

# synedra View

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## 1. Feature Overview

### 1.1. General Features

- Easy to use, configurable visibility of the individual program components
- Available in German, English and French
- Documentation available in German, English, French
- Customizable design of synedra View
- Dark user interface available
- Supported operating systems: Windows 10 x32, Windows 10 x64, Windows Server 2016 with Citrix Virtual Apps and Desktops 1912 LTSR (or later)

- Can be run as a native 64-bit application; for an optimized performance and quick loading of big studies > 4GB
- Unicode support to run synedra View on systems with special character sets in file paths and temporary directories
- Individually configurable, server-based update of the clients (also via proxy server)
- Silent installer for a roll-out without user interaction
- Integration of synedra View with RIS, HIS and web applications also in terminal server environments
- Support of SSC for software updates and web service calls
- Encrypted data transfer between synedra View and the synedra Backend possible
- Host- or user-specific client configuration with central administration
- Possibility to specify a user function upon login; users will have a customized view on the application and may ask for additional roles if required
- Support of biometrical login (Siemens biometry module)
- Integrated file and CD browser with preview function; optional web browser
- Keyboard shortcuts for an efficient access to tools and functions for key users
- Functions can be assigned individually to mouse keys
- Presentation component
- Snapshots and history function to save and restore the loading and hanging state (including the current playback position in videos)
- Automatic creation and loading of reports in PDF and DICOM PDF, e.g., of diagnostic reports
- IHE-compliant auditing as well as a logbook function, allowing users to see audit events (shares, exports, conversions, anonymizations) for patients or documents
- Numerous possibilities for format conversions of images and videos; creation of conversion templates

## 1.2. Searching and Loading

- Patient- or document-centered search
- Configurable display of search fields
- Search templates can be created to facilitate recurring search requests
- Search results are displayed either as a list or image-oriented using image previews
- Support of barcode scanners for searching without typing
- Images referenced in a report can be loaded together with the report; a report linked to an examination can be loaded together with the examination

- Convenient loading of previous examinations; previous examinations can also be loaded on the diagnostic monitor
- Convenient loading of key images
- Loading and opening of password-protected PDF documents possible

### 1.3. Opening and Hanging

- Flexible configuration of hanging protocols; separate GUI for the creation and adaptation of hanging protocols
- Hanging protocol wizard to create personal hanging protocols (including recognizing several series that are hung as a stack in one viewer)
- Automated hanging of examinations/series/sequences based on default hanging protocols supplied with synedra View
- Users can adjust the priority and activation of the hanging protocols available
- Configuration of comparative protocols
- Identification rules for hideable elements and for elements that are not to be hung are configurable
- Hanging protocols can be activated with buttons and keyboard shortcuts
- Possibility to select a certain hanging directly on the diagnostic monitor
- Mammo-specific hanging protocols (vertical image alignment and edge orientation, align to nipple)
- Dynamic grid adjustment to the aspect ratio of the display

### 1.4. Patient Record



#### Note

The patient record is an additional module in synedra View that needs to be cleared for use.

- Structured overview of all documents of a patient
- Configurable display, e.g., in chronological order or according to cases
- Filtering options to restrict the view to specific documents:
  - Filtering based on meta data (e.g., document description, date, keywords, producer, ordering provider)
  - Filtering by text in documents
  - Fulltext search
- Configurable emergency button that grants extended access rights to the data of emergency patients
  - Emergency access is either created via shares or via treatment relationships

- Access to data from the electronic patient dossier EPD, the national health record in Switzerland, possible
  - Different assistant roles can be selected when accessing EPD data
  - The roles that a person is allowed to have are defined for each AIM user
- Access to data from the electronic patient record ePA, the national health record in Germany, possible
- Export and print function for selected documents in the patient record

## 1.5. Diagnostic Imaging, Image Viewing and Editing

- Direct display of all common image formats without the need to change the application
- Integrated PDF viewer with many features, including search, adjust page, adjust width, print, delete, split PDF document, etc.
- Integrated media player based on ffmpeg, providing extensive support of different video formats and the possibility to extract clips including the audio track
- Image fusion view
  - Image fusion (e.g., fusing 2 images to measure the antetorsion angle)
  - Series fusion (e.g., fusing 2 series of the same examination, but of different modalities in oncology)
- Remote sessions to transmit the content of a display to other people who are physically distant, e.g., in the context of consultations
- DICOM display:
  - All DICOM image types, including x-ray (CR), MR, CT, nuclear medicine, PET, angiography, fluoroscopy
  - Data embedded in DICOM: MPEG2, MPEG4, PDF
  - DICOM Structured Reports
  - DICOM Presentation States
  - DICOM ECG data
  - Display of radiation therapy dose in DICOM RT studies
- Viewing area can be flexibly divided into grids:  $n \times m$ , 2+1 left/right/top/bottom
- Possibility to interact with the data directly on the diagnostic monitor: stripe, data selector, loading of previous examinations, etc.
- Display of structured data, e.g., laboratory findings, in the format of the FHIR HL7 standard:
  - FHIR DiagnosticReports can be displayed in narrative or presented form
  - Filtering options (e.g., by category, interpretation, time period) including the possibility to create filter templates and a default view for the user account
- Support of HL7 CDA

## synedra View

- Support of numerous image and multimedia file formats, including JPEG, JPEG 2000, Photoshop, TIFF, PNG, BMP (Windows Bitmap), XPM, PNM, GIF
- Single- and multi-monitor set-ups:
  - Standard clinical application on standard PCs with 1 monitor on each workstation in the hospital
  - Workstations for radiological image interpretation usually consist of three monitors: 1 control monitor and 2 high-resolution monitors (2, 3 or 5 megapixels); order of monitors can be changed (e.g., if control monitor is positioned to the right of the diagnostic monitors)
  - synedra View can also be operated on two diagnostic monitors without the need of a control monitor
- Specified elements, e.g., presentation states, localizers, can be shown and hidden in the documenttree with a toggle button
- Wide range of image viewing functions, including window, zoom, magnifier, shutter, scroll, pan, rotate, mirror, false colors
- Individually configurable window presets for CT examinations: cranium, abdomen, bone, lung, liver, spine, postmyelo, petrous portion, mediastinum
- Support of Thick Slab projections (MIP, MinIP, AVG) in stack view and in MPR
- Support of localizers for scrolling in series of slice images
- Visualization of the scroll direction when scrolling through an image stack
- Cine Loops: play-back of multiframe sequences (e.g., angiography, nuclear medicine, ultrasound sequences) and series of slice images (e.g., CT, MR) as film
- Synchronization tools:
  - Synchronous scrolling, windowing, zooming and panning
  - Synchronous application of the viewing properties Invert and Edge enhancement in multiple series
  - Synchronization of changes made to the MinIP, MIP and AVG projections and the slab size in all linked viewers
- Support of multiplanar reconstructions (MPR):
  - Rotation cube for an easy handling of multiplanar reconstructions
  - Orientation lines to visualize how planes are situated to one another; orientation lines can be shown and hidden
  - Tool to measure the volume of spheres/ellipsoids
  - "Curved MPR" for the reconstruction of images along a traced path, e.g., panoramic x-rays of the teeth, including distance measurements along the path (= centerline)
  - Configuration of user-defined slice thickness possible
  - MPR reconstructions can be stored as series or as individual images in the archive
  - Configurable initial view of MPR examinations and configurable layout in MPR view

- The step size and the area of reconstruction can be determined when reconstructing series
- In the reconstructed view, it is possible to display two topograms (scouts), which inform users about the position of the reconstructed slice
- Specific tools for mammographic image interpretation
  - Quadrant zoom
  - Align image to nipple
  - Background Air Suppression
  - Edge enhancement
- Pre-configured labeling templates to label vertebrae and intervertebral spaces; creation of user-specific labeling templates possible
- Wide range of measurement and annotation tools:
  - Distances with optional display of the midpoint and snapping at 45 degree increments; adding further measuring points is possible
  - Measuring the perpendicular distance; *Application*: measuring the femoral offset, measuring the TT-TG distance
  - Areas; adding further measuring points is possible
  - Angles (3-point, 4-point, 2-line angle measurements) including snapping at 45 degree increments
  - Freehand; adding further measuring points is possible
  - Spline (Catmull-Rom-Splines)
  - Circle measurements either starting from the center of the circle or from 3 points on its circumference; display of diameter, circumference and area
  - Ellipse measurements
  - Density/gray value measurements
  - Measurements on Doppler ultrasound images: time and velocity measurements; display of the Resistive Index
  - Deleting/applying/copying/modifying selected measurements/annotations
  - Image calibration tool; support of different measurement units
- Measurement and annotation tools are available as so-called single shot tools
- Undo and redo for image editing functions

## 1.6. Exporting

- Options for the export of data to local media:

- Data can be anonymized
- Export of one image out of n, marked images
- Convenient production of patient CDs/DVDs; optionally available with a free viewer for patients, synedra View Personal
- Versatile printing component
  - Easy compilation of images to print on film (or paper), as PDF or as a new DICOM series
  - Configurable image text, header and footer
  - Creation of print templates for similar, frequently carried out print jobs possible
- Archive catalog: convenient export of big amounts of data directly from the search results list

## 1.7. Meta Data

- Keywords
  - Keywords function can be centrally managed and freely configured; users can be given permissions to read, search, edit and manage keywords
  - Keywords can be assigned as free text and from predefined catalogs
  - Measurement results can be saved automatically as keywords
  - EXIF information can be saved automatically as keywords
  - Fulltext search in documents with keywords
  - Keywords can be defined as mandatory
  - Use of templates and QuickKeywords to assign keywords more easily
- Markers
  - Marking of DICOM studies, non-DICOM containers and individual images
  - Marking of key images, marking of studies as completed
- Workflows
- Document classes

## 1.8. Integrated Special Features

- DICOM Query/Retrieve: Requests can be made to a DICOM archive or a modality; data can be transferred from this external system to synedra View
- Orders for the creation of worklists can be created for DICOM worklist-compatible devices as well as for synedra View Import and synedra Import

- Support of DICOM ECG documents including specific tools (i.e., ECG time measurement, ECG heart rate measurement, ECG tension measurement) and display of interpretation
- Sending documents, e.g., to AETs or healthcare providers; selection of several recipients at the same time possible
- PDF documents can be signed/(re)archived—electronic signature component
- Sharing documents with, for example, physicians in private practice; selection of several recipients at the same time possible
- DICOM/EXIF Dump: display of the DICOM and EXIF information contained in the image
- Pre-operative endoprotheses with mediCAD II module
- Upload of documents to IHE-compliant electronic health records, such as the electronic patient dossier EPD in Switzerland, the electronic patient record ePA in Germany or Elga in Austria

## 2. synedra View Accessory Modules

### 2.1. synedra View Import Accessory Module

The synedra View accessory modules, i.e., synedra View Import and Import/Video, support the acquisition of images, videos, and documents. Typical purposes of use are the integration of endoscopy and ultrasound devices, intra-oral cameras and microscopes, as well as the archiving of scanned x-ray films, DICOM and DICOMDIR data from CDs, digital photos and videos. These modules can also be used for the flexible integration of older radiologic devices without a DICOM interface (ultrasound, angiography, etc.), i.e., by converting their image data to a valid DICOM format.

Users have different options to assign the correct archiving context to the data to be archived, e.g., worklists, patient search in the HIS and barcode scanners. Regardless of the data source and of the format, there is one consistent way for the users to archive documents.

#### 2.1.1. General Features

- Workstation-specific worklists for patient assignment
- Search for patients and visits in the HIS
- Barcode scanner
- Possibility to enter the context manually
- Possibility to mark ordering providers and document classes as favorites
- Automatic transfer of the patient and the case context to synedra View Import via a DLL interface
- Loading and archiving of DICOM images, graphic formats and generic files from the hard disc via the browser, a menu and with Drag&Drop



- Non-DICOM images can optionally be saved as DICOM images and vice versa

## 2.1.2. Archiving Functions

- Logging of the archiving user
- Check & Sign Workflow
- Archiving of DICOM images
- Archiving of all common image formats: JPEG, TIFF, PNG, BMP, XPM, PNM, etc. with meta information being preserved
- Archiving of video and audio sequences
- Archiving of generic documents: MS Word files, PDF files, etc.
- Automatic archiving of DICOMDIR CDs
- Clipboard can be selected as data source for archiving
- Patient-related data as well as data contained in images can be anonymized before archiving
- Export options: Select one image out of n for saving; Select marked images for saving
- Support of digital cameras and scanners via a TWAIN interface (also in Duplex mode)

## 2.2. synedra View Import/Video Accessory Module

synedra View Import/Video includes the following additional features compared to synedra View Import:

- Acquisition of snapshots and video sequences from devices with video outputs, including sonography, endoscopy, fluoroscopy, intra-oral cameras, video recorders
- Integration of digital and analog video and audio sources
- Recording of analog and digital video sources in SD and HD (720p, 1080i, 1080p)
- The recording time is shown and can be limited
- Support of the following filters: Deinterlacer, Framerate Converter, Image Scaler
- Video captures with and without sound
- Video management in the OR: convenient signal switching for OR monitors in synedra View (router control)
- Touchscreen support: optimized program surface when working with touchscreen monitors
- Control of the record by means of a hand and a foot switch from endoscopy devices
- Off-line video acquisition including an off-line worklist with asynchronous archiving
- Archiving in standardized multimedia formats, i.e., MPEG4 or H.264 for video files and AAC for audio files

- Intuitive video cut functions with the possibility to save the newly created video
- Bookmark function for retrieving interesting scenes in long videos

### 2.3. synedra View Fulltext Search Accessory Module

The fulltext search module is optionally available in synedra View. All archived documents are indexed and can be searched based on this index. Thus, not only file names and meta information, but also document contents can be searched, e.g., text in PDF files.

### 2.4. synedra View Diagnostic Accessory Module

View Diagnostic is another accessory module in synedra View. Basically, this module provides the same range of features as synedra View, with the difference that View Diagnostic has been specifically designed to be used on diagnostic monitors and may therefore be applied for primary diagnosis.