

siemens.com/syngo-via

syngo.via for Molecular Imaging

Reading as it should be in PET and SPECT.

Today's molecular imaging scanners are faster, more precise and produce greater amounts of complex data than ever before. 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 in a single platform.

Better care starts at the molecular level

In today's healthcare environment, small details can lead to significant value — for patients, caregivers and enterprises. Our advances in molecular imaging help you reveal critical details that result in meaningful improvements for all.

Data courtesy of University Hospital Erlangen, Germany.





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.

More than

95

syngo.via applications¹

More than

10,000

*users worldwide*¹

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 PACS system. 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 organ recognition to align studies for precise study comparison.

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)** and **volumes of interest (VOIs)** and offer **synchronized scrolling** based on anatomical registration for quick results.

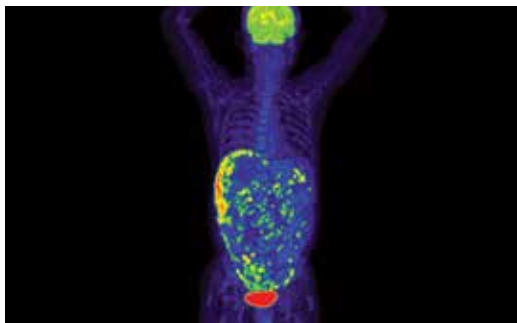
REPORTING

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

Optional *syngo.via* functionality

MM ONCOLOGY

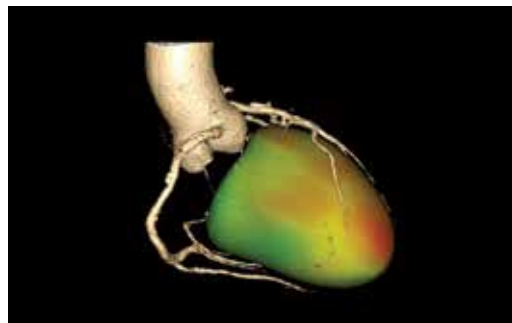
syngo.PET Dynamic Analysis
syngo.MI Segmentation
syngo.MI Oncoboard
syngo.MM Cross-Timepoint Evaluation
syngo.MM Onco Multi-Timepoint
syngo.MM Therapy Interface
syngo.CT Segmentation



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

MI CARDIOLOGY

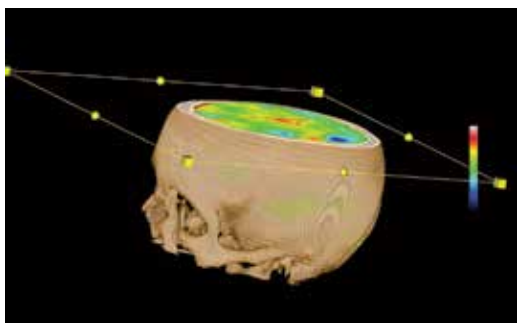
syngo.PET Myocardial Blood Flow
syngo.PET Corridor 4DM/Cedars Cardiac Suite
syngo.CT Extention Corridor 4DM/Cedars Cardiac Suite
syngo.MI Hybrid Coronary View
syngo.CT Calcium Scoring
syngo.CT Coronary Analysis
syngo.CT Cardiac Function



Data courtesy of Daviess Community Hospital, Washington, Indiana, USA.

MI NEUROLOGY

syngo.PET Amyloid Plaque
syngo.PET Neuro Database Comparison
syngo.MI Neuro Hybrid 3D
syngo.MI Neuro Subtraction
syngo.MI Neuro Database Creation
syngo.CT Neuro DSA
syngo.SPECT Neuro Database Comparison
syngo.SPECT Striatal Analysis

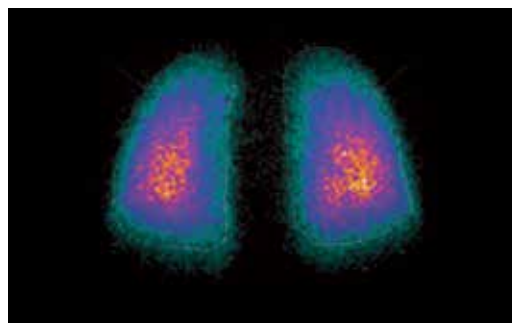


Data courtesy of University of Tennessee Medical Center, Knoxville, Tennessee, USA.

MI READING


syngo.SPECT Processing for organs such as:

- Stomach
- Lung
- Kidneys
- Thyroid
- Parathyroid



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

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



Rest		Reserve	
mean	std dev	mean	std dev
0.86	0.18	2.14	0.44
0.93	0.15	2.24	0.02
0.67	0.14	1.47	0.12
0.81	0.07	2.01	0.04

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.

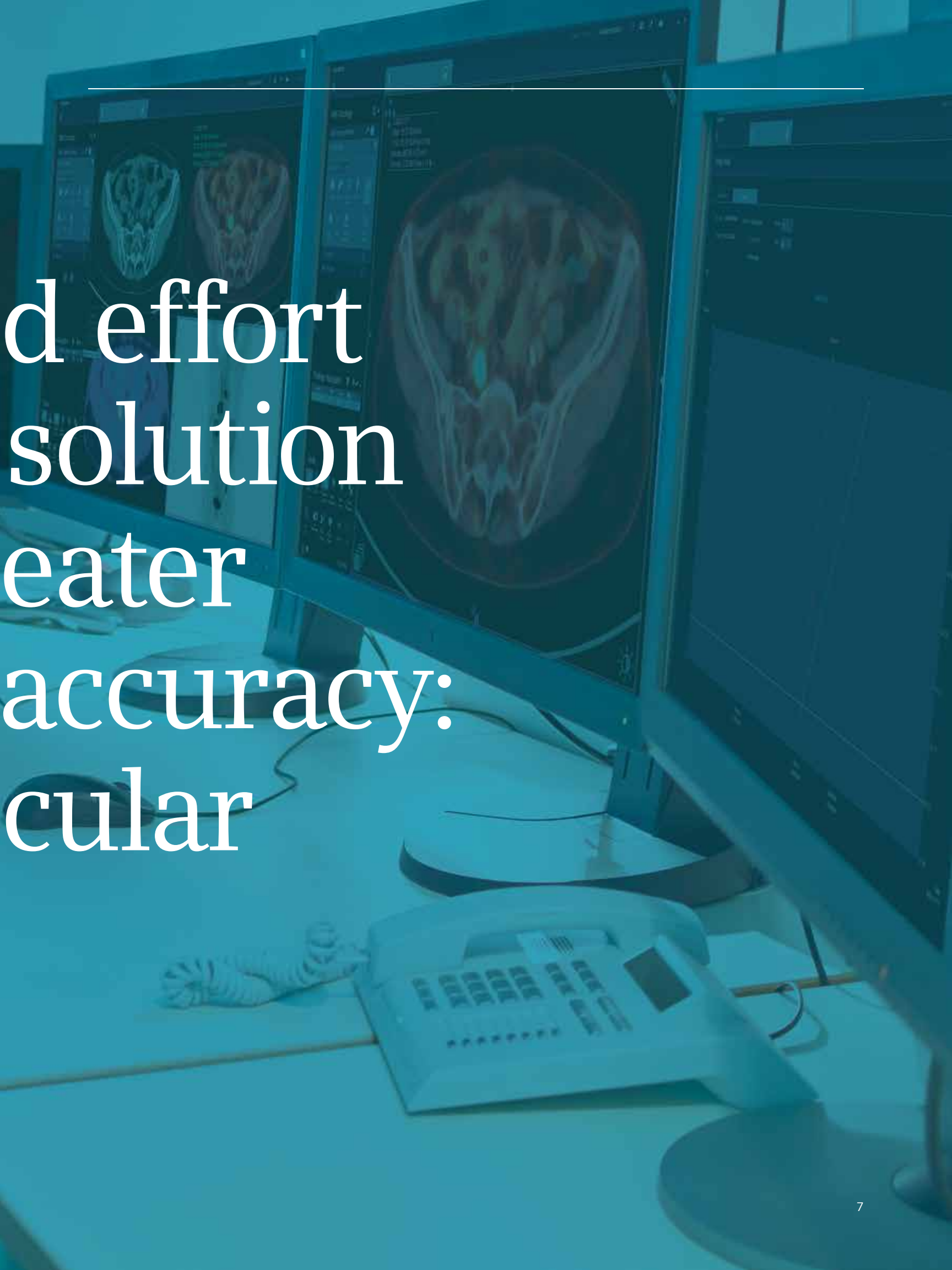
Collaborate across departments

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.

Save time, cost and
with one reading
engineered for greater
productivity and
syngo.via for Molecular
Imaging.

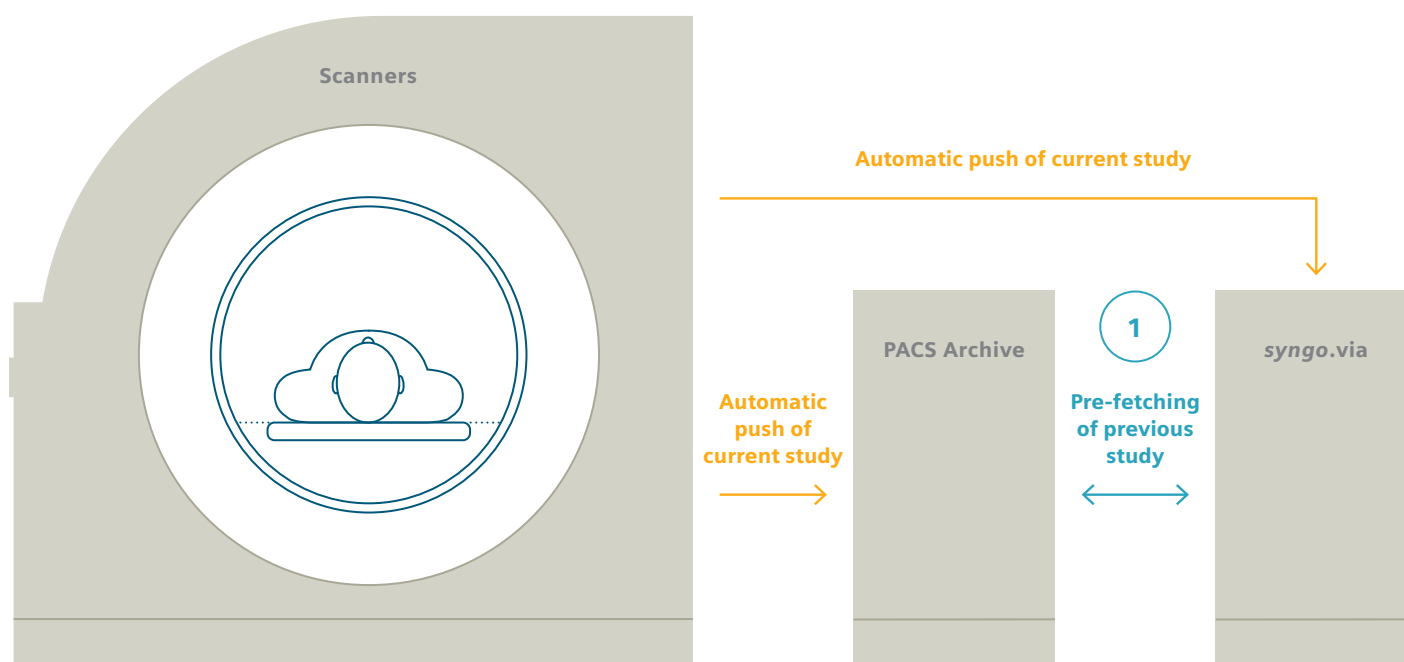
A multi-monitor workstation in a clinical or research setting. The central monitor displays a large, detailed CT scan of a human skull in axial view. To its left, another monitor shows two smaller CT scans side-by-side. A third monitor on the right displays a software interface with various controls and data. In the foreground, a white office telephone with a coiled cord sits on a light-colored desk. The entire scene is overlaid with a semi-transparent blue filter.

Reduced effort
Solution
Greater
accuracy:
Circular

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 you need to take prior to reading — simply open the case and start reading right away.



Eliminate unnecessary steps and move onto your next case faster

1. PRE-FETCHING

Before you open 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 you to quickly compare patient studies.



Find a more efficient route to the answers you need

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

In a multimodality Siemens study, eight different workflows from five different institutions were evaluated to show that cases can be evaluated up to 45% faster² with syngo.via.

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.

	Former software		syngo.via		Improvement	
PET/CT Onco Diagnosis	502	97	275	98	227	45
PET/CT Onco Follow-up	343	95	240	71	103	30

45%

Oncology diagnostic cases up to 45% faster¹

30%

Oncology follow-up cases up to 30% faster¹

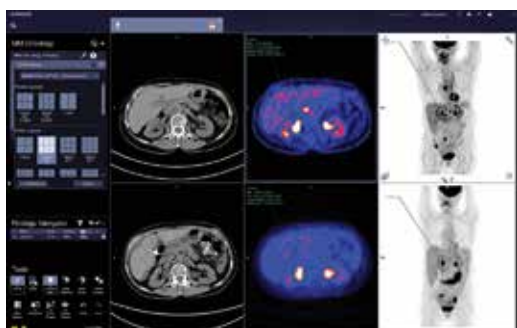
With preprocessing taking the work out of your workflow, you can now begin reading your cases right away.

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

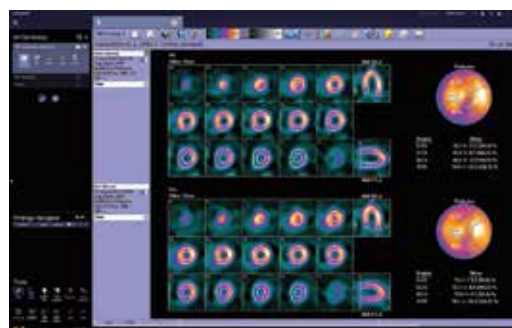
Key PET and SPECT features let you compare results from different time points and accurately track disease progression over time.



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

CARDIOLOGY

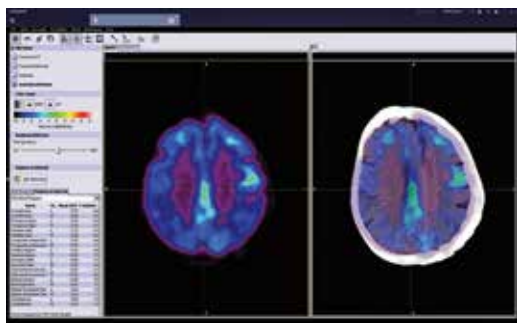
Whether you prefer Corridor4DM, Cedars Cardiac Suite or Siemens applications, *syngo.via* allows you to read both SPECT and PET cardiac data on the same platform.



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

NEUROLOGY

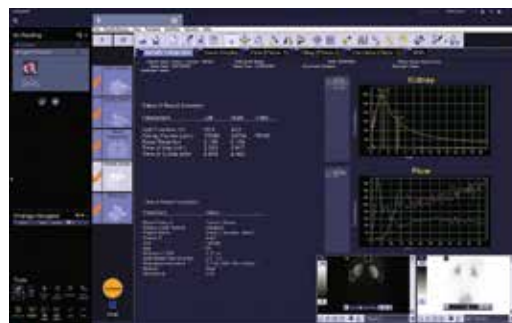
Our exclusive quantification algorithms provide quantitative guidance for the assessment of your diverse PET and SPECT neurological indications.



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.

ONCOLOGY

Consistent results for better patient care in PET and SPECT

With worldwide cancer rates expected to grow,³ we're experiencing a significant increase in the number of cancer cases that require evaluation. Treating these cases requires monitoring the progression of disease over time and 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•PET⁴

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.

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

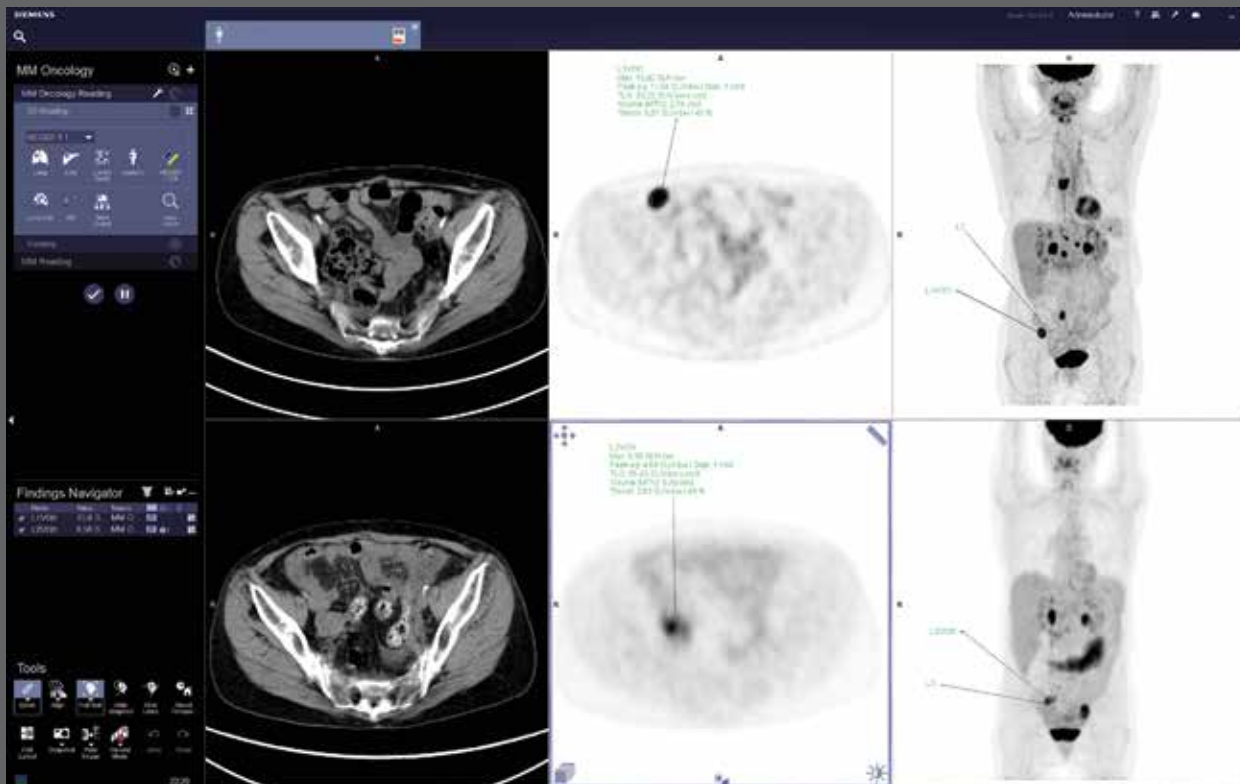
Compares SUVs from different PET/CT scanners and harmonizes measurements between past and current studies.

+18% / -16%

variation of SUV measurement with EQ•PET⁴

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 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 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.

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 an expected compounded annual growth rate of 8% through 2020.⁵ Even in PET, the cardiac share of the total exam mix has increased 32% in less than three years.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 you employ. Additional CT tools support your ability to interpret multimodality cardiology scans in a single platform.

32%

Increase in cardiac share of the total exam mix in only three years in PET⁶

8%

Increase expected in average growth of the global nuclear medicine market in cardiology in SPECT⁵

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 (i.e., heart muscle contraction).

LEFT VENTRICULAR MYOCARDIUM

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

REGIONAL WALL THICKENING

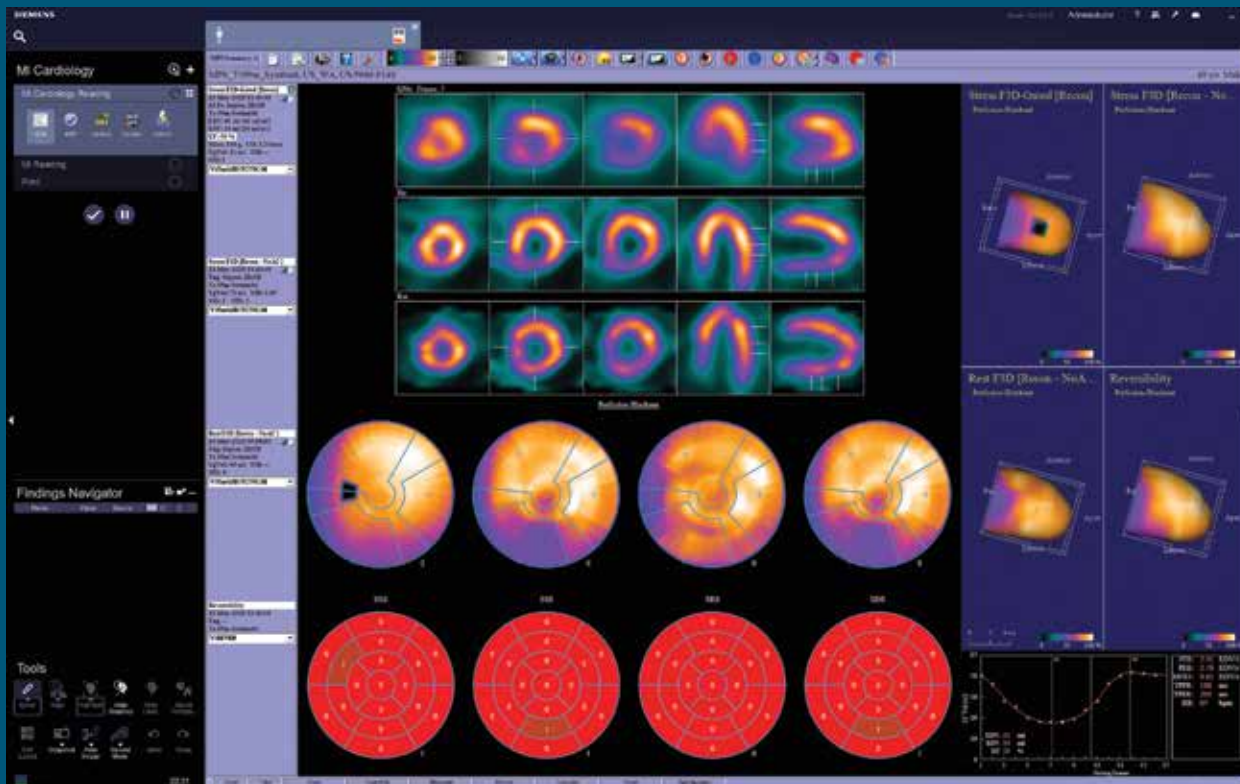
A measurement to predict angiographic stenosis.

MYOCARDIAL BLOOD FLOW

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

CORONARY FLOW RESERVE

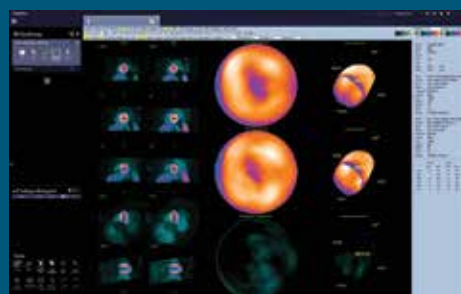
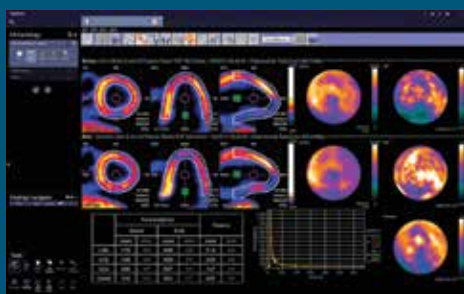
Quantitative assessment of myocardial tracer uptake to aid in interpretation of dynamic myocardial perfusion with Rubidium and Ammonia tracers.



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.

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.



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

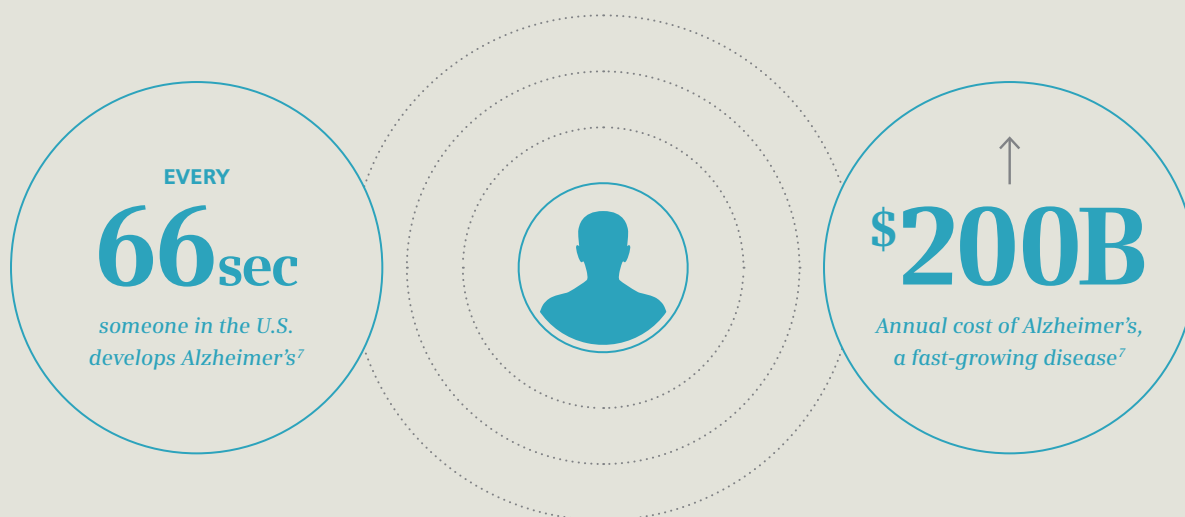
Data courtesy of University of Central Manchester University Hospital, Manchester, United Kingdom.

NEUROLOGY

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 you identify problems by comparing patient exams against a population database of normal, healthy brains and comparing exams over time.



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. Databases can be created and tailored to your 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 you've created a specific workflow, you can automate and replicate it—saving time and improving diagnostic confidence.



34.6M *SPECT procedures completed globally in 2015⁵*

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.

GRAPH VISUALIZATION

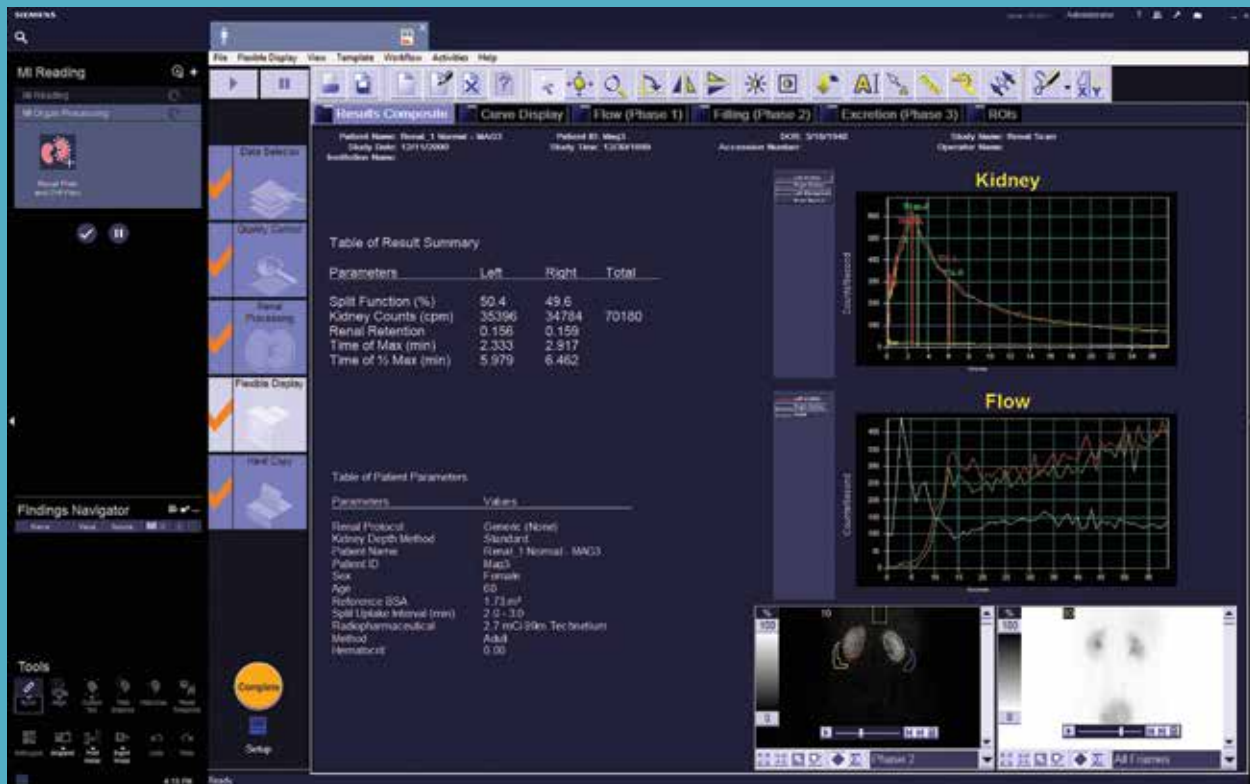
Enables you to visually display time activity curves in different areas based on the data collected.

CUSTOMIZED PROCESSING PROTOCOLS

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

FLEXIBLE DISPLAY

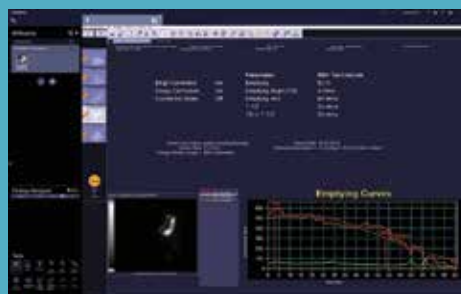
Lets you create your own customized screen layout to display results the way you prefer to read them.



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 $\frac{1}{2}$ 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 guide diagnostic consensus toward a better treatment. User-friendly reports help improve understanding for patients and collaboration among your department.

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

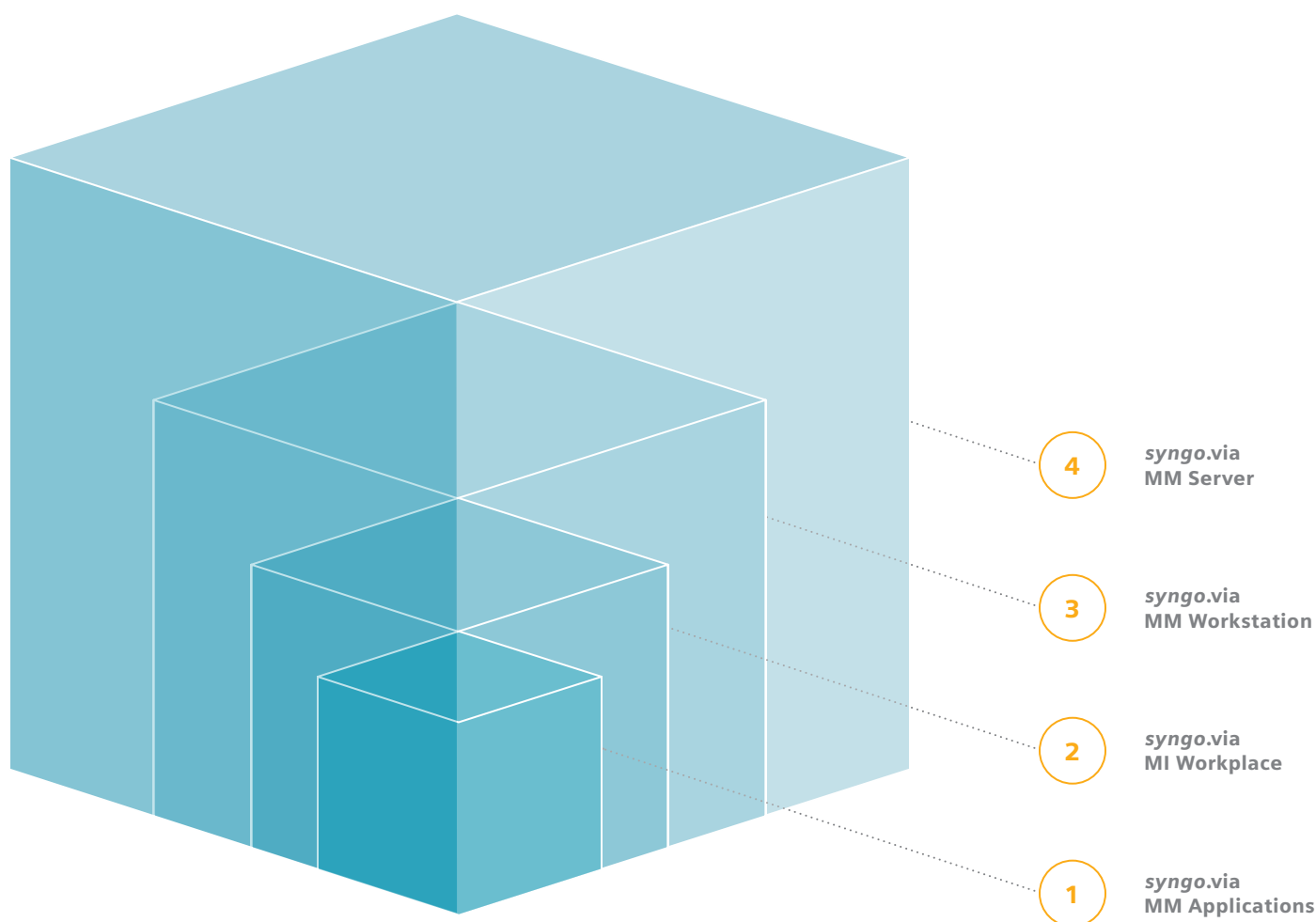
Oncoboard provides a dynamic, offline method for discussing cases onsite or on-the-go, even for locations without a *syngo.via* or network connection. Oncoboard runs a fully interactive, shareable application from a single USB drive.



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

Find your best fit—for today and tomorrow

With a variety of solutions for your clinical environment and budget, 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
- PET applications are available on syngo.via Molecular Imaging Workplace (MIWP) for PET/CT⁸ and SPECT applications are available on syngo.via MIWP for SPECT and SPECT/CT⁹
- 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
- PET applications available on PET MIWP and SPECT applications available on SPECT MIWP

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^U

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

FINDINGS NAVIGATOR^U

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

ALPHA TECHNOLOGY^U

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

QUANTIFICATION TOOLS^S

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

MULTI TIME-POINT TRENDING^S

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^U

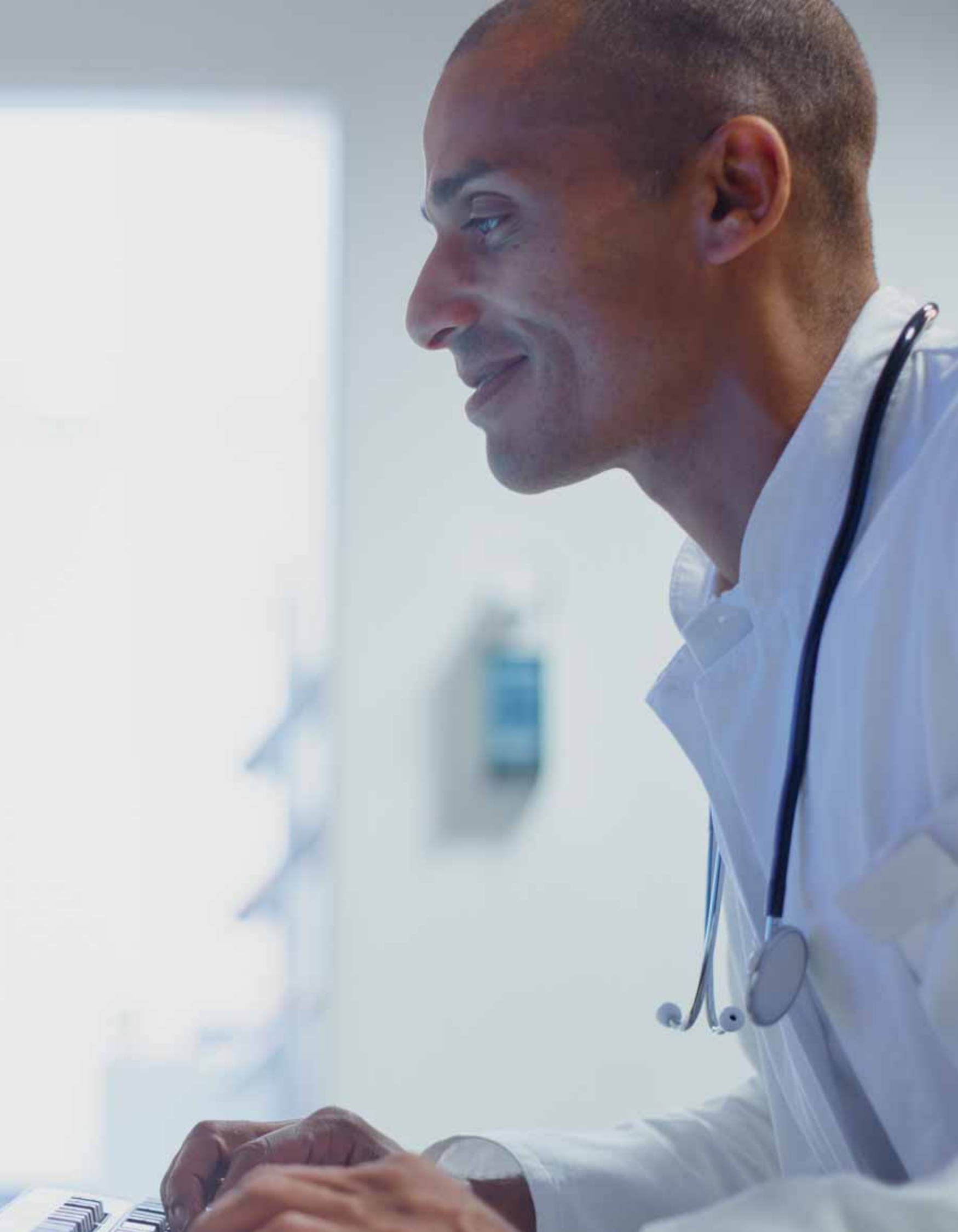
A dynamic method for sharing cases interactively at conferences or on the go, even on systems that don't have a syngo.via or network connection.

NORMALS DATABASE^S

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.

*U = Unique
S = Special*

For a complete list of features, visit [siemens.com/syngo.via](https://www.siemens.com/syngo.via).



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Disclaimers

¹ Claims based on internal data at time of publication. Data on file.

² The outcomes achieved by the Siemens customers during the *syngo.via* Efficiency Study were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., 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 2014.

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 Markets and Markets Nuclear Medicine/ Radiopharmaceuticals Market Global Forecasts to 2020.

⁶ IMV 2014 PET Imaging Market Summary Report.

⁷ Alzheimer's Association, 2016. Alzheimer's Disease Facts and Figures. www.alz.org/facts/. Accessed April 4th, 2016.

⁸ *syngo.via* MIWP for PET/CT is available with Biograph Horizon. Biograph Horizon is not commercially available in all countries. Due to regulatory reasons, its future availability cannot be guaranteed. Please contact your local Siemens organization for further details.

⁹ *syngo.via* MIWP for SPECT and SPECT/CT is available with all Symbia™ SPECT and SPECT/CT systems.

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