



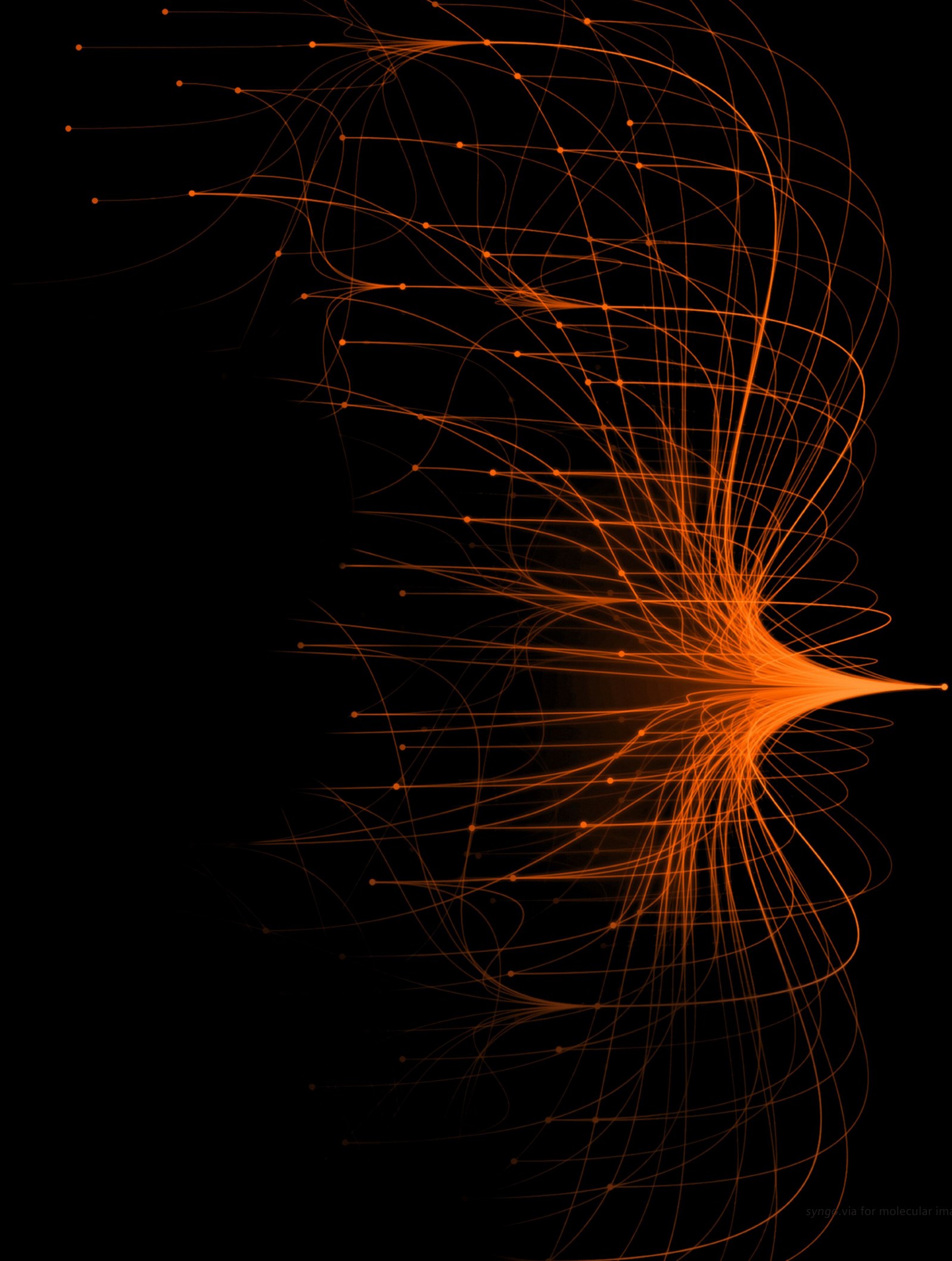
syngo.via for molecular imaging

Reading as it should be in PET and SPECT

siemens-healthineers.com/molecular-imaging/reading-software/syngo-via

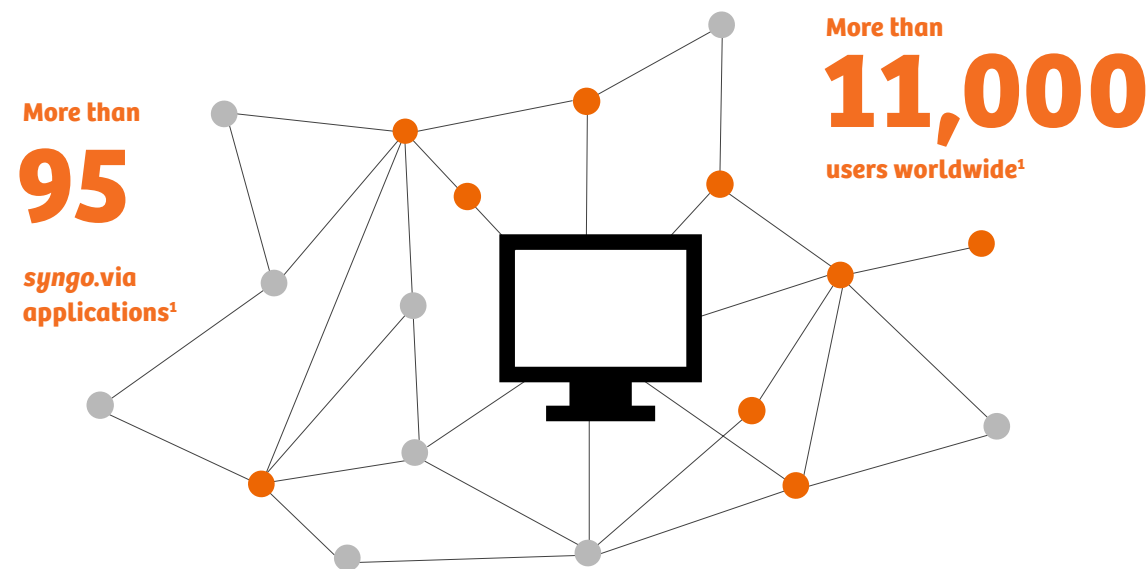
Today's molecular imaging scanners are faster, more precise, and produce greater amounts of complex data than ever. Interpreting, managing, and sharing that data—across care teams, patients, devices, and time intervals—can present a host of challenges.

syngo[®].via for molecular imaging (MI) addresses these challenges by integrating everything you might require to read, interpret, report, and share your cases quickly and precisely on a single platform.



Reading as it should be

Designed for ultimate ease of use, *syngo.via* provides integrated toolsets and a consistent workflow for single-user or multi-user environments. Whether you're reading PET/CT, SPECT/CT, SPECT, planar, CT, MR, mammography, angiography or ultrasound exams or performing radiation planning, *syngo.via* helps you master growing amounts of imaging data.



syngo.via standard functionality

Preparation

Automatic preparation saves time and reduces manual interaction by pushing patient data from the scanner and pre-fetching the corresponding exams from the picture archiving and communication system (PACS). The Findings Navigator automatically stores and redisplay previous findings, which can shorten the time needed to compare pre- and post-therapy exams. Automatic Landmark Parsing of Human Anatomy (ALPHA) uses

Reading and measuring

Smart menus speed up your workflow with context-based access to all your preferred tools. Image evaluation tools show distances, regions of interest (ROIs), volumes of interest (VOIs) and offer synchronized scrolling based on anatomical registration for quick results.

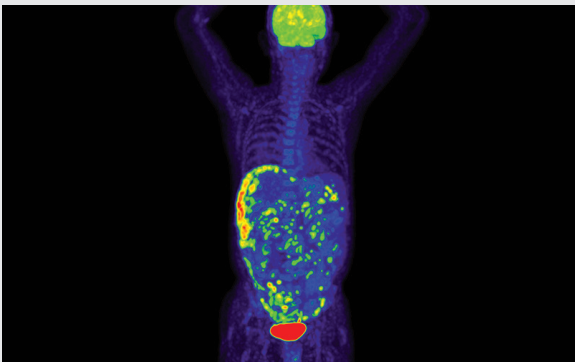
Reporting

Visual and quantitative findings are automatically formatted into a report to reduce overall reporting time. The findings are automatically archived in PACS when the case is closed.

Optional *syngo.via* functionality

MM Oncology

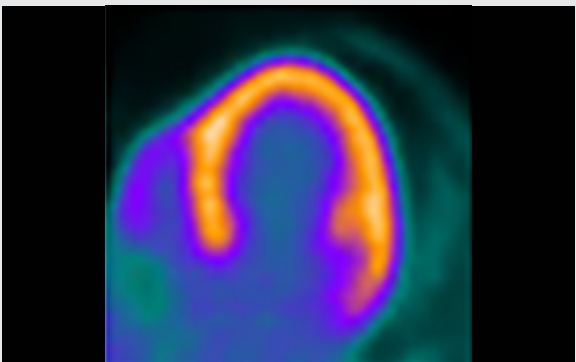
- *syngo*.MM Multi-Timepoint
- *syngo*.MI Segmentation
- *syngo*.PET Dynamic Analysis
- *syngo*.PET Auto ID^[a]
- *syngo*.MM Therapy Interface
- *syngo*.MI OncoBoard
- *syngo*.CT Segmentation



Data courtesy of University of Keio Gijyuku University Hospital, Tokyo, Japan.

MI Cardiology

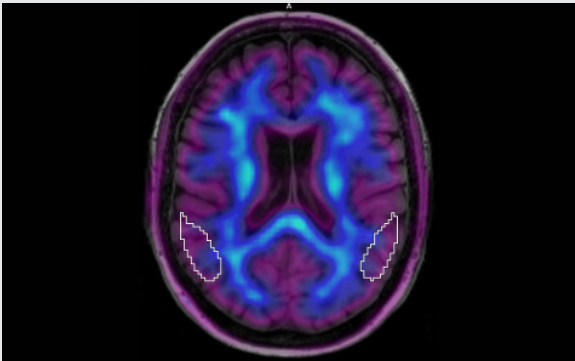
- *syngo*.PET Myocardial Blood Flow
- *syngo*.PET Corridor 4DM/Cedars Cardiac Suite
- *syngo*.CT Extention Corridor 4DM/Cedars Cardiac Suite
- *syngo*.CT Calcium Scoring
- *syngo*.MI Cedars Reporting



Data courtesy of Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland

MI Neurology

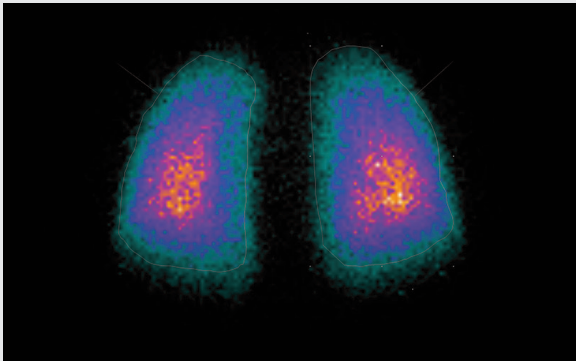
- *syngo*.PET DB Comparison
- *syngo*.SPECT DB Comparison
- *syngo*.PET Amyloid Plaque
- *syngo*.PET Striatal Analysis
- *syngo*.SPECT Striatal Analysis
- *syngo*.MI Neuro Subtraction
- *syngo*.MI Neuro DB Creation



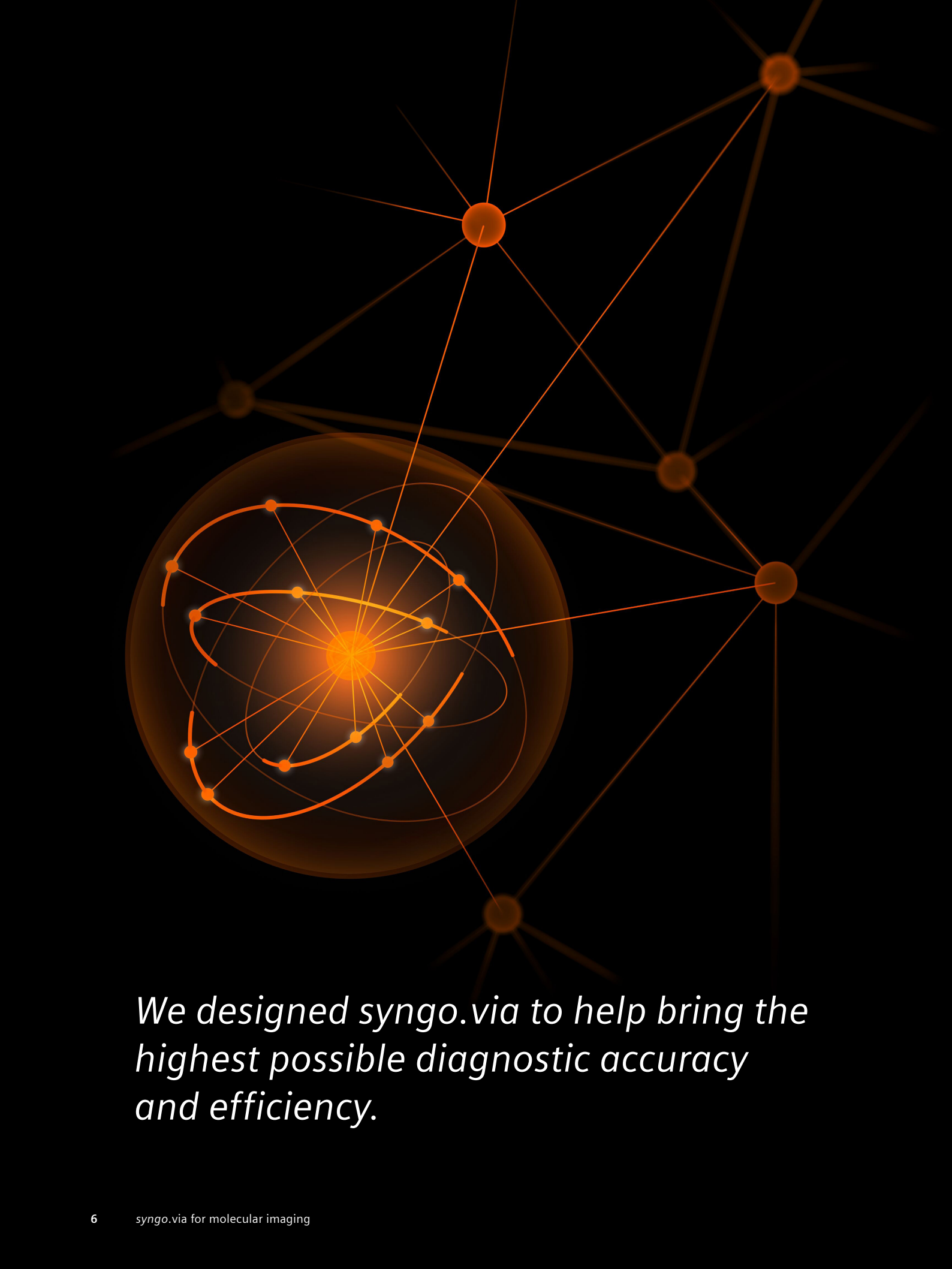
Data courtesy of University of Tennessee Medical Center, Knoxville, Tennessee, USA.

MI General

- *syngo*.NM Organ Processing for organs such as:
 - Stomach
 - Lung
 - Kidneys
 - Thyroid
 - Parathyroid
- *syngo*.NM Auto Lung 3D^[b]



Data courtesy of University of Minnesota, Minneapolis, Minnesota, USA.



We designed syngo.via to help bring the highest possible diagnostic accuracy and efficiency.



Take the work out of workflow

syngo.via's unique combination of multiple smart technologies provides a level of automation that eliminates many of the manual pre-processing steps. With *syngo.via*, you can start reading right away and experience greater productivity.



Get the most out of your image, faster

syngo.via drives diagnostic clarity through a variety of unique MI algorithms that normalize quantification results and reduce variability across devices, patients, and time.



Collaborate across departments

From everyday reporting to mobile viewing and portable USB technology, *syngo.via* translates your data and findings into a concise report designed to enhance collaboration both online and in person.



Find your best fit— for today and tomorrow

syngo.via's high degree of flexibility and scalability supports a broad range of applications and users. It's designed to meet your needs now and into the future.

Take the work out of workflow

Preparing images for reading often requires extra manual work and time. Available diagnostic information must be organized and reviewed. Images from multiple time points must be synchronized and properly aligned, especially when you are navigating volumetric data sets and observing anatomical changes in exacting detail.

syngo.via offers multiple features to minimize the number of steps required before reading—simply open the case and start reading right away.

Eliminate unnecessary steps and move onto your next case faster

1 Pre-fetching

Before opening a patient file, the prior examinations are automatically loaded onto *syngo.via* and are combined with the current exam in the SMART layout.

2 ALPHA technology

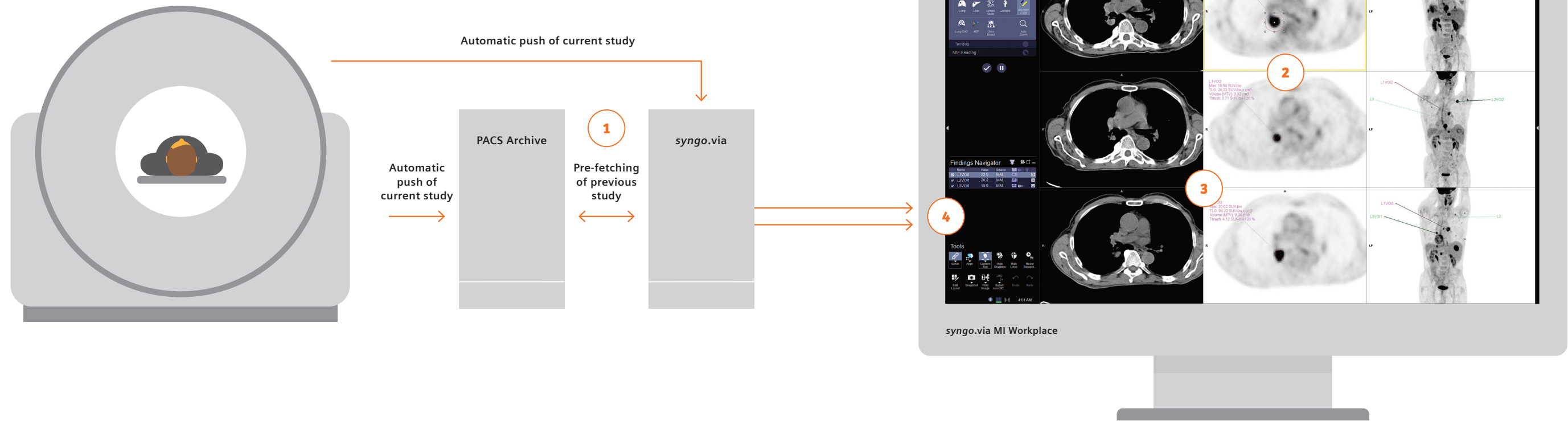
Proprietary ALPHA technology automatically correlates studies based on individual organ recognition and aligns them for more precise registration and easier evaluation.

3 Smart layout

Based on the type of scan performed, the appropriate application automatically opens in your preferred layout and displays the necessary tools.

4 Findings Navigator

See all previous findings within a case as soon as the case is displayed. Previous findings can be propagated to your current exam, allowing a quick comparison of patient studies.



Data courtesy of University of Tennessee Medical Center, Knoxville, Tennessee, USA.

Find a more efficient route to the answers you need

syngo.via can help you evaluate cases faster, free up staff time, and reduce costs with automated pre-fetching, pre-processing, display and comparison of previous findings, SMART layouts, and ALPHA technology.

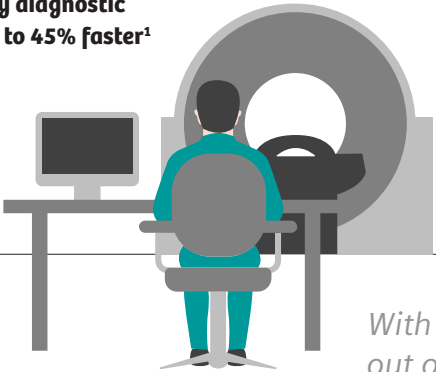
In a multi-modality Siemens Healthineers study, eight different workflows from five different institutions showed that cases can be evaluated up to 45% faster with syngo.via.²

Up to 20 cases per workflow were analyzed for PET/CT with the case mix, including a variety of cancers such as rectal, endocrine system, parotid gland, and lung carcinoma.²

	Previous software	syngo.via	Overall improvement	
PET/CT Onco Diagnosis	502 sec	275 sec	227 sec	45%
PET/CT Onco Follow-up	343 sec	240 sec	103 sec	30%

45%

Oncology diagnostic cases up to 45% faster¹



30%

Oncology follow-up cases up to 30% faster¹

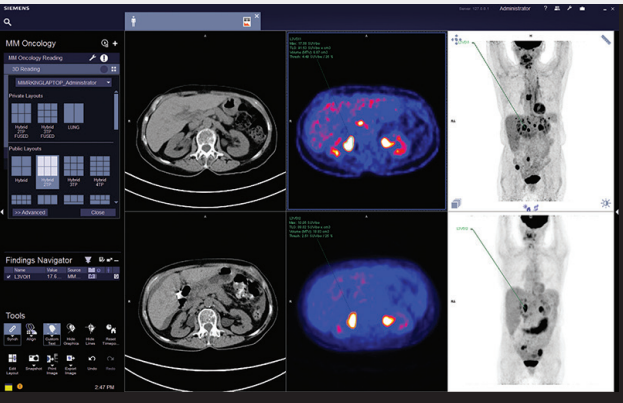
With pre-processing taking the work out of workflow, you can now begin reading cases right away.

Get the most out of your image, faster

syngo.via includes applications that support a fast and accurate evaluation for both PET and SPECT.

Oncology

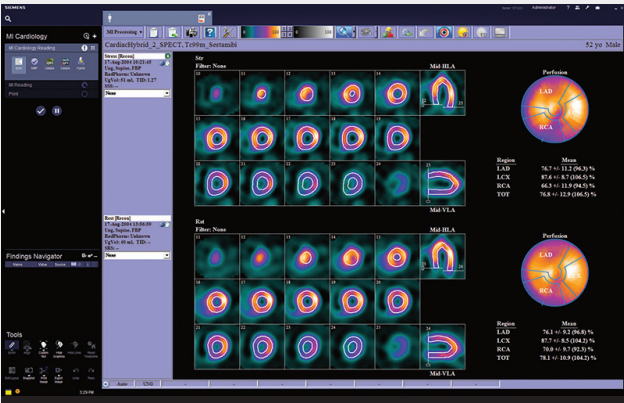
Key PET and SPECT features let you compare results from different time points and accurately track disease progression over time.



Data courtesy of University of Tennessee Medical Center, Knoxville, Tennessee, USA.

Cardiology

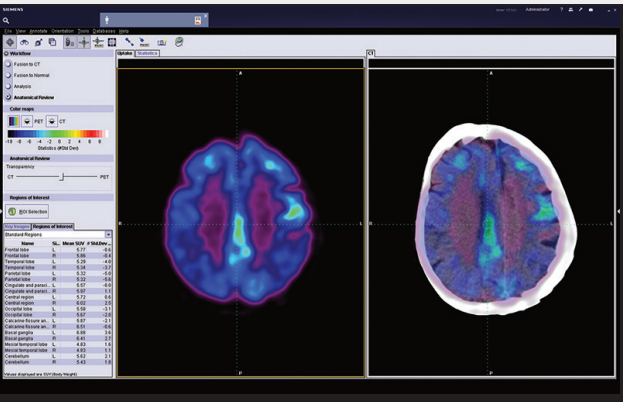
Whether you prefer Corridor4DM, Cedars Cardiac Suite or Siemens Healthineers applications, syngo.via allows you to read both SPECT and PET cardiac data on the same platform.



Data courtesy of Manchester Royal Infirmary, Manchester, United Kingdom.

Neurology

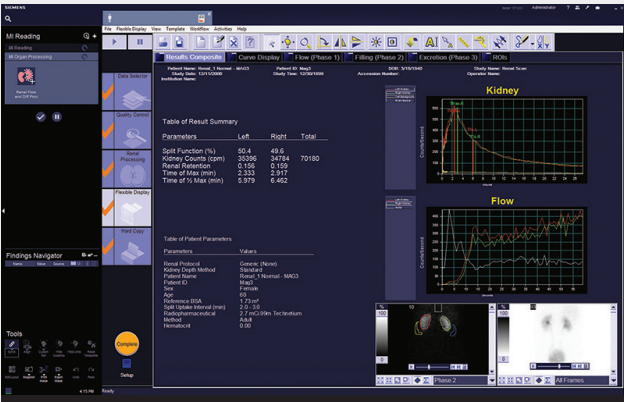
Our exclusive quantification algorithms provide quantitative guidance for the assessment of your diverse neurological indications.



Data courtesy of University of Tennessee Medical Center, Knoxville, Tennessee, USA.

Organ processing

Automated workflows let you perform advanced evaluation of general nuclear medicine datasets within the same interface.



Data courtesy of University of Minnesota, Minneapolis, Minnesota, USA.

Consistent results for better patient care in PET and SPECT

As worldwide cancer rates continue to grow, there is a significant increase in the number of cancer cases that require evaluation.³ Treating these complex cases requires monitoring the progression of disease over time across numerous exams acquired on different scanners. As a consequence, SUV measurements can fluctuate, impacting staging and treatment decisions—a challenge already recognized by the Radiological Society of North America (RSNA).

Our oncology application includes an array of features that help master increasing amounts of imaging data while supporting consistent measurement accuracy.

+86% / -54%

variation of SUV measurement without EQ•PET[®]

+18% / -16%

variation of SUV measurement with EQ•PET[®]

Experience faster, more accurate reading with syngo.via

Findings Navigator

Automatically stores and redisplay previous findings, reducing the time needed to compare these findings over time.

Multifoci Segmentation: Total Lesion Glycolysis (TLG) and Molecular Tumor Volume (MTV)

Measures the accumulated metabolic activity of multiple tumors for the entire body, potentially improving the preoperative identification of high-risk patients and the prognostic value in predicting overall survival.

Auto ID for ¹⁸F FDG^[a]

Artificial intelligence that provides suggestions for findings inclusion or exclusion for whole-body tumor burden (MTV/TLG). Identifies physiological and non-physiological uptake and proposes classifications.

CT Recist/PET Percist

Segments and quantifies new lesions on CT and PET using the same tool to provide RECIST and PERCIST metrics.

EQ•PET

Compares SUVs from different PET/CT scanners and harmonizes measurements between past and current studies.

Trending

Enables longitudinal comparison of lesions in one view.

Follow-up examination of progressive disease of an ovarian cancer patient. Top: current scan. Bottom: prior scan from a different scanner. Both scans were aligned using ALPHA.

Data courtesy of University of Tennessee Medical Center, Knoxville, Tennessee, USA.

This image compares the data from a follow-up scan on a Siemens Healthineers PET/CT scanner in 2014 (top) with an image of several lesions detected in 2010 using a different scanner (bottom). After opening the case, the Findings Navigator automatically displayed all findings in both examinations with access to the trending tools. Molecular Tumor Volume was

automatically calculated and shown with all other relevant parameters of the particular lesion. In this case, an increase in biological activity during that period is shown. Since the scans were performed on two different scanners, syngo.via EQ•PET functionality normalized the measurements between the prior and current studies, enabling comparability.

Our oncology application also supports xSPECT Quant, a unique Siemens Healthineers solution, quantifying SPECT/CT data, which allows tracking of disease progression using different functional tracers in SPECT/CT.

Data courtesy of Bundeswehrkrankenhaus Ulm, Ulm, Germany.

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syngo.via for molecular imaging 13

Cardiology

A cardiac solution suited to your preference in PET and SPECT

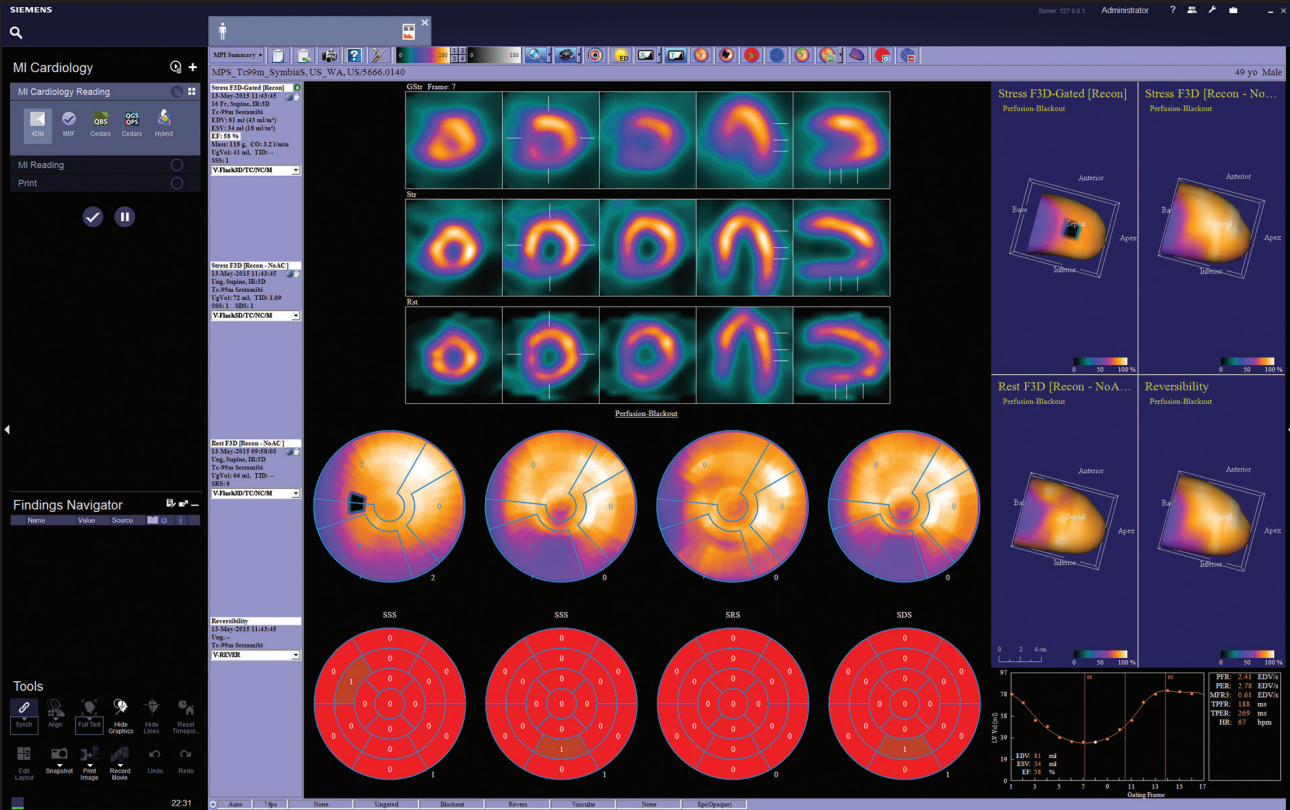
Cardiology represents a large portion of molecular imaging studies, especially in SPECT, with 52% of all studies attributed to myocardial perfusion.⁵

Additionally, the number of cardiac PET exams has increased more than 4 times during the last decade.⁶

Many physicians are working with both PET and SPECT cardiac data, and frequently use separate platforms to obtain a comprehensive view of a condition.

syngo.via delivers the same consistent user experience for faster workflow, regardless of which modality or isotope utilized.

Additional CT tools support your ability to interpret multimodality cardiology scans in a single platform.



>4X Growth in number of PET cardiology exams in the last decade



52% of all SPECT cardiology studies were myocardial perfusion

syngo.via in cardiology integrates the tools from your preferred applications in one platform

Transient Ischemic Dilation (TID)
A measurable marker of severe and extensive coronary artery disease (CAD).

Ejection Fraction
A measurement of the percentage of blood leaving the heart each time it contracts.

Motion and Time to Peak Contractility
An indirect method for assessing contractility of the myocytes (ie, heart muscle contraction).

Left Ventricular Myocardium
The thickening of the myocardium (muscle) of the left ventricle of the heart.

Regional Wall Thickening
A measurement to predict angiographic stenosis.

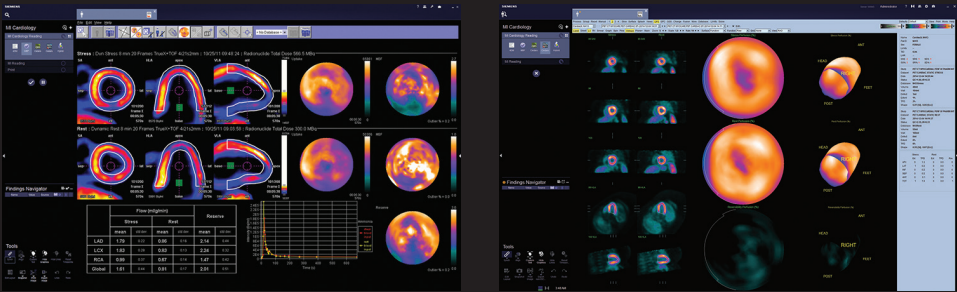
Myocardial Blood Flow
Review relative perfusion results together with myocardial blood flow in ml/min.

Coronary Flow Reserve
Quantitative assessment of myocardial tracer uptake to aid in interpretation of dynamic myocardial perfusion with Rubidium and Ammonia tracers.

This image shows the results of a stress/rest ^{99m}Tc-MIBI SPECT myocardial perfusion imaging study of a 49-year-old male with intermittent chest pain and difficulty in breathing, which was suspected to be secondary to coronary artery disease. In this case, the physician chose Corridor4DM to read and measure. The study shows decreased tracer uptake in the inferior wall with normalization of uptake at rest. By using syngo.via Left Ventricular Myocardium functionality, it could be shown that the rest of the LV myocardium shows normal perfusion. Mild post-stress LV dilatation is visible as well. Based on the Transient Ischemic Dilation measurements, these results suggest reversible ischemia in the right coronary artery (RCA) territory. The extent of reversible perfusion defect confined to the inferior wall suggests predominant involvement of the right coronary artery. Post-stress left-ventricular Ejection Fraction is slightly reduced compared to rest, suggesting stress-reduced ischemia.

Stress/rest ^{99m}Tc-MIBI SPECT myocardial perfusion imaging study showing reversible inferior wall ischemia suggestive of coronary artery disease, predominantly involving the right coronary artery.

Data courtesy of Manchester Royal Infirmary, Manchester, United Kingdom.



Examples of additional integrated cardiology applications: Myocardial Blood Flow/Coronary Flow Reserve (left) and Cedars Cardiac Suite (right).

Data courtesy of University of Central Manchester University Hospital, Manchester, United Kingdom.

A more confident diagnosis for PET and SPECT

As life expectancy increases, we see a corresponding rise in neurological diseases that affect aging populations, including dementia, movement disorders, and seizures. Due to the complexity of the brain, it can be especially difficult to identify and characterize disease progression.

syngo.via provides quantitative guidance for the assessment of disease in both PET and SPECT cases, especially for borderline cases. Our dedicated neurological quantification algorithms help identify problems by comparing patient exams against a population database of normal, healthy brains, over time.

Every




3 sec

someone in the world develops dementia*

\$818B

Global annual cost of dementia*



syngo.via for neurology promotes clarity in complex cases

- SUV Ratios Calculation

Helps determine activity in PET imaging and highlights uptakes ratios in different parts of the brain.
- Normals Databases

Establishes standards for the amount of amyloid plaque in the brain and can be used to monitor the progress of Alzheimer’s disease.

- Custom Databases

Complements regular assessments with new custom databases. Data-bases can be created and tailored to patient population, new tracers, smoothing criteria, or other parameters to specifically address your workflow and research needs.

- Neuro Subtraction

Enables measurement of local differences in cerebral blood flow between the ictal and interictal state of neuronal activation that occurs with epileptic seizures.



Amyloid-negative scan of a patient with clinical symptoms of dementia. PET data from a PET/CT scan was fused to a prior MRI scan of the same patient.

Data courtesy of University of Tennessee Medical Center, Knoxville, Tennessee, USA.

This image shows the results of an 87-year-old woman with clinical symptoms of dementia. She was referred for amyloid PET/CT testing because she was experiencing short-term memory loss and occasional hallucinations. Based on visual assessment alone, neurologists found it difficult to clinically differentiate between Alzheimer’s disease and fronto-temporal dementia, though PET studies showed increased uptake in the brain with normal uptake predominantly appearing in the white

matter. Using syngo.via MI Neurology, the neurologist measured a global SUV ratio of .93, which is normal according to the referenced Normals Database in syngo.via. As a result, and in view of the normal uptake pattern and SUV ratio values established by syngo.via, the physician concluded that Alzheimer’s disease could be ruled out, and fronto-temporal dementia was the more likely diagnosis.



syngo.via MI Neurology can also be used in SPECT/CT studies, in this case for motion disorders.

Data courtesy of University of Tennessee Medical Center, Knoxville, Tennessee, USA.

Organ processing

One interface for every organ study in SPECT and SPECT/CT

Organ studies performed on SPECT and SPECT/CT systems are one of the largest sources of volume for examinations in nuclear medicine. Reading and measuring these studies requires processing and analyzing imaging data from different organs, and each study demands its own dedicated protocol and workflow.

syngo.via allows you to create and save automated workflows and process datasets using the same interface. Once a specific workflow is created, you can automate and replicate it—saving time and improving diagnostic confidence.



48.8M

nuclear medicine procedures occurring globally in 2018⁵

syngo.via SPECT processing applications give you diagnostic confidence in your nuclear studies

Regions of Interest

Allows you to display the physiological process over time in a specific region of interest for nuclear medicine exams such as cardiac, lung, thyroid, renal, gastric, hepatobiliary, brain, liver, and parathyroid.

Auto Lung 3D^(b)

Artificial intelligence that automates the segmentation and quantification of 3D anatomy, automatically locates and contours lungs, segments

right/left lung lobes, quantifies ventilation/perfusion, and generates a report containing the % of total perfusion and volumes.

Graph Visualization

Enables you to visually display time activity curves in different areas based on the data collected.

Customized Processing Protocols

Allows you to customize processing protocols and workflows for specific organs, making data processing fast and repeatable.

Flexible Display

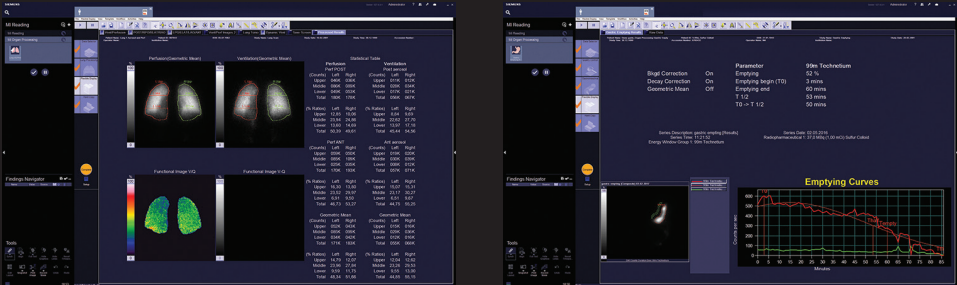
Lets you create your own customized screen layout to display results the way you prefer to read them.



Renal scan of a 60-year-old patient prior to a living donation of one kidney. The study shows bilateral normal function of both kidneys. Data courtesy of University of Minnesota, Minneapolis, Minnesota, USA.

This image displays the results of a 60-year-old female patient who underwent a scan to confirm regular bilateral kidney function before the living donation of one kidney. As seen on the screen, a kidney-specific Processing Protocol automatically performed the Region of Interest (ROI) placement and manual motion correction—reducing manual, repetitive steps for kidney-specific evaluation. An automated calculation of results, which was chosen in the Flexible Display settings is

displayed: renal retention, split function, T ½ max, and Tmax. syngo.via for MI helped visualize kidney function over time, displaying results in the form of a Time Activity Graph. One of the results shown here is Mercaptoacetyl triglycerine (MAG3) elimination over 26 minutes, visualized by the red and green curves, demonstrating the split renal function of 50.6 and 49.6%.

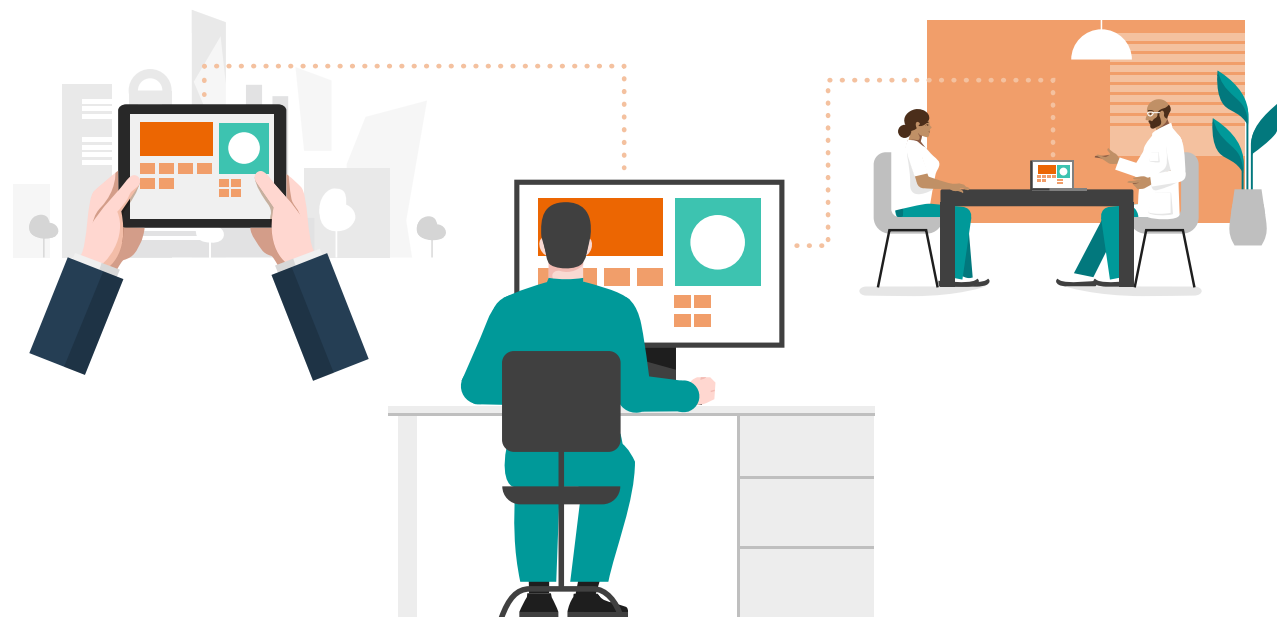


Other organs can be evaluated in syngo.via using identical tools as shown here: lung perfusion (left) and gastric emptying (right).

Data courtesy of University of Minnesota, Minneapolis, Minnesota, USA.

Collaborate across departments

Physicians are frequently required to communicate their findings in many different ways to a diverse audience. *syngo.via* delivers data in dynamic, shareable formats to help easily guide diagnostic consensus toward a better treatment for the patient. User-friendly reports enable better collaboration within and across departments.



Enjoy a consistent viewing experience across all sharing platforms for more efficient collaboration

Structured Reports

Findings and measurements are automatically collected by *syngo.via* in disease-specific report templates. The *syngo.via* report can be distributed to PACS or sent via an HL7 interface to an information system.

WebViewer

With *syngo.via* WebViewer, patient involvement is effortless. 3D images can be used to explain the diagnosis, and conversations can be held where the patient is located. WebViewer is accessible from a standard mobile device, making it easy to share information with referring physicians and other departments.

Oncoboard

Oncoboard provides a dynamic, offline method for discussing cases onsite or on-the-go, even for locations without a *syngo.via* or network connection. Oncoboard runs a fully interactive, shareable application from a single USB drive.

Find your best fit— for today and tomorrow

With a variety of solutions for various clinical environments and budgets, you can begin with a small initial investment and expand your capabilities as you grow.

1 *syngo.via* multimodality applications

In addition to standard functionality, applications can be added to *syngo.via* any time.

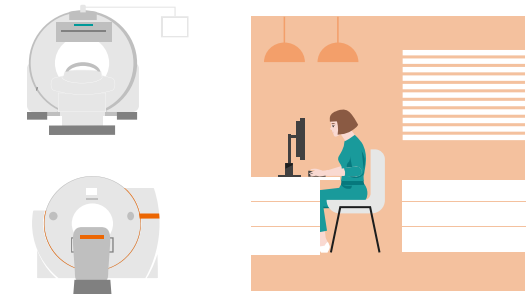
- All *syngo.via* multimodality (MM) applications are available for single or multiple concurrent users
- All applications are available on *syngo.via* MM Workstations and *syngo.via* MM Servers
- Applications as well as the number of licenses per application (defining the number of concurrent users) can also be added at a later stage



2 *syngo.via* molecular imaging workplace

Ideal for a stand-alone MI department or small private practice

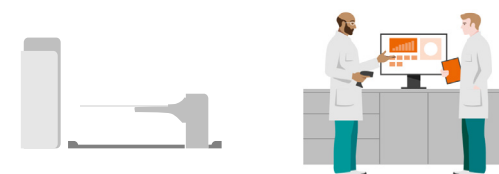
- Stand-alone MI workplace at one location
- For a single user
- MIWP can be configured with any SPECT and/or PET application



3 *syngo.via* multimodality workstation

Ideal for a small hospital or stand-alone imaging center

- Stand-alone MM workstation at one location
- For one or two concurrent users (when using different advanced applications)
- *syngo.via* MM Workstation available with all scanners
- Applications on *syngo.via* MM Workstation available for all modalities



4 *syngo.via* multimodality server

Ideal for a large hospital or practice with satellite branches

- Client-server MM solution to connect multiple departments or locations
- For multiple concurrent users (even when using the same advanced applications)
- Applications on *syngo.via* MM Server available for all modalities



Uniquely suited to your needs

Benefit from unique and special features

EQ•PET

Overcomes an industry-wide challenge and compares SUVs from different PET/CT scanners to harmonize measurements between past and current studies.

Findings Assistant

Automatically stores and redisplay previous findings, reducing the time needed to compare previous and follow-up exams.

ALPHA Technology

Uses organ-recognition technology to align studies for easier data comparison.

Quantification Tools

Improves comprehension of disease process for PET and SPECT through accurate and reproducible SUV calculations, segmentation and contouring.

Multi Time-Point Trending

Displays up to 8 time points at the same time in a fully synchronized single layout to provide complete disease progression of the patient in a single view.

Oncoboard

A dynamic method for sharing cases interactively at conferences or on the go, even on systems that don't have a *syngo.via* or network connection.

Normals Database

Provides you with information about the degree of deviation of the patient exam from a normal database of healthy patients, quantified as a standard deviation to aid in a more confident diagnosis.

Auto ID for ^{18}F FDG^[a]

Artificial intelligence that provides suggestions for findings inclusion or exclusion for whole-body tumor burden (MTV/TLG). Identifies physiological and non-physiological uptake and proposes classifications.

Auto Lung 3D^[b]

Artificial intelligence that automates the segmentation and quantification of 3D anatomy, automatically locates and contours lungs, segments right/left lung lobes, quantifies ventilation/perfusion, and generates a report containing the % of total perfusion and volumes.



For a complete list of features, visit
[siemens-healthineers.com/molecular-imaging/reading-software/syngo-via](https://www.siemens-healthineers.com/molecular-imaging/reading-software/syngo-via)

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References

- ¹ Claims based on internal data at time of publication. Data on file.
- ² The outcomes achieved by the Siemens Healthineers customers during the syngo.via Efficiency Study conducted in 2012 were achieved in the customer’s unique setting. Since there is no “typical” hospital and many variables exist (eg, hospital size, case mix, level of IT adoption), please be aware that we cannot guarantee, warrant, or represent that others will actually achieve the shown time savings and patient-centric productivity. Data on file.
- ³ WHO, World Cancer Report 2020.
- ⁴ EQ•PET White Paper. Lasnon et al: Harmonizing SUVs in multicenter trials when using different generation PET systems: prospective validation in non-small cell lung cancer patients, in *EJNM*, 11/6/2012.
- ⁵ IMV 2021 PET Imaging Market Summary Report.
- ⁶ IMV 2018 Nuclear Medicine Market Outlook Report.
- ⁷ MEDraysintell Nuclear Medicine – Marketed Radiopharmaceuticals – Edition 2019.
- ⁸ Alzheimer’s Disease International. Dementia statistics. <https://www.alzint.org/about/dementia-facts-figures/dementia-statistics/>. Accessed August 2021.

Disclaimers

- ^[a] Lesion Scout with Auto ID is not available for sale in the United States and is not commercially available in all countries. Future availability cannot be guaranteed. Please contact your local Siemens Healthineers organization for further details. The lesion classification presented by Auto ID is only a proposal. All findings must be evaluated and accepted by the physician before MTV/TLG is calculated.
- ^[b] Auto Lung 3D is not commercially available in all countries. Future availability cannot be guaranteed. Please contact your local Siemens Healthineers organization for further details.

Siemens Healthineers Headquarters

Siemens Healthcare GmbH
Henkestr. 127
91052 Erlangen, Germany
Phone: +49 9131 84-0
siemens-healthineers.com

Published by

Siemens Medical Solutions USA, Inc.
Molecular Imaging
2501 North Barrington Road
Hoffman Estates, IL 60192
USA
Phone: +1 847 304-7700
siemens-healthineers.com/mi