syngo.via VB10 for MR
A new generation is coming

siemens.com/syngovia-mr
Dear syngo.via user,

Your post-processing solution benefits from the continuous development of the modality applications. It is our goal to keep you on top of the latest technology.

Since the first versions of syngo.via, we have come a long way with important evolutions every year.

This year is a special year for syngo.via: Going from the VA-line to the VB-line, we change generation and introduce syngo.via VB10.

A change in generation always means profound changes.

The new syngo.via focuses on ease-of-use, advanced oncology, and key improvements of your current clinical applications.

Indeed, the new syngo.via brings a major change in your daily routine with a new user interface and a thumbnails view for efficient and more intuitive reading in MRI. The new application syngo.MR OncoCare offers a quantitative evaluation of functional response to treatment, paving the way to an earlier assessment of therapy response. And the computed b-values functionality aims at saving MR scan time while improving image quality in diffusion-weighted imaging.

With the following information, we would like to describe the key elements of syngo.via VB10 and present some highlights. If you are reading the electronic version of this document, click on the short movie snippets and enlarge them in order to experience syngo.via VB10.

Your Application Specialist will introduce you to the new software in more detail.

Sincerely,
Your Siemens Team

Note: The MR General Engine license is a pre-requisite for all MR applications and improvements mentioned in this document.
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• New patient browser  
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| **Advanced functionalities in oncology** |
| • One MR Oncology workflow with Easy Reading Mode  
• `syngo.MR OncoCare` – quantitative evaluation of functional tumor response (optional license, pre-requisite `MR Onco`)  
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A major change in your daily routine

The new syngo.via looks different. It feels different. For good reasons.

New user interface
Following real benefits are intended:
• Clearer, calmer, and darker interface
• Labeled icons
• Enhanced Online Help
**New patient browser**

The patient browser is where everything starts: Locating the right patient must be as intuitive and efficient as searching over the internet with your preferred web browser.

The new patient browser of syngo.via VB10 offers three major functionalities going in this very direction:

- **Web browser-like search capability**
  Similar to what we do on the internet, typing “Andreas, MR” in the search area will return all “MR” exams for the patients with the name “Andreas”.

- **Preview of the images with scrolling functionality**
  Before opening the case, you can quickly identify the study you want to open based on the images that have been acquired.

- **Dockable and floating patient browser**
  You can freely dock and undock the patient browser and move it around on your monitor(s) as a floating window, for more convenient access to your database.
A major change in your daily routine

New thumbnails view in all MR workflows

When reading a case, it is often useful to have a place where you can find a summary of all the series you have acquired. For this purpose, the series navigator exists since the beginning of syngo.via and displays the different series names.

With the high amount of series acquired in MR, a visual identification of the different series based on the contrast is sometimes easier and faster.

With the new syngo.via for MR, the series navigator now offers the possibility to visualize all available MR sequences as thumbnails, allowing for a preview of the MR sequences done during the exam. With this, you are now able to visually quickly identify the information you are looking for.

The already existing display mode remains available.
**Advanced functionalities in oncology**

One MR Oncology workflow with Easy Reading Mode – one tool for fast and easy multi-parametric reading

The new syngo.via offers one consolidated MR Oncology workflow. The previous four oncology (Onco Brain, Onco Liver, Onco Multi Region, Onco TimCT) and the dedicated mMR General (for MR/PET) workflows are now fused into one single MR Oncology workflow where the PET tools are activated as soon as PET data are detected and the corresponding license available.

Your benefit? You can now find all functionalities embedded into one workflow for efficient evaluation of multiple tumor types or lesions.
And there is more.
The many sequences acquired during oncology studies require a fast and intuitive way to deal with all the images. Therefore, we implemented the Easy Reading Mode in MR Oncology:

• With just one click, you can choose the series you want to evaluate.
• With one drag & drop interaction, you can automatically adapt the layout to the amount of series you want to compare. The series are automatically synchronized.
• With one mouse gesture, you can quickly fuse two different contrasts to highlight the location of the pathology to the referring physician.

Note: If you had the MR Onco license, when migrating from syngo.via VA30 to the new syngo.via, your existing MR Oncology workflows will be migrated (copied) so that you can still use them. In addition, you will receive the new consolidated MR Oncology workflow.
**Advanced functionalities in oncology**

*syngo.MR OncoCare – quantitative evaluation of functional tumor response (optional license, pre-requisite MR Onco)*

*syngo.MR OncoCare* is your new tool for advanced oncology reading, designed to positively address therapy benefit.

*syngo.MR OncoCare* offers a solution for quantitative evaluation of functional lesion response to treatment. It has the potential to allow **earlier assessment of treatment response**, leading to **treatment path optimization** and **savings of unnecessary treatment costs**.

As extension of the MR Oncology workflow, *syngo.MR OncoCare* provides rich feature sets for histogram analysis and trending over multiple time points:

- VOI- and ROI-based histogram analysis
- Intuitive color definition for three histogram domains
- Savable presets for histogram analysis
- Back-mapping of histogram colors on the image of reference
- Export in .CSV format of pixel intensity values
- Trending plot
**Advanced functionalities in oncology**

**Benefits:**
- Quantitative assessment of the functional behavior of lesions for earlier assessment of therapy benefit
- Improved communication towards referrers and oncologists with the back-mapping functionality
- Additional research possibilities with the export functionality

*syngo.MR OncoCare: Comparison in a follow-up case*

*syngo.MR OncoCare: User-defined histogram settings*

*syngo.MR OncoCare: Trending of histogram metrics*
Advanced functionalities in oncology

Further Readings

Monitoring bone marrow metastases treatment

Histogram analysis of whole-body diffusion-weighted images and ADC maps has been documented to be a powerful tool to monitor response to treatment in skeletal therapy.

„Monitoring Bone Marrow Metastases Treatment with Whole-Body Diffusion MRI“ – Anwar R. Padhani, MAGNETOM Flash Issue 59 (04/2014), pages 26-29

Earlier assessment of response to TACE therapy

Volumetric functional MR assessment is documented to help predict TACE therapy response after one month, where the currently available imaging criteria (morphology-based) assess therapy response after six months, earliest1.

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1 Hepatocellular Carcinoma: Response to TACE Assessed with Semi automated Volumetric and Functional Analysis of Diffusion-weighted and Contrast-enhanced MR Imaging Data; Radiology: 2011;260:752-761
Computed b-values – save scan time and improve diffusion image quality

Diffusion-weighted imaging has grown to become the key sequence in oncology imaging.

High b-value images deliver the most valuable clinical information, but they require acquisition time and are often prone to distortion and ghosting artifacts. syngo.via VB10 allows generating computed high b-value images from acquired ones. This type of algorithm has been documented to save valuable scan time while providing images of overall better accuracy.²

² Feasibility study of computed vs measured high b-value (1400 s/mm²) diffusion-weighted MR images of the prostate, World J Radiol 2014 June 28; 6(6): 374-380
Advanced functionalities in oncology

Additionally, the computed images can be interactively adapted to better fit the pathology, the body area, and the patient you are looking at. We believe this functionality can have a huge impact in reducing your examination time and improving your diagnostic power. Therefore, this powerful feature comes standard with a syngo.via VB10 upgrade, as long as you have the MR General Engine license.

Note: This feature is integrated in a tool called “ADC and b-value”, where the offline computation of ADC maps is also available.
Take your existing applications to the next level

Based on your valuable feedback, we implemented numerous improvements in syngo.via VB10 for the existing applications. This paragraph describes these improvements.

Improved mean curve

The mean curve is an important tool for evaluation of dynamic images. This tool is available in the different workflows of the MR General Engine application. The new syngo.via makes this tool more intuitive and interactive:

• **Display of curve on / off**
  When you have multiple ROIs for mean curve evaluation, you can choose which curves you want to display by using the new checkboxes.

• **Interactive mean curve segment**
  By using the mouse or the keyboard arrows, you can visualize the relevant slice and phase in the corresponding image segment. In other words, you can now use the mean curve segment to scroll through your dynamics and display on demand the curve information.

• **Export functionality**
  The mean curve values can be exported as .CSV file in order to use them e.g. for research purposes.
Improved registration functionality

The automatic registration functionality offers a fast and easy way to compare current and prior data. This registration is based on sequence parameters and can be manually fine-tuned for more precise analysis.

With the new *syngo*.via, the “Hot Iron” LUT is automatically selected in the floating alignment tool in order to allow for better visual alignment when fine-tuning is needed.
Take your existing applications to the next level

MR Cardiac reading evolves
For cardiac reading, the new syngo.via will give you:

• More flexibility in the reading of cine images
  For the reading of cine images in the cine step, you can now change phase and slice position with keyboard shortcuts.

• New user guidance
  In some cardiac cases, the automatic contouring proposed by the software needs to be fine-tuned or corrected. This is especially true for abnormal anatomies. The new step-by-step user guidance in the Cardiac Function step will show you the best and fastest way to do it, as if your application specialist were next to you explaining how to do it.

• New drop tool “add slices”
  The new drop tool in MR Cardiac Function allows adding slices to an existing analysis. This is particularly important if post-processing is performed simultaneously with scanning in order to increase your productivity.
Take your existing applications to the next level

• “Mirroring of flow curve”
  In the Flow Quantification step, it is now possible to invert the polarity of the flow encoding direction in order to match the display of the curve to the Ultrasound visualization.
Take your existing applications to the next level

**syngo.MR Tissue 4D**

syngo.MR Tissue 4D is intended to support your diagnostic with advanced tools for T1 perfusion evaluation (qualitative and quantitative Tofts-based analysis). One of the key benefits of this application is the high level of standardization of your results thanks to advanced pre-processing functionalities.

With the new syngo.via, we intend to make this functionality more flexible:

- **New volume type for pre-processing**
  In addition to the already available ellipsoid, you can now also select a cuboid and configure its size and its position within the imaging volume. This can be particularly useful if you want to apply the application in some specific areas (e.g. spine) or if you want to calculate the parametric maps for the complete image, just by setting the dimension values to 100%.

- **New handling of additional data incoming during reading the case**
  If additional data are coming, you are now advised to restart the processing.
For reading of spectroscopy cases, the following functionalities are now available:

- **More flexibility in the handling of user-defined post-processing protocols**
  The protocols can be saved either on user level (so that only the specific user can see them) or now on site level by the clinical administrator (so that every user of that site can see them).

- **Additional options for the findings**
  A layout snapshot finding now contains the result table. It makes life easier when the goal is to save the result table with the different localization slices.
syngo.MR Vascular Analysis

syngo.MR Vascular Analysis gives you the tools for quantitative assessment of vascular lesions such as stenosis degree.

With the new *syngo.via*, this application offers the following improvements:

- **Enhanced algorithm for QISS data**
  With the *syngo* MR E11 software version on the MR scanner, Siemens introduced QISS, a software package for non-contrast enhanced peripheral MR angiography based on quiescent interval single-shot imaging. The new *syngo.via* improves the algorithm used in *syngo.MR Vascular Analysis* for QISS datasets.

- **Enhanced usability in centerline editing**

Take your existing applications to the next level
**syngo.mMR General**

As previously described, the mMR tools for reading and post-processing of MR/PET exams are now integrated in the MR Oncology workflow. The PET tools are automatically activated as soon as PET data are detected.

**Note:** When migrating from syngo.via VA30 to the new syngo.via, your existing mMR workflow will be migrated so that you can still use it in addition to the new MR Oncology with PET tools.
Take your existing applications to the next level

**syngo.MR Neuro Tumor becomes syngo.MR Neuro Dynamics**

Introduced with **syngo.via** VA30, **syngo.MR Neuro Tumor** offers dedicated tools for brain tumor perfusion evaluation.

For regulatory reasons, the name of the workflow is evolving from “**syngo.MR Neuro Tumor**” to “**syngo.MR Neuro Dynamics**”.

All functionalities remain the same.
New MR workflow manager

In MR, one of syngo.via’s main functionalities is the highly structured reading of the cases, enabling faster access to the diagnostic information as well as better standardization of the reading throughout the institution.

In addition, the ad-hoc functionality makes it possible to call up, within a workflow, another workflow in order to interactively adapt to a specific case.

The new workflow manager makes it now possible for the clinical administrator to permanently save one ad-hoc task in order to generate advanced customized workflows. These customized workflows can then be freely imported and exported from a syngo.via VB10 server to another.
## Summary of all improvements and new features

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<th>Description</th>
<th>Your benefits</th>
<th>How you can receive it</th>
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<tr>
<td><strong>New user interface</strong></td>
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<tr>
<td>Darker, cleaner, calmer</td>
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<td>Reduced eye strain</td>
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<td>Labeled icons</td>
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<td>More intuitive reading</td>
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<td>Enhanced online help</td>
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<td>Increased knowledge of syngo.via</td>
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<td><strong>Patient browser</strong></td>
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<td>Browser-like search area</td>
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<td>Faster access to the patient exam</td>
<td>Included in your syngo.via VB10 upgrade</td>
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<td>Series preview</td>
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<td>Easier identification of your case</td>
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<tr>
<td>Dockable functionality</td>
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<tr>
<td>Thumbnails view in series navigator</td>
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<td>More intuitive reading with faster identification</td>
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<tr>
<td>Existing mode remains available</td>
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**A major change in your daily routine with MR**
### Summary of all improvements and new features

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| One MR Oncology with Easy Reading Mode | • Consolidation of the previous 4 oncology (Onco Brain, Onco Liver, Onco Multi Region, Onco TimCT) and the mMR General (for MR/PET) workflows into one single MR Oncology workflow  
• Easy Reading Mode:  
  - Single click interaction  
  - Intelligent layout adaptation  
  - One click fusion | • One workflow for efficient evaluation of multiple tumor types or lesions  
• Fast and easy way to deal with the high amount of images in MR oncology cases | Included in the syngo.via VB10 upgrade if you had syngo.MR Onco on syngo.via VA30. Otherwise optional. |
| syngo.MR OncoCare | • Histogram analysis  
• Backmapping  
• Trending | • Earlier assessment of therapy benefit  
• Savings of unnecessary treatment costs  
• Better communication to the referring physician | Optional (pre-requisite syngo.MR Onco) |
| Computed b-values | • Generation of computed high b-value images from acquired ones  
• Interactive preview  
• Generation of ADC maps | Save scan time and improve diffusion image quality | Included in your syngo.via VB10 upgrade |
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| Improved mean curve           | • Display of curve on / off  
• Interactive mean curve segment  
• Export values as .CSV | More intuitive and interactive reading of dynamic series                      |                                                                                     |
| Improved registration functionality | The “Hot Iron” LUT is automatically selected in the floating alignment tool | Easier visual alignment                                                       | Included in your syngo.via VB10 upgrade if the corresponding license is available on syngo.via VA30. |
| MR Cardiac reading evolves    | Cine reading through keyboard shortcuts  
New user guidance for myocardium contouring  
New drop tool "add slices"  
"Mirroring of flow curve” functionality | Faster reading of cine images  
Efficient and faster contouring for complex cases  
You can perform the post-processing in parallel to scanning  
The display of your curve matches the visualization in Ultrasound |                                                                                     |
| syngo.MR Tissue 4D            | New cuboid volume type for pre-processing                                   | More flexibility for use in specific body regions                            | Ask your Siemens representative for more details.                                     |
| syngo.MR Spectro              | Layout snapshot finding with result table                                  | Save the result table with the reference images                               |                                                                                     |
| syngo.MR Vascular Analysis    | User-defined post-processing protocols can be saved on admin level         | Better standardization of the spectroscopy post-processing                     |                                                                                     |
| syngo.MR General              | • Improved algorithm for QISS data  
• Improved usability in centerline editing  
MR/PET specific tools are integrated in the MR Oncology workflow | Optimal non-contrast angiography workflow from scanning to quantitative reading |                                                                                     |
<p>| syngo.MR Neuro Tumor          | syngo.MR Neuro Tumor is renamed to syngo.MR Neuro Dynamics                 | One workflow for efficient multi-parametric reading                           |                                                                                     |</p>
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| New MR workflow manager | Advanced customization of your MR workflows  
• Ad-hoc tasks can be persistently saved by the clinical admin  
• Possibility to import / export customized workflows | Better standardization of post-processing throughout your institution | Included in your syngo.via VB10 upgrade |