

Release Notes

ZEISS ZEN 3.1 (blue edition)



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Original Manual

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New Modules

The following new software modules are available:

Module	Description
Guided Acquisition	<p>Automatic and targeted image acquisition of objects of interest (e.g. rare events).</p> <p>Workflow:</p> <ul style="list-style-type: none"> Acquisition of an overview image. Automatic image analysis of the overview image to detect objects of interest (requires module Image Analysis). Acquisition of detailed scans for the detected objects (e.g. higher resolution, Z-stack,...).
ZEN Connect	<p>Replaces the ZEN Module Connect Advanced and the ZEN lite/starter Module Connect Advanced.</p> <p>Features:</p> <ul style="list-style-type: none"> Direct control of C, T and Z in the ZEN Connect viewer. New shortcut to align the current system. Export into SerialEM format. New holders for TEM grids and Argolight slides.
ZEN Connect 2D Add-on	<p>Extension for the module ZEN Connect for workflows with correlative sample holders. Replaces the module Shuttle & Find.</p> <p>Features:</p> <ul style="list-style-type: none"> Semiautomatic calibration of sample holders for correlative microscopy. Definition and usage of custom correlative holders. Definition of regions of interest in the correlative workspace. Easy retrieval of marked regions.
ZEN Connect 3D Add-on	<p>Extension for the module ZEN Connect for 3D workflows.</p> <p>Features:</p> <ul style="list-style-type: none"> Control of the displayed z-position in ZEN Connect. Alignment of images in z-dimension. Viewing two 3D stacks of different resolutions and creating a rendering movie (requires module 3Dxl). Import FIB stacks. <p>Note! The correlative 3D viewer does not work with the graphic cards NVIDIA Quadro K620 and AMD Fire Pro W5100.</p>

New Features & Improvements

Area / Module	Features / Improvements
2D view	'Draw Rotable Region of Interest' (Edit menu) allows to crop multiple areas from a multi-scene image with a rotatable ROI.
3D view	Data visualization during acquisition (live update of 3D Rendering). Image data can be rendered after each acquired Z-stack.
Chart option	Charting functions from data tables are no longer available.
Processing tab	Stitching in Batch mode: Selection of a reference image for shading correction.
Devices	Cameras: <ul style="list-style-type: none"> ▪ Axiocam 705 color ▪ Axiocam 705 mono ▪ Axiocam 712 color ▪ Axiocam 712 mono Microscopes: Micro Toolbox MTB 2.16.0.9 (no support of TIRF, Cell Observer SD, DirectFRAP)
Module Tiles & Positions	The stage motion for preview scans can be set in the Tiles tool options section.
Module Shuttle & Find	Replaced by the new module Connect 2D Add-on.
Module Direct Processing	General improvements: <ul style="list-style-type: none"> ▪ Communication via direct network communication instead of a XML file. ▪ Communication between many acquisition and more than one processing workstation via 'Discovery proxy' function (similar to network printer operation). ▪ Processing computers can announce their abilities such as GPU type, nr. of running processes, name, location etc. into the network allowing users to choose a suitable processing PC for the direct processing tasks. ▪ Deconvolution via Direct Processing is possible with advanced deconvolution settings. ▪ Airyscan processing via Direct Processing allows channel specific strength settings.
Module Intellesis	General improvements: <ul style="list-style-type: none"> ▪ Option to download trained neural networks trained by Zeiss. ▪ Option to use trained neural networks for segmentation and inside Image Analysis. ▪ Extended scripting interface for machine-learning based segmentation. ▪ Graphical user interface.

Area / Module	Features / Improvements
Module Image Analysis	<p data-bbox="622 253 893 288">General improvements:</p> <ul style="list-style-type: none"><li data-bbox="622 309 1385 371">▪ Extraction of an image analysis setting from an already analyzed image.<li data-bbox="622 383 1374 479">▪ Interactive execution of all steps of the Image Analysis Wizard (incl. steps "Classes" and "Features) allowing to analyze images on-the-fly via "Analyze Interactively").<li data-bbox="622 490 1426 734">▪ Analysis view:<ul style="list-style-type: none"><li data-bbox="662 533 1267 568">– Plotting of Time Series chart for Time series images<li data-bbox="662 568 1283 631">– Plotting of Heatmap for multi-well or multi-chamber experiments<li data-bbox="662 631 1426 694">– Generation of a scatterplot/histogram for datapoints by selecting multiple wells on the sample carrier tab<li data-bbox="662 694 1102 730">– Export of charts via Chart Export tab<li data-bbox="622 745 1426 887">▪ New functions in group Image Analysis (Processing tab):<ul style="list-style-type: none"><li data-bbox="662 788 1426 824">– Analyze to Label Image: label detected objects via image analysis<li data-bbox="662 824 1374 887">– Analyze Interactive Batch: execute interactive image analysis in batch mode <hr/>

2 Celldiscoverer Application

New Module

- **Automated Photomanipulation** (for Celldiscoverer 7 with LSM 900)
 - Automatic determination of ROIs for photoactivation or bleaching are to be applied in the experiment.
 - Acquisition of an image at each position and identification of the ROIs via a customized image analysis followed by the photomanipulation experiment are included in the complete experiment .
 - Execution of the photo-manipulation at all tile regions per time point (photoactivation) or as full time series per tile region (bleaching).

General Improvements

- Mixed mode acquisition for widefield and MPLX tracks.
- Automatic image crop in experiments using more than one MBS:
 - Widefield acquisition with multi-MBS tracks using one type of camera (either internal or external)
 - Widefield and LSM tracks (Mixed mode acquisition)

3 Slidescan Application

Hardware Improvements

- New light sources:
 - Excelitas X-Cite Xylis
 - Excelitas X-Cite Exacte

Software Improvements

- Focus Map Settings / Objective:
 - Selection of the condenser position (aperture) for Coarse Focus / Fine Focus and Scan Settings to be saved within the profile.
- Magazine tab:
 - 'Skip Slide' button to stop the scan of the current slide and continue with the next one.
- Acquisition Monitoring:
 - Setting for Frame Rate Limitation has been moved from the main GUI and to the Options dialog.
 - Default for Frame Rate Limitation has been set to 1 fps.
- Advanced Wizard:
 - Lamp intensity for Label and Specimen area capture settings were removed.

Note!

The Optical Character Recognition (OCR) does not work with Windows 10 as the used 3rd party library does not support Windows 10.

4 Arivis Vision4D (Third Party Application)

New Modules

- Exchange Objects
 - Creation of 3D objects from segmentation results of other programs (i.e. ZEN Intellesis segmentation results).
 - Conversion of binary masks or labeled images into 3D objects.
 - 3D evaluation of the generated 3D objects, e.g. in scatter plots over time.
- Volume Fusion
 - Fusion of two volumes with different rotation, translation, scaling and resolution.
 - Generation of a new volume for further processing and rendering.
 - Adjustment and alignment of volumes based on surface representation or via landmarks.
 - Display of each volume in its own channel as an option.

General Improvements

- The new tool **Vision4D** is available in the **Applications** tab of ZEN. There it is possible to select a specific processing pipeline such as “Detect Cells or Particles” directly in ZEN before transfer of the image to Vision4D. This further helps customers to make working in Vision4D easy. Please note, that this functionality requires Vision4D Version 3.1.3 in order to work correctly.
- Module Colocalization providing pixel based 3D colocalization incorporated in the standard package Vision4D.

Trainings

- Web Training
 - Introduction into the operation of the 3D analysis software Vision 4D (3 hours).
 - Training carried out by an expert from arivis via GoToMeeting session.
- Classroom Training
 - Introduction into the operation of the 3D image analysis software Vision 4D and to the practice of 3D image analysis on the basis of a relevant application example (6 hours).
 - Introduction to tracking analysis on request.
 - Training carried out by an expert from arivis on site.

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