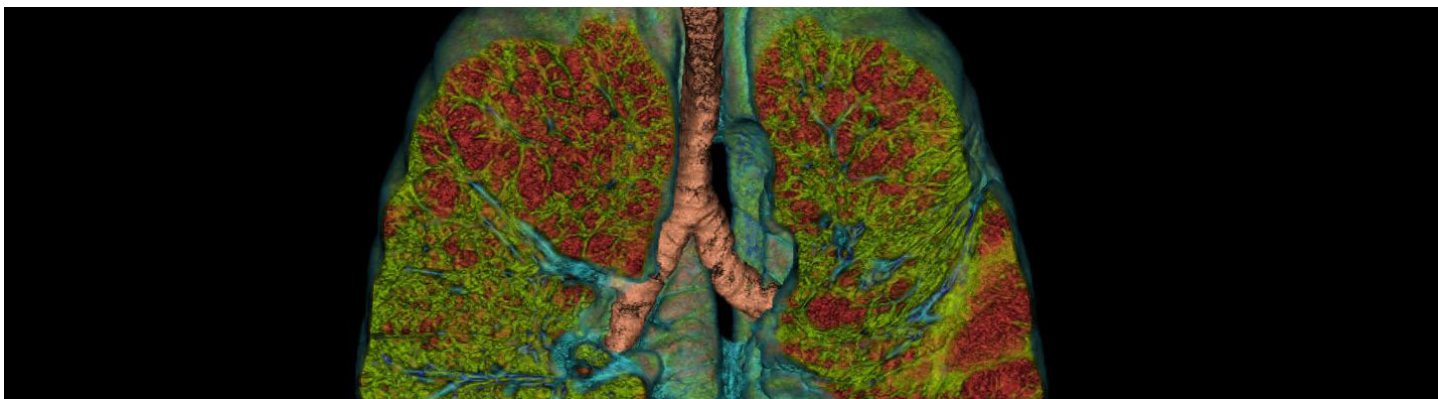


What's New in Vitrea® Advanced Visualization Version 7.14



In addition to our current Vitrea Advanced Visualization applications, we continue to improve and enrich our clinical offerings across all modalities.

New Applications

MR Multi-Chamber Wall Motion Tracking¹

MR Multi-Chamber Wall Motion Tracking is designed to assist with cardiac analysis and enable the delineation of the inner and outer walls of both the atria and ventricles using ECG-gated MR cardiac cine images, in order to obtain quantitative information regarding cardiac function and strain analysis.

- Evaluate all four chambers - LA, RA, LV and RV
 - LV full auto contour detection
 - RV full auto contour detection – powered by a machine learning contouring algorithm
- Perform cardiac function and strain analysis based on delineated myocardial contours across all chambers
- Display strain, strain rate, and twist and torsion for global/regional strain parameters
- Perform dyssynchrony analysis segment by segment
- Visually assess wall motion scoring for each of the AHA segments
- Display ejection fraction, stroke volume, and cardiac output for cardiac functional parameters

NeuroQ™

NeuroQ by Syntermed is a separately licensable application and is now integrated into Vitrea Advanced Visualization. NeuroQ is used to assess neurodegenerative processes and underlying symptoms of cognitive and movement disorders by comparing regional activity values to each other and to those in brain scans acquired for asymptomatic control subjects.

- Increased clinical confidence with qualitative results support or augment visual only reads
- 240 standardized regions of interest (sROIs), defined from multiple sources (PET, MRI and the Talarach/Tourneux cross-sectional atlas) combine to form 47 anatomically significant clusters (standardized volumes of interest) which precludes users from having to manually define ROIs/VOIs
- Normalization can be changed in real time to Whole Brain, Pons, Cerebellum, Sensorimotor Cortex or Thalamus for both Hyper and Hypo metabolism which allows for evaluation of the various types of dementia
- Two-Dimensional color scale identifies not only hypo/hyper metabolic region but also severity
- NeuroQ was validated in 112 patients whose course of dementia (progressive vs non-progressive) was established by longitudinal follow-up; in this group sensitivity and specificity were equal or higher than expert interpretation. The other normal databases (SPECT and Amyloid) all went through a similar validation process.

New Features and Enhancements

Global Illumination

Global Illumination rendering extends the new rendering technique to the most common Vitrea application set. Global Illumination is now available in the following protocols via combo presets:

- Vascular: Carotid CT
- Vascular: CoW CT
- Vascular: Aorta CT
- Vascular: Runoff CT
- Vascular: Aorta Stent CT
- Vascular: TAVR CT
- Abdominal CT
- Urogram CT
- Lung Density Analysis
- Lung Nodule Analysis
- Pulmonary Analysis
- Airway Analysis
- Cardiac: Arteries CT
- Cardiac: EP Planning CT
- Cardiac: Functional CT
- Cardiac: Myocardial CT

Note: Global Illumination is not available in flythrough or fusion modes, or in conjunction with segmented lung density views.

CT Lung Density Analysis

CT Lung Density Analysis now offers a refreshed look and features for evaluation of high densities in the lungs.

- Addition of light blue to the color range to display very high densities
- Medium densities displayed in green for enhanced visibility
- Density quantification table toggles between volume and percentage of lung
- Updated results table provides concise summary of volumetric findings
- Results table capture provides a restorable snapshot for rapid review of lungs

CAC-DRS in CT VScore™ application

The Agatston and Visual Scoring methods as well as identification of a number of affected vessels can be seamlessly added to Mesa or Hoff report guidelines in Vitrea CT VScore.

- CAC-DRS selection enables fields for visual estimation (V) and vessel counting (N)
- Agatston Score automatically converts to correct A Score when CAC-DRS option is selected
- CAC-DRS selection automatically updates report with scores and risk table

CT Brain Perfusion

- Improved auto selection of the artery and vein points
- 2D and 4D midline enhancements
 - Enhanced hemispheric definition and AIF/VOF detection to assist with suboptimal patient positioning
- CT Brain Perfusion Segmentation enhancements
 - Improved spine segmentation at skull base
 - Improved removal of high intensity structures such as calcific deposits
 - Improved sinus bone segmentation
 - Improved removal of artifacts and implanted devices, such as drains, clips, shunts, and metal

General Improvements

- Contours are visible on VScore calcium scoring snapshots
- Order of evidence is aligned between all tabs where evidence is displayed
- Enhancements to custom stent planning reports in CT Endovascular Stent Planning and CT TAVR
- Crosshair tool is not activated with Snapshot tool
 - Users will easily be able to show crosshairs no matter what tool is active when taking a snapshot
- “Show Patient Info”/“Hide Patient Info” selection remembered for future sessions
- Toolbar changes:
 - Pan and Crosshair tools separated for easier selection
 - Tooltips for toolbar tools now easier to read and include keyboard shortcut
- Keyboard shortcut for Cine/Rotate tool is now “X”

Ultrasound

- Ultrasound applications integrated with Vitrea AV 7.14 correspond to the applications on the Canon Aplio i-series v5 ultrasound scanner.
- Aplio i-series “Onboard report” integrated on US 2D Viewer
- Online or USB connected printing (requires separate printer driver installation)
- Improved Ultrasound clinical workflows, measurement results are automatically stored in DICOM SR

Note: Ultrasound applications are no longer supported on Windows 7. Ultrasound applications are not supported on extend, enterprise and enterprise single server (ESS) deployments.

Spectral Analysis Enhancements

- Smoothing filter on monochromatic imaging
- Monochromatic image 200 keV support
- Myocardial analysis^{1,2}
 - Assess Iodine distribution, electron density, and effective Z values within the myocardium
 - Visualize areas of lower iodine concentrations, which may indicate possible areas of ischemia
 - Delayed acquisition review, which helps indicate areas of potential high iodine concentration, to indicate areas of suspected myocardial infarction
 - 17-segment polar map view – aids visualization of key areas of potential ischemia.
 - Measurement regions of interest on cardiac chamber views
 - Short axis, 2-chamber, and 4-chamber
 - Myocardial volume measurement
 - Total myocardial volume
 - Per segment volume
 - Volume based on threshold of iodine map
 - Batch export the chamber view with iodine overlay
- Coronary analysis^{1,3}
 - Assess Iodine distribution, electron density, and effective Z values within the coronary arteries
 - Curved Planar Reconstruction (CPR) and Stretched curved Planar Reconstruction display (SPR) with crosscut visualization
 - Measure regions of interest on the crosscut views
 - Visualize low KeV monochromatic images which can increase the conspicuity of iodine in coronary vessels
- Brain analysis¹
 - Load Advanced intelligent Clear-IQ Engine (AiCE) brain image reconstructions
- Others
 - Bone/water basis material addition
 - Scaled Iodine map⁴
 - Table for measurement ROI
 - CSV export

Dynamic Myocardial Perfusion Enhancements⁴

- Supports loading of snapshots including coronary centerline and contour generated by Vitrea “Cardiac Analysis” application
- Coronary arteries can be projected onto polar map. This allows the visualization of the myocardial region correlated with supplying coronary arteries on polar map.
- Vessel marking functionality
 - Vessel marking provides the myocardial region correlated with the supplying coronary artery from the marked point to distal on polar map
 - By specifying this point on the coronary artery, it is also possible to calculate the partial myocardial mass of the myocardial region involved
- Batch saving (3D, MPR)
- MBF parameter improvement

Multi Modality Viewer Enhancements

- The last cine speed setting is remembered and will be used the next time the program is launched
- The right-click menu on a markup includes “Delete” and “Delete All Annotations” options
- The ability to cine multiple loops is now provided. When cineing all, each loop will play to the end, and then start from the beginning. When cineing a given loop, it will stop playing. Navigation of loops by group (example: 1, 2, 3, 4 on screen advances to 5, 6, 7, 8) or by one (example: 1, 2, 3, 4 on screen advances to 2, 3, 4, 5) is provided.
- When a new series arrive, they are added to the Carousel and the user is notified

Deployment Update

- Install option collection and test improvements
- Vitrea Advanced Visualization deployments now support non-standard RDP ports
- 64bit Only AppShell and Kiosk
- Vitrea Advanced Visualization version 7.14 does not rely on Microsoft Internet Explorer (IE). The removal of IE from a Vitrea Advanced Visualization 7.14 installation will have no effect the performance of Vitrea Advanced Visualization.
- Vitrea Advanced Visualization now supports a 6 user Application Node. This reduces the number of rack units required and also reduces the hardware cost per user of the solution.
- Vitrea Advanced Visualization now supports an ESS server a Tower form factor. This deployment has the same performance characteristics as the Server version without the need for a rack

Integration Enhancements

- When launching through the integration, an option to ignore requested data IDs on the launch is available
- Improvements to the PACS integrated launch and close stability
- Improvements to the PACS integration workflow to allow early close of Vitrea Advanced Visualization

Olea Sphere®

Olea Sphere version 3.0 SP24 is integrated into Vitrea Advanced Visualization version 7.14.

Enhanced Applications

The following applications are enhanced using Olea Medical® SDK technologies:

- DTI replaces the eponymic application DTI
- Multi-b replaces IVIM
- Diffusion replaces DWI
- MR Breast Advanced (breastscape®) interface¹
- Olea Vision™ tools

Features improved

- Carousel follow up studies border color display to differentiate them
- More user friendly chart interface

MR Breast Advanced¹ (Breastscape)

- New report export format in PDF. Additional DICOM Secondary Capture/RGB report sent to the Vitrea database
- Report display improvements
- Report assessment: Distance between lesions center and display lesion position on quadrant and clock position
- Non-rigid registration method for DCE MoCo and for the DCE and VOI coregistration

MR Breast Biopsy¹

- Updated blocks and needles
- New layout with MPR average, a results section and additional image series for clip control

Olea Vision™

- Filmer function provides automatic squeeze, change layout for all pages and ability to swap capture from any page to any page
- Advanced DICOM description add-ons including indications, customizable description and font size

Additional Olea Sphere SP24 Information

There are visual configuration changes within Olea Sphere SP24

- Removal of the Stretched model
- Spatial smoothing has been relocated to the Configuration panel
- Motion Correction has been relocated to the Configuration panel

Note: DTI Fibers are not able to be ingested into Vitrea Advanced Visualization on an export or Query Retrieve. The Volume Synthesis application is not able to ingest DTI Fibers.

Security Enhancements

The Vitrea Advanced Visualization (AV) product has been enhanced for certain safeguards and to address vulnerabilities.

The AV offering for the Department of Defense (DoD) with extend workstation deployments has been updated and approved for the 7.14 release version.

Partner Integration Enhancements

The following enhancements are now included within our partner integrated versions in Vitrea Advanced Visualization:

Medis® Suite Cardiovascular MR

The following features have been added and updated to further enhance the post processing of cardiovascular MR cases

QMass - AutoQ on the Fly

- Left and right ventricular function analysis is now more automated than ever. AutoQ on the fly applies deep learning algorithms to produce accurate and automated contours that reduces analysis time, increases accuracy and reproducibility, and expedites overall workflow

QStrain⁵

- Measures wall deformation (strain) based on feature tracking algorithm
- Provides for LV, RV, Atrial strain/strain rate results
- LV results include:
 - Global: Longitudinal, Circumferential, and radial strain/strain rate, delta rotation
 - Segmental: Longitudinal, Circumferential, radial strain, strain rate, displacement, velocity. Results are provided in 16-segment AHA format
- RV results include:
 - Global Longitudinal strain and fractional area change
 - Segmental results for the free wall and septum
- Atrial results include:
 - Global Longitudinal strain and fractional area change
 - Segmental results for the left wall, right wall, and roof
- No additional scanning is required. QStrain uses the SSFP short axis or long axis images to calculate strain results
- Generate results for endo, mid and epicardial wall

4D Flow⁵ - several enhancements

- One-click phase unwrapping feature corrects for aliasing artifacts and updates results instantly
- Modified 2D streamlines and vectors. Vector size and count are now variable to enhance visualization of flow direction and speed
- Updated 3D streamlines enhance visualization of forward and backward flow.

Mirada Oncology Fusion™

- Ability to skip slices in slice range export (configurable option to allow for exporting e.g. every second slice or every third slice, as well as the existing start and end of range being user-set)
- When capturing from screen for Secondary Captures, users can now capture an entire row or entire column from their layout rather than just whole-screen or single image viewport
- Data series number on saved sessions and secondary captures, for better PACS compatibility

TomTec

- IMAGE-COM, Stress Echo
 - Added additional smart region for brightness contrast (same as basic view)
- AutoStrain
 - AutoStrain provides measurement tools for Strain analysis of the left ventricle (LV), the right ventricle (RV) or the left atrium (LA) to assess cardiac function. Just by selecting the loops and starting the application, the user gets immediate results based on automated proposals for view labels and endocardial border definitions based on Speckle tracking. This allows the user to focus directly on the interpretation of measurements.

Note: AutoStrain LV/RV/LA is part of TOMTEC-ARENA. TOMTEC-ARENA is a trademark of TOMTEC Imaging Systems GmbH.

iCAD VeraLook® CT Colon CAD

The following enhancements are available in the integrated version of iCAD VeraLook® CT Colon CAD within Vitrea Advanced Visualization:

- CT Colon studies that meet criteria for iCAD are queued and run subsequently instead of simultaneously
 - Icons on the Study List will provide users with feedback about which studies are queued, processing, or finished
- iCAD will launch on idle app nodes instead of the management node

Partner Integration Applications

All partner applications are available from all deployments (workstation, extend, enterprise – including enterprise single server). Canon Medical integrates the latest versions from its partners.

Features	Version
4DM by INVIA	2018.0.0.180
Cedars Cardiac Suite	2017.10
iCAD VeraLook® CT Colon CAD	1.1.10/1.1.5
Medis® Suite Cardiovascular MR	Medis Suite 3.2.60.6 QFlow 8.1.98.2 QMass 8.1.98.2 4D Flow 1.1.26.2 QStrain 3.2.4.2
Mirada Nuclear Medicine	4.4.4
Mirada Oncology Fusion	3.6.11
Mirada RTx	1.8
NeuroQ™	3.80
TOMTEC	2.41
Visia™ CT Lung CAD by MeVis™ Medical Solutions	5.8

Note: Ultrasound, Spectral and Dynamic Myocardial Perfusion are only for Canon scanner data.

1. Not available for sale in certain geographic areas, including the United States.
2. Myocardial contour delineation in "Myocardial Perfusion" application is mandatory before performing myocardial analysis in the Spectral Analysis application. Myocardial contour information is loaded into the application via a snapshot. Without a snapshot of "Myocardial Perfusion", myocardial analysis is not available.
3. Coronary artery centerline and lumen detection in the "Cardiac Analysis" application is mandatory before performing coronary analysis in Spectral Analysis application. Coronary artery centerline and lumen are loaded into the application with a snapshot. Without snapshot of "Cardiac Analysis", coronary analysis is not available.
4. Not available within the US.
5. Separately licensable options

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