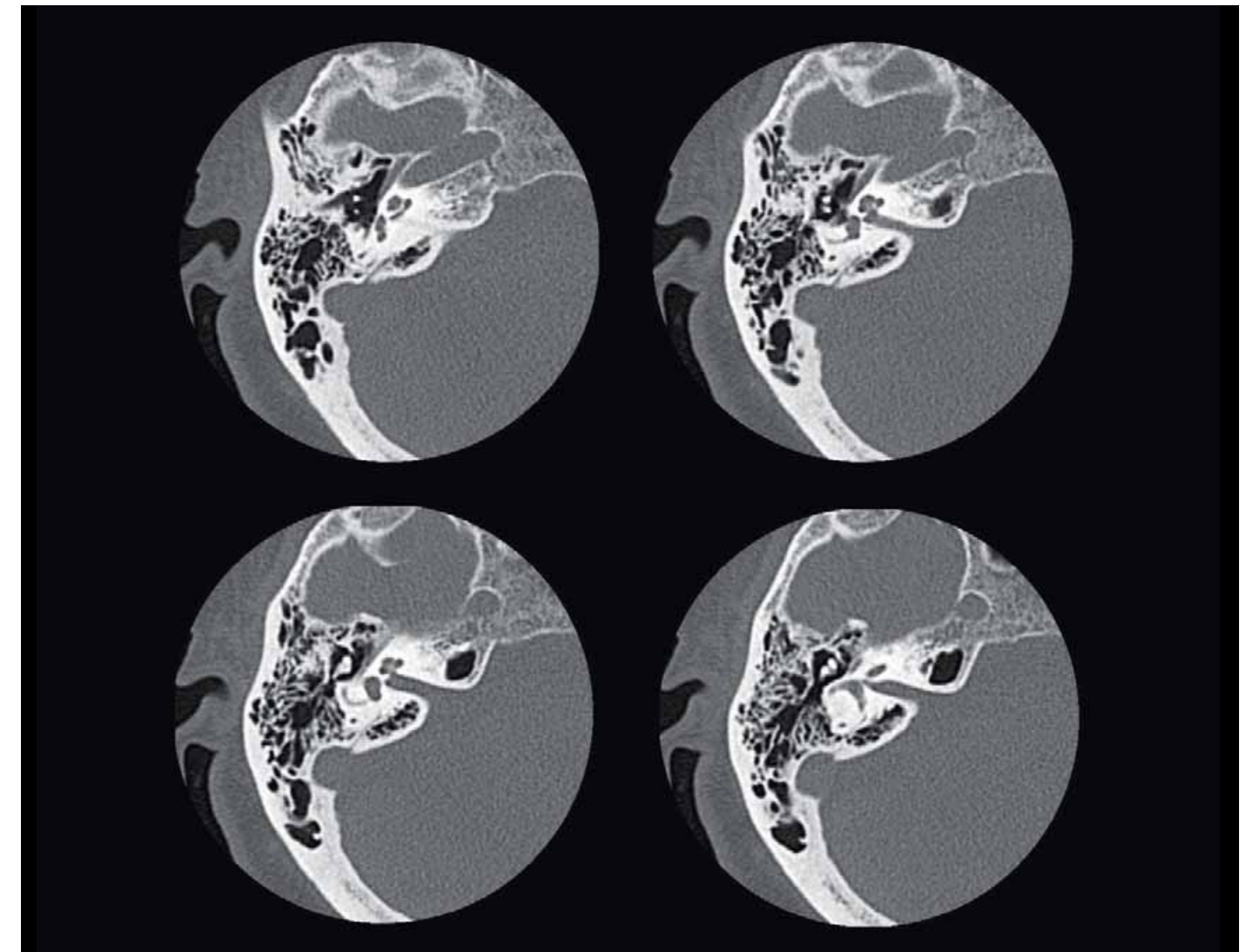
Double-slice reconstruction technology provides full fidelity images with superior resolution. Details of the most intricate structures are sharply depicted in any imaging plane.

### Advanced Technology

The advanced coneXact reconstruction technology originally developed for Aquilion ONE has been reengineered for Aquilion *cx* to provide the same high-quality image reconstruction.

### Innovative Solution

Toshiba's unique double-slice solution both increases image resolution and reduces cone beam artifacts with absolutely no exposure dose penalty.



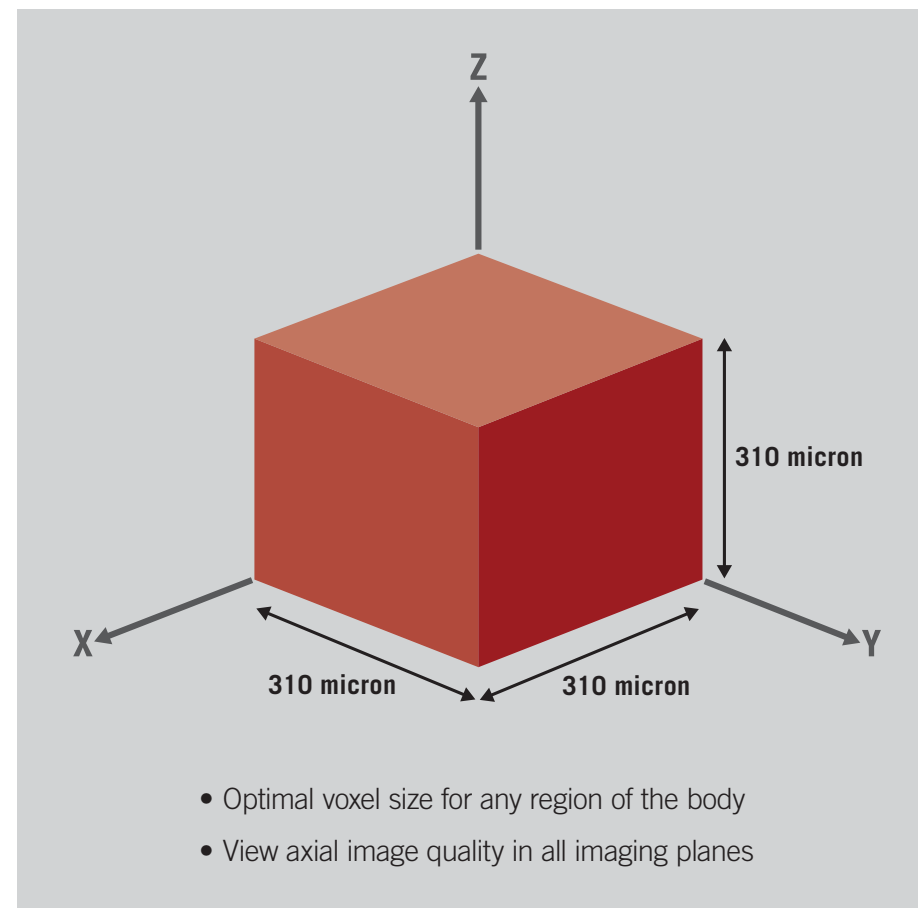
Temporal Bone: Double-slice reconstruction using coneXact technology provides exceptional spatial resolution, as demonstrated in these axial images of the inner ear.

# Experience the Quantum Advantage

## QUANTUM DETECTOR

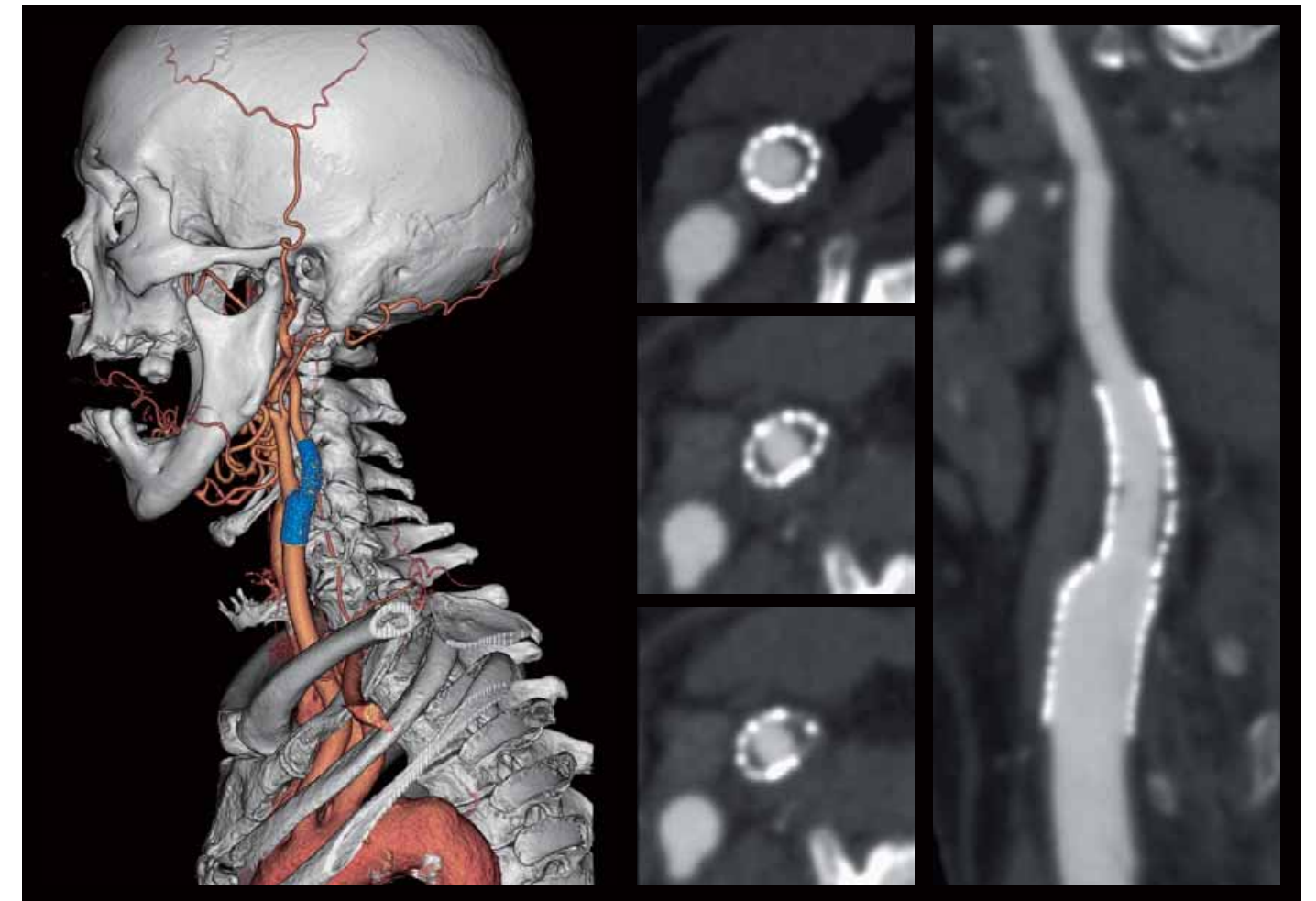
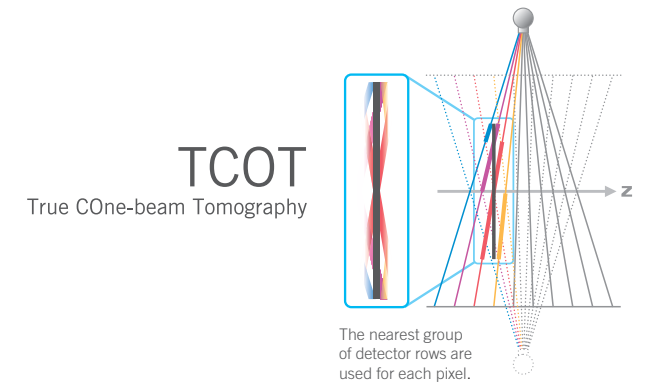
Featuring Toshiba's exclusive, industry-leading Quantum Detector technology, Aquilion *rx* incorporates 0.5 mm detector technology for acquiring true isotropic voxels. This very small detector aperture (the smallest in current CT technology) provides razor-sharp images, ensuring fast and accurate diagnosis in all parts of the body with a lower exposure dose. Regardless of the procedure, you are always assured of superior diagnostic imaging with no compromise in image quality or patient safety.

- 0.5 mm detector elements are the thinnest in the industry
- The industry's best low contrast resolution creates consistent soft tissue imaging at the lowest possible dose
- Uniform image quality is achieved by ultra high 310 micron isotropic resolution



## TCOT RECONSTRUCTION

Toshiba's patented helical cone beam reconstruction technique "TCOT" uses a modified Feldkamp algorithm, employing data from multiple projections in the z-direction to correct for the cone beam effect resulting in a uniform slice profile. Unlike more approximate reconstruction techniques, the properties of the reconstructed axial image are constant for field of view, ensuring high quality images.



Carotid stent: A stent across the bifurcation of the left common carotid artery is depicted in this 3D image. The curved MPR view shows some in-stent restenosis in the internal carotid artery. The 310 micron spatial resolution provides excellent images that clearly demonstrate the struts of the stent.

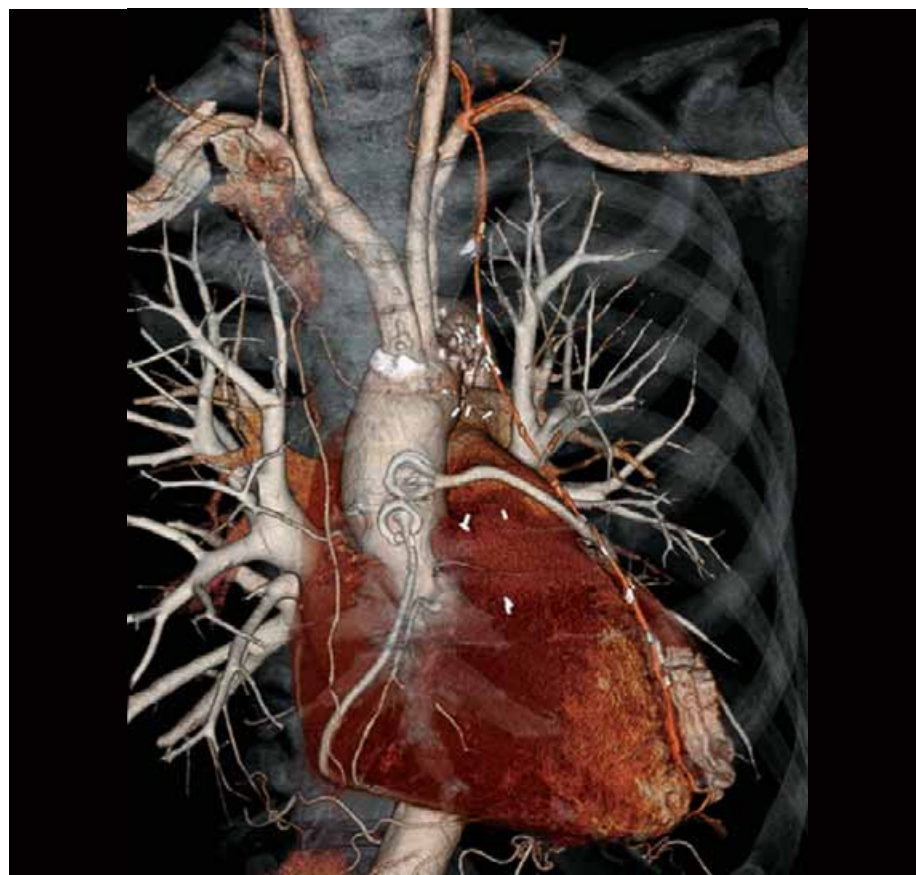
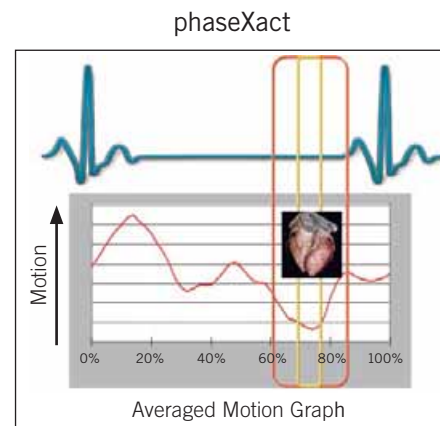
# Cardiac scanning made easy

High performance in image quality and speed must go hand in hand with efficient workflow. The Aquilion *cx* has specifically addressed workflow integration to optimize productivity and enhance diagnosis.

## SURECARDIO™ WITH PHASEXACT\*

Delivers clear, accurate cardiac images and enhances patient throughput and workflow by automatically selecting optimum scan parameters.

- Automated, clinically validated protocols provide the best temporal resolution regardless of patient heart rate or condition
- Achieve consistent Cardiac CTA with adaptive, multi-segment reconstruction
- Decrease patient scan time through protocol automation
- Reduce view time and storage space with phaseXact, which automatically selects the cardiac phase with the least motion



Coronary Artery Bypass Graft (CABG) acquired using SURECardio automated scan.

## SURECARDIO SCORING\*

Provides fast and easy evaluation of calcium based on non-contrasted, ECG-gated data directly from the Aquilion console.

- Calculates Ca scores using the Agaston method and the Volume mass method
- A report and the representative images showing calcium will be automatically generated



SURECardio Scoring for fast volumetric coronary calcium evaluation.

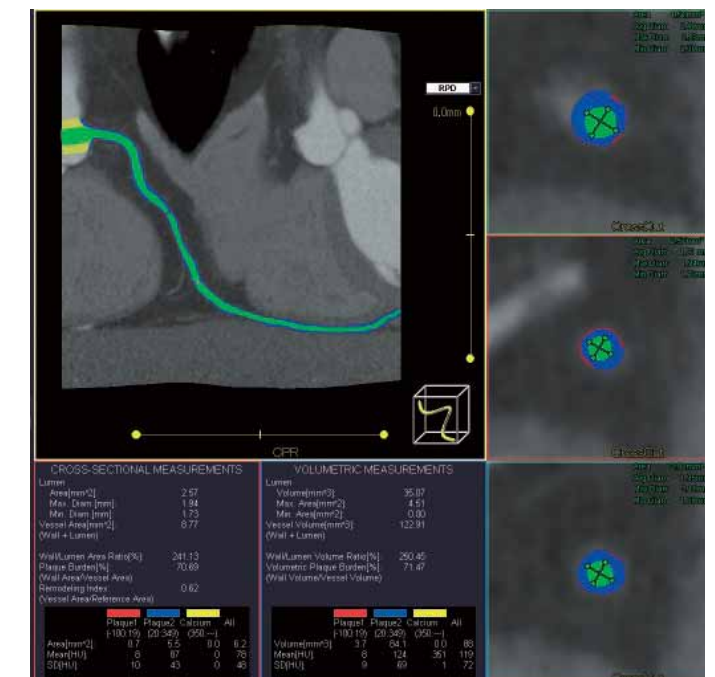
## CARDIAC FUNCTION ANALYSIS\*

Calculates the various functional parameters, such as ejection fraction, wall motion, cardiac output, etc from images reconstructed at various phases of the cardiac cycle.

## SUREPLAQUE™\*

A comprehensive advanced visualization tool to assist clinicians in evaluating the characteristics inside the blood vessel.

- Visualize coronary vessel anatomy and disease with ease using defined HU ranges
- Quantify plaque burden and coronary remodeling non-invasively
- Characterize lesions in the vessel wall as either calcified or non-calcified



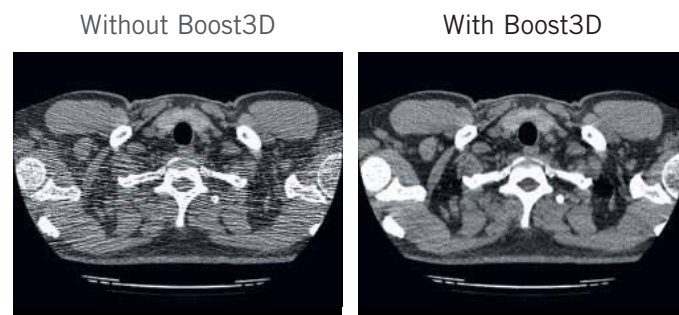
SUREPlaque permits both classification and quantification of coronary artery plaques.

# Low dose imaging without compromise

Thanks to the use of advanced dose reduction techniques, Aquilion *rx* substantially reduces the patient exposure dose and improves the image quality by applying sophisticated algorithms to the raw data, both operating in three dimensions.

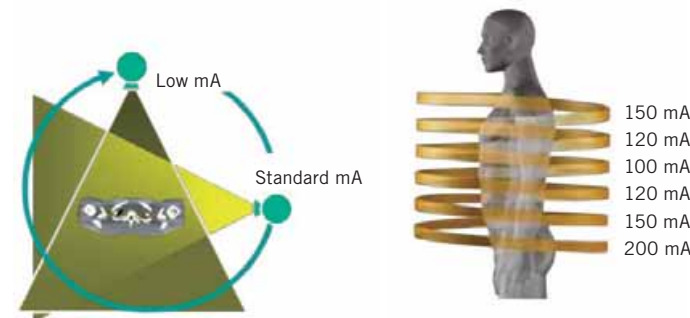
## BOOST3D™

Measures the acquired data for increased absorption (e.g., in the shoulder region) and performs compensation accordingly, resulting in superior image quality and a further reduction in the patient exposure dose.



## SUREEXPOSURE™ 3D

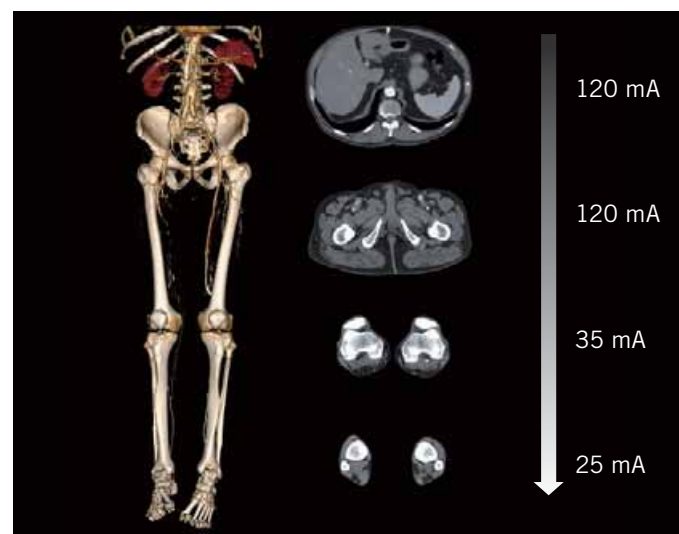
Measures the size and attenuation of the patient and tailors the radiation dose to achieve the required image quality. Using an automatic, individualized protocol ensures that a uniform level of image quality can be maintained at the lowest possible dose for every patient.



SUREExposure 3D + QDS

## QDS (Quantum Denoising Software)

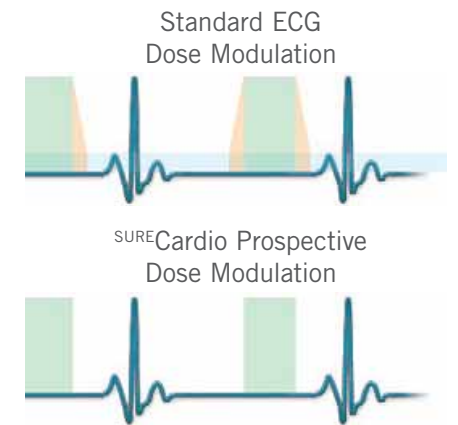
An adaptive image processing algorithm in which noise reduction is selectively applied, improving low contrast resolution. This unique algorithm substantially reduces the patient dose by up to 40% as compared to the scanning parameters normally employed for improved image quality.



## SURECARDIO PROSPECTIVE\*

Reduce the exposure dose during ECG-gated helical scanning by changing the helical pitch according to the heart rate and restricting X-ray exposure to the required cardiac phases in synchronization with the ECG signal.

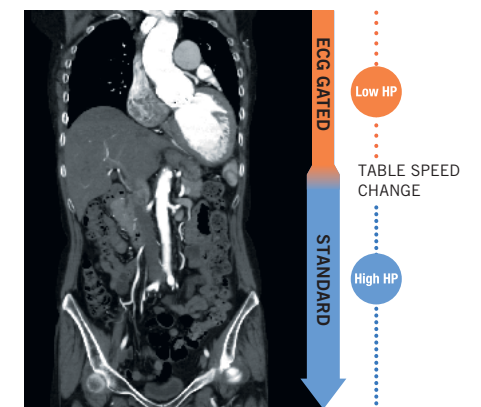
- Developed to perform low dose cardiac CTA in a volumetric helical scan
- Use a pulsed (ON / OFF) exposure control with higher helical pitch settings
- Pitch selection and exposure window are chosen automatically from the patient's heart rate



## VARIABLE HELICAL PITCH\*

Acquire a gated and a non-gated scan in a single examination using a single contrast bolus. Ideal for multiple procedures in one session such as:

- Coronary artery CTA (ECG gated using Cardiac Pitch) and CTA of the aorta (non-gated using a standard CTA pitch)
- Combine trauma applications such as a brain scan and a neck scan in one continuous scan



## AUTOMATED DOSE REDUCTION PROGRAM

Presets and easy-to-use clinically controlled parameters such as SUREExposure 3D help clinicians optimize patient dose during protocol planning.

- Low dose protocols for volumetric diagnosis
- Pediatric protocol automatically set based on age or date of birth
- Interactive CTDI<sub>VOL</sub> and DLP calculation, display and DICOM transfer to PACS

## DOSE INDEX VALUE DISPLAY

During scan planning, the predicted total exposure dose for an examination is calculated and the estimated dose index values are displayed.

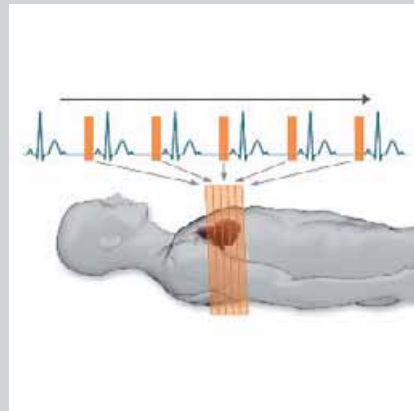
Published Reference dose values are available for review.

Examination	CTDIvol (mGy)	DLP (mGy·cm)	Examination	CTDIvol (mGy)	DLP (mGy·cm)
Abdominal Head	10	1000	Head (General)	10	100
Face and Neck	20	200	Chest (General)	10	200
Vertebral Spine	10	400	Chest (HRCT)	10	100
Skull Base	20	400	Prostate Adenoma	10	100
PECT of Chest	20	200	Upper Abdomen	10	100
Prostate Adenoma	10	100	Lower Abdomen	10	100
Lower and Upper	10	300	Lower Abdomen & Pelvis	10	100
Prostate pelvis	10	100			
Cervical spine	10	500			

# Maximizing clinical capabilities

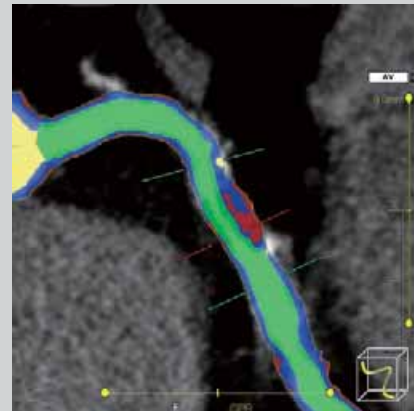
Aquilion *rx* supports Toshiba's sophisticated suite of <sup>SURE</sup>Technologies and other advanced software tools to improve image quality, lower dose requirements and deliver the industry's fastest data to diagnosis. Continuous development of optional field upgradable software enhancements means that when it comes to maintaining state-of-the-art capabilities, your investment is always protected.

## CARDIAC



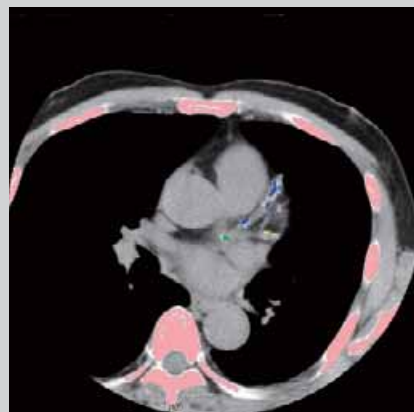
**SURECardio Prospective\***

Automated ultra-low dose coronary artery CTA



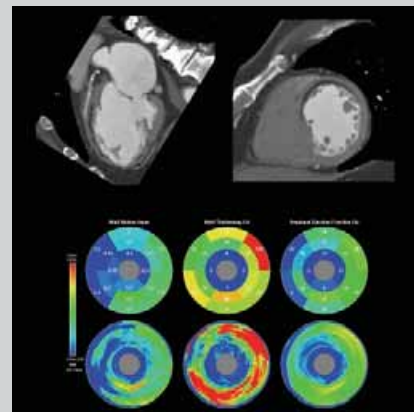
**SUREPlaque\***

Automated plaque visualization and characterization software



**SURECardio Scoring\***

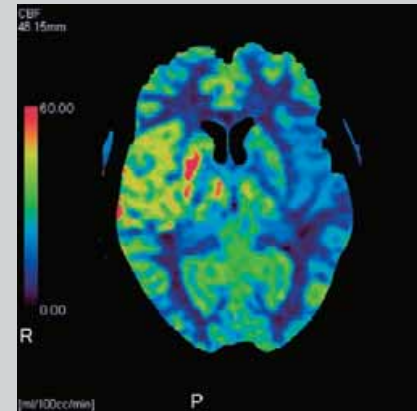
Fast and easy evaluation of calcium based on non-contrast ECG-gated data



**Cardiac Function Analysis\***

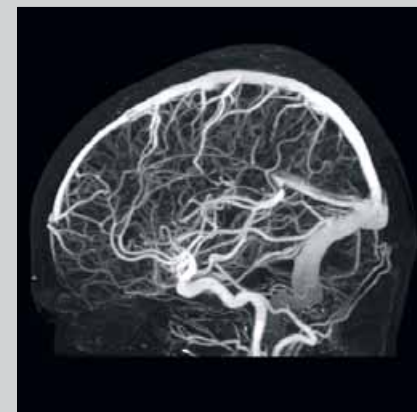
Calculate the various functional parameters, such as ejection fraction, wall motion, cardiac output, etc

## NEURO



**CBP Study\***

Blood flow characteristics are analyzed from dynamic scan images and the results are displayed as map images



**SURESubtraction™\***

Automated digital subtraction of intracranial vessels from bone

## BODY



**vHP\***

Acquire a gated and non-gated scan in a single examination using a single contrast bolus



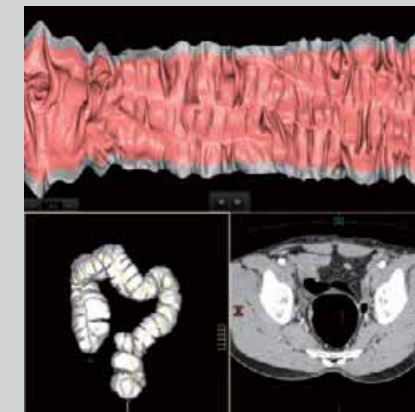
**Vessel View\***

Generate and displays CPR and cross-cut images of blood vessels



**SUREFluoro™\***

Real-time reconstruction and display of fluoroscopic images for faster and safer interventional procedures



**Colon View\***

Automated visualization software for accurate diagnosis in colon examinations

## OTHERS



**SUREXtension™\***

Remote access to Aquilion's advanced 3D/MPR and clinical applications



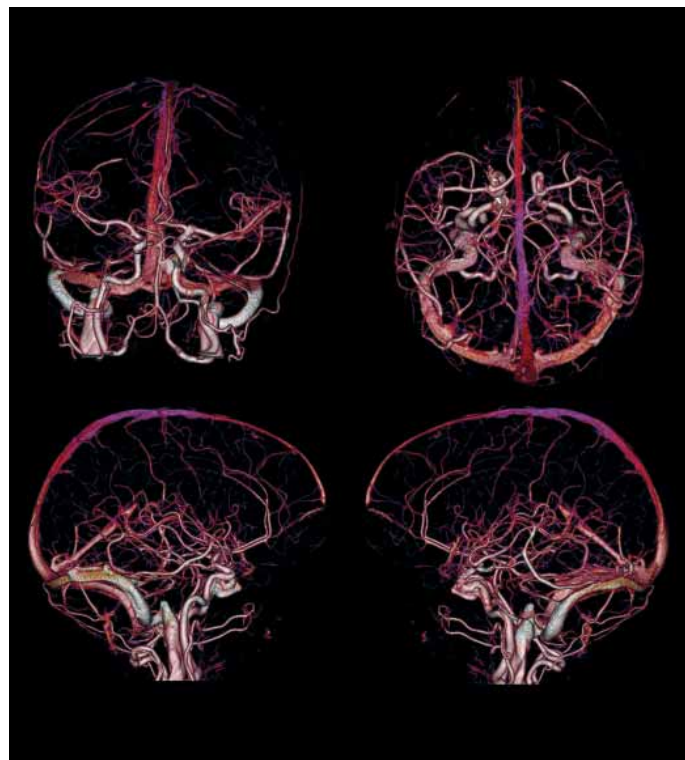
**Dental Analysis\***

Comprehensive dental MPR software with easy-to-use tools for pre-operative planning

# Aquilion <sup>ICX</sup>. Performance you can see



Pediatric CTA showing large Arteriovenous Malformation (AVM), using a low dose <sup>SURE</sup>Exposure 3D protocol.



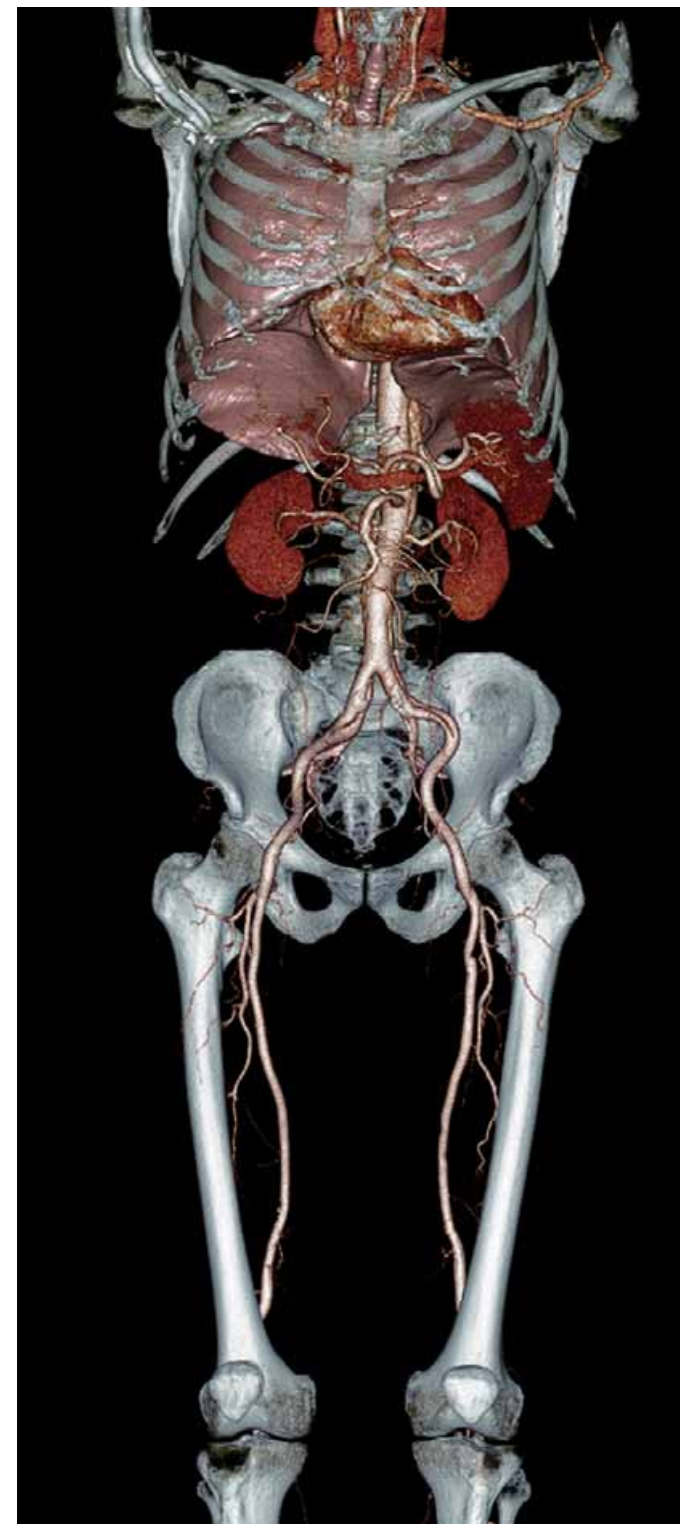
Brain CTA with <sup>SURE</sup>Subtraction bone removal.



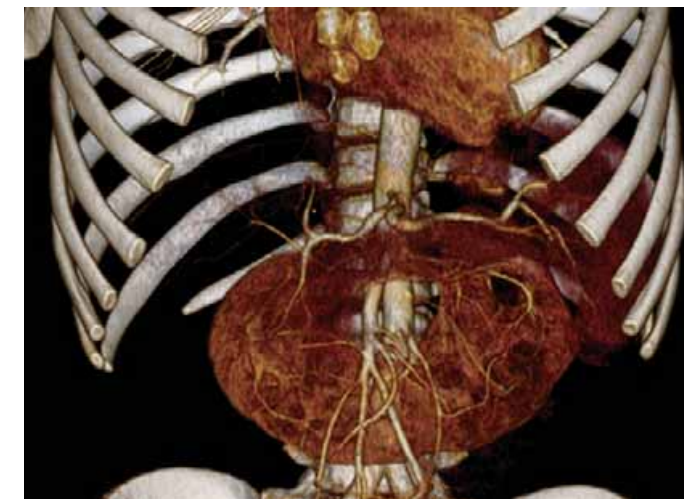
Pulmonary artery CTA using <sup>SURE</sup>Start™ and advanced on console 3D.



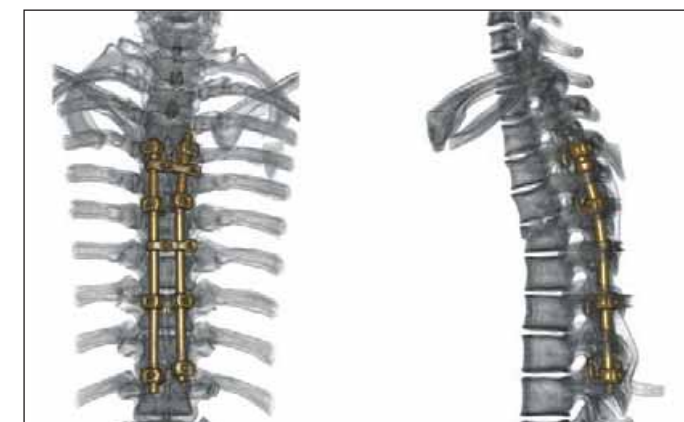
Artifact free cervical spine CT post myelogram.



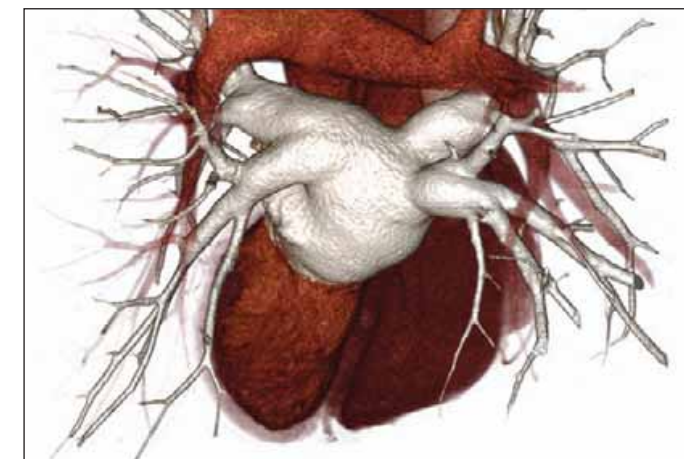
Aorta CTA rendered using on-console advanced 3D.



Renal CTA demonstrating horseshoe kidney.



Thoracic spine internal fixation device rendered using Aquilion's 3D multi object fusion.



Pulmonary vein mapping used for pre-ablation planning.



# Golden standard high performance

Every aspect of clinical performance has been considered in creating Aquilion *rx*. As a result, you can count on Toshiba to improve patient comfort and clinician access, reduce radiation exposure and contrast media, boost productivity while providing the ultimate platform for treating a broader patient base and perform a wider range of procedures.

## HIGH PERFORMANCE

Aquilion *rx* provides new standards in performance that allow clinicians to do more with fewer resources in less time.

- 72 kW\* generator with 350 ms\* rotation acquires data quickly and reduces exam duration
- Ultra-fast reconstruction up to 28 images per second\*
- Latest standard in DICOM, increasing the transfer speed up to 10 times
- Stores up to 500,000 images for immediate access
- 2D, 3D and 4D real-time dynamic perfusion imaging

## ERGONOMIC DESIGN

A host of exclusive, ergonomic features increase patient comfort and operator convenience while making procedures safer and more efficient.

- Gantry and couch return to home position automatically with the push of a button
- Carbon fiber couch top with 1500, 1800 mm (or even 2000 mm\*) scan range
- Convenient front and (optional) rear table footswitches facilitate a more efficient workflow



\* Option

# Continuously advancing the state-of-the-art

As part of its mission to enhance quality of life by supplying patients and practitioners with superior imaging technology, Toshiba conducts ongoing product validation and provides product education for those involved in delivering patient care.

## CLINICAL TRIALS

Toshiba is the first in the industry to conduct international, multi-institution clinical studies in the use of multidetector CT as the primary diagnostic tool for detecting cardiovascular diseases.

Validating 64 detector row Coronary CT Angiography with cardiac catheterization, CorE64 (Coronary Evaluation on 64) participants

represent nine of the world's premiere medical education and research centers.

faCTor64, a randomized, outcomes-based trial of over 1,000 diabetic patients with obstructive coronary artery disease, is also being conducted in cooperation with Intermountain Healthcare.

Other clinical trials include iLead, an international multi-center trial evaluating Aquilion 64 CT low dose lung nodule detection, conducted at:

Beth Israel Deaconess  
Kobe University, Japan  
DKFZ, Germany

## DELIVERING HIGH-QUALITY, COST-EFFECTIVE PATIENT CARE

Aquilion iCX provides more ways to help you better manage the cost of providing healthcare without compromising the quality of physician and patient services.

- Make more efficient use of limited resources with flexible financing options
- Increase utilization with faster throughput and access to a wider range of applications

## QUALITY MANAGEMENT

In 1915 Toshiba developed the first X-ray tube in Japan. Since that time we have continuously pursued product quality, while developing and producing many products with superior safety, durability, flexibility, economy, and serviceability. Toshiba's fundamental principles are based on respect for people. In addition to strict compliance with the law, our goal is to provide products and services that improve our customer's lives, and contribute to society.

## GLOBAL NETWORK

With a sales network of local corporations and representatives in more than 120 countries across the globe, we are proud of our record of service and support to the leading medical institutions throughout the world.

## TOSHIBA LEARNING CENTERS



To ensure consistent scanning and a faster diagnosis with Aquilion iCX, Toshiba's global training facilities provide courses for clinicians and technologists.



Customer Support & Training Center at the Nasu Headquarters.

