

Definiens

Definiens XD 2.6

Release Notes

Overview

Thank you for using Definiens software. With this document, you will receive an overview about the product and functionality added with this release. Should you have any comment or suggestions, please do not hesitate to contact us on our support website at <http://www.definiens.com/company/support> or via e-mail at support@definiens.com.

About Definiens XD

Definiens XD is a comprehensive image analysis platform for multi-dimensional image analysis. It contains all the client and server software needed to extract intelligence from any digital image in a fully automated or semi-automated way.

What's New

At Definiens, we constantly strive to improve our products. With this new release of Definiens XD, you will receive a range of fixes and enhancements designed to improve the overall usability and stability. Additionally, we have added a series of new features and increased support of image formats. You will find a short description of the most important additions below.

New and enhanced algorithms improve development of image analysis solutions

- Use standard color spaces in your image analysis such as CIELab, HSV, YcbCr and more with the algorithm "Color Conversion" (Reference Book p. 200 f.)
- Assemble patches of images to a new training map for classifier training by using the following:
 - Construct a new map with dimensions different from your main map (algorithm "Create temporary map", Reference Book p. 160)
 - Copy selected regions from image layers to a new map (algorithm "Copy Image Layer Region", Reference Book p. 149 f.)
 - Add image layers from the file system to your map, e.g. containing ground truth annotation data (algorithm "Create/Modify project", Reference Book p. 226 ff.)
 - Apply machine learning based techniques, e.g. train a Random Forest Pixel or Object Classifiers introduced with earlier releases of Definiens XD
- Identify relevant objects in your image by similarity measures, e.g. compute the probability of a pixel to belong to a certain class based on image layer values (algorithm "Estimation of Joint Likelihood", Reference Book p. 201 ff.)
- Assess roundness of your objects and enhance smoothness (algorithm "Image Object Convex Hull", Object Feature "Area of Convex Hull" – to make your objects smoother, or assess roundness (Reference Book p. 201 and p. 330)
- Compute advanced shape features such as object concavity to described identified image objects (Object Feature "Fractional Concavity", Reference Book p. 330 ff.)
- Reutilize trained classifiers in other projects by saving and loading classifier configuration from the file system (algorithm "Export/Import String", Reference Book p. 283 f.)

Tools to monitor, change, and administer job execution

- Export time stamps and logging information to the file system to monitor rule set execution (algorithm "Logger", Reference Book p. 278)
- See memory consumption and execution time for jobs that are done, and show algorithm that used most of the time in the Job Scheduler page (User Guide p. 209 f.)
- Suspend and resume jobs (for details, please see User Guide p. 210)
- Options to define use of processing resources per user and group (please contact our Customer support for assistance)

Improvements of existing algorithms

- Improved performance of "Layer arithmetics"
- "Create\modify project" now allows to use the new Aperio Thematic Layer driver (xml 2.2). Add the *.xml file in the Thematic Layer section using an Aperio import template with suffix "xml 2.2". Ensure that additionally for Thematic layer Driver ID "APERIO_VDI.2" is selected
- "Convert image objects" for object type "disconnected": Change default setting for fusion to "no"
- "Fast threshold segmentation": Increased accepted image size to 36 million pixels, updated documentation (Reference Book p. 47 f.)

New image drivers

- PerkinElmer qptiff support: Analyze images from Vectra 3 systems in XD 2.6 using the new PerkinElmer qptiff import template. Unmixed multispectral images of fields of views are shown in the context of the lower resolution full slide scan and can be analyzed in relation to one another.
- Please view the demo video provided in the Definiens download area for more information. Please note that import of unmixed fields of views (e.g. from Mantra/Nuance systems) is supported by the import template Multipage tiff-multilayer. Refer to the document "Supported Connectors and Drivers" for more information.
- Mirax z-stack support: With Definiens XD 2.6 Mirax z-stack images are now supported (8-bit and uncropped only).
- Updated TissueGnostics driver: Benefit from enhanced viewer performance as Definiens XD 2.6 now implements the TissueGnostics pyramidal layers image format.

Upgrade of Previous Installations

For the upgrade of your installation, please refer to our customer support.

We recommend testing all validated solutions on new software versions. Because of continuous improvements of our algorithms, results may change slightly requiring a new round of validation.

The driver for Zeiss *.czi files uses the Microsoft JPEG XR codec. This may require relevant Windows updates (e.g. update KB2670838) to be installed on the systems running Definiens software.

Fixes from previous Release Notes

The following issues mentioned in the Release Notes for version XD 2.5 have now been fixed for XD 2.6:

32463 – Import of metadata fails for multiple regions on single slides in Leica SCN files

When the metadata file is placed into the correct location, the data is imported for Leica SCN as well. Please consult the documentation or the Definiens Support team for assistance.

34579 – Resolution read from metadata is undefined for Philips server image

Resolution is read for files from the Philips IMS

34688 – "CellularAnalysis" screenshot directory may not be deleted on "Reset Workspace"

The screenshot directory is deleted upon "Reset Workspace"

35495 – "Create/modify project" uses xml 2.1 driver

See information above on how to use the xml 2.1 driver for the algorithm "Create/modify project"

35516 – Dialog "Find&Replace" is not displayed correctly

When opening the "Find&Replace" dialog with Cntl+F, the dialog is displayed as intended

Known Issues

Below you will find a list of the currently known issues for Developer XD 2.6.0 and possible solutions. In case of any questions, please do not hesitate to contact customer support.

30436 – Filter2d - median may fail for input images of 32 bit float

Due to the underlying libraries used for this filter, the median operation may not work for 32 bit float image layers.

Solution: Convert the input layer to 8 bit prior to using the filter operation filter2d with option median.

32431 – An error may occur when opening a multipage TIFF image

When loading a multipage TIFF image into the software and first using the "All Files" connector, an error message will appear and the file cannot be opened.

Solution: Confirm the error message and reload the multipage TIFF image. Instead of using the "All Files" connector, make sure to use the "Multipage TIFF" connector first.

32462 – Problems with eSlide integration when using IE 10 or IE 11

When using Internet Explorer Version 10 or 11 with the Aperio eSlide integration, you may experience problems such as the absence of toolbars or failed import of data.

Solution: Use the latest Firefox browser.

35590 – Remaining pixel shift for export to/import from drc

In exceptional cases, a one-pixel shift might still be observed despite improvements in the resampling procedures.

Solution: Please contact our customer support.

35655 – Save view settings fails for 3D image

View settings are not stored for 3D images.

Solution: Please contact our customer support.

35656 – Copy map fails for smooth source maps in integral mode

When copying a map using integral mode, and the map was originally copied with smooth resampling, an error occurs. It does not occur if the original map was generated with fast resampling.

Solution: Please contact our customer support for assistance.

36380 – Multipage tif driver ignores ".tiff" extension

The multipage tif driver does not open files with the extension ".tiff".

Solution: Rename the file from ".tiff" to ".tif" to open it with the multipage tif driver.

37039 – Wrong resampling of thematic layer in copy map

When working with PerkinElmer *.qptiff images and using copy map to copy only the WSI images, the thematic layer is not correctly copied.

Solution: Copy at least one MSI layer to the new map to ensure thematic layers are copied as expected.

Updated Results

35820 – TissueGnostics: results differ slightly

The new TissueGnostics driver uses the image pyramids provided in the image file and hence improves performance when working with these images. However, pixel values and results might slightly differ with the new driver compared to previous versions.

36177 – Standard deviation for homogenous objects corrected

In previous versions of the software, the standard deviation for homogenous objects was calculated wrongly. This has been corrected in Developer XD 2.6.0 so results might now differ from previous versions.

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