HISTOQUEST

Features Overview
V6.0 - V7.1

V6.0

➢ x64 support and Intel IPP upgrade

- HistoQuest 6.0 comes with new features which improve handling of large samples/number of samples in one project as well as increase the software's speed:
- Full 64 bit support will greatly increase the number of samples which can be analyzed in one project.
- By implementing x64 support, the user will no longer receive "not enough memory" kind of messages from the application.
- The processing libraries have been updated in order to take advantage of the latest processors.
- The effective speed increase is up to 40%.
- Examples:

Number of FOVs per project	HistoQuest 4.0	HistoQuest 6.0 - 64 bit
285 FOVs	377 seconds	250 seconds
92 FOVs	133 seconds	85 seconds
177 FOVs	471 seconds	282 seconds

➢ Cache updates

- HistoQuest 6.0 will use the cache directly from TissueFAXS. The cache is not copied anymore, so no more extra time or space is required. Also, this eliminates waiting time while the project is loaded into the viewer.
- HistoQuest 6.0 will build a faster and smaller cache by combining 4x4 images instead of 2x2 images.
- New cache technology that improves building time up to 100% and reduces space on hard disk even up to 400%.

➢ Reading on the fly for Zeiss and Perkin Elmer

- When importing images from a **Zeiss/Aperio** file, the images will be read on the fly during the import, which means they will not be extracted or saved on your computer. The import process will be faster and memory saving.
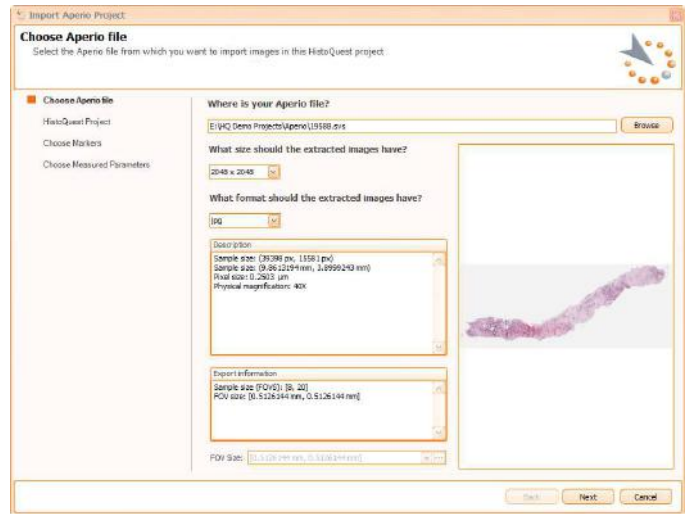
➢ Batch Zeiss

- It is possible to import multiple Zeiss files to create a HistoQuest project.
- To choose desired project, find it and select in the left panel, then press **Add** button to bring it in the Selected projects panel in the right.
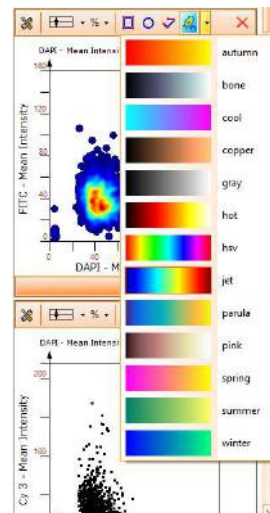
➢ Import Aperio

- Importing **Aperio** files is now available in HistoQuest.

➢ Heatmap diagrams

- **HistoQuest** includes a *heat map* feature for a better understanding of processed data. The graphical representation specific to a heat map shows up data where the individual values contained in a matrix are represented as colors.
- To use heat map feature, press **Draw Heat Map** button from the scattergram toolbar ( ) and the dots of the scattergram will be automatically converted into a heat map image. You can also choose the graphical appearance of the heat map.
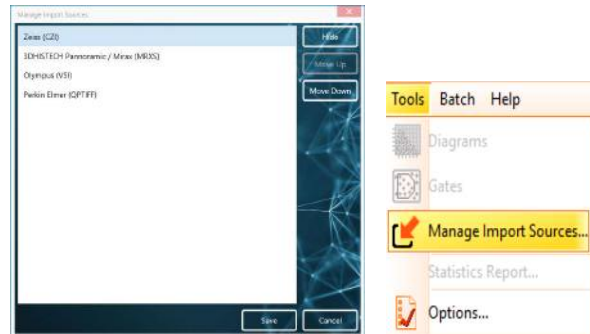

V7.0

➢ New Startup Screen

- **HistoQuest 7.0** comes with a new graphic interface for the startup screen.

➤ Manage Import Sources

- From the Manage Import Sources, the user can modify the order of the import sources or can hide some of them.
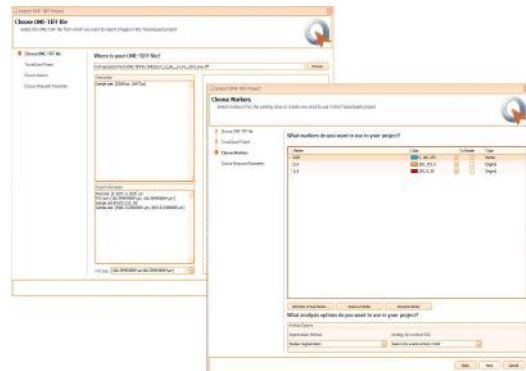- The new configuration will be saved in a config file that will be used afterwards.

➤ Import StrataFAXS II

- **HistoQuest** now allows importing **StrataFAXS II** images. The wizard will guide the user to create the new project.
- This import is available with reading on the fly and it is possible to import 16 bit projects as well.

➤ Import OME-TIFF images

- HistoQuest now allows importing OME-TIFF images. The wizard will guide the user to create the new project.
- This import is available with reading on the fly and it is possible to import 16bit projects as well.

➤ Import BigTIFF

- **HistoQuest** now allows importing BigTIFF images. The wizard will guide the user to create the new project, as shown below.

➤ Import Olympus

- **HistoQuest** can import **Olympus** files. Batch import is supported and reading on the fly feature is available as well.
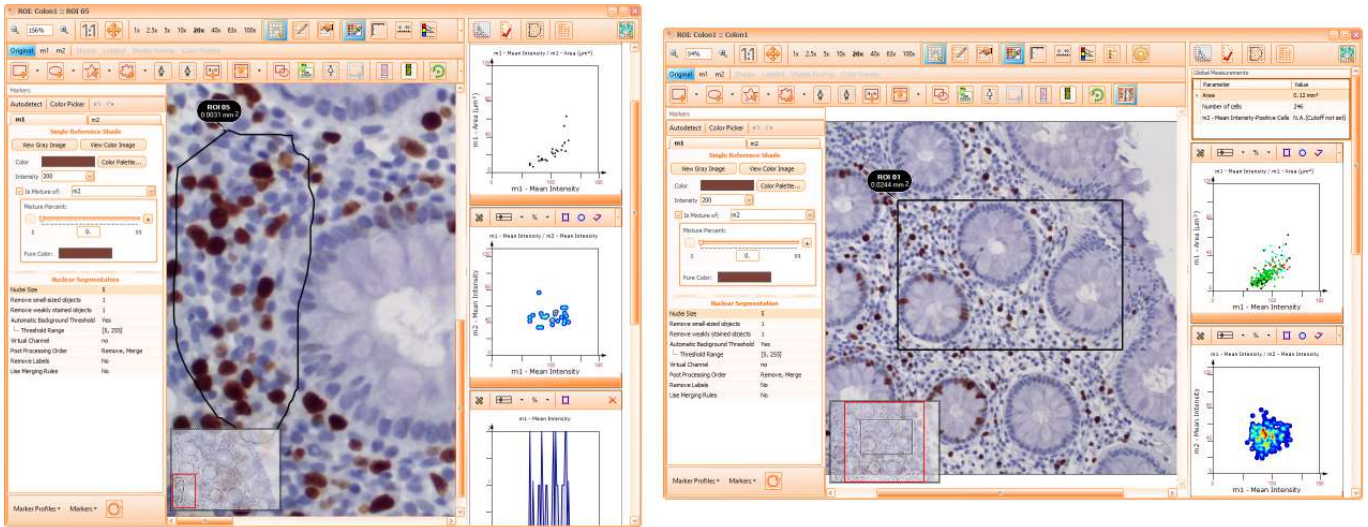
➤ Import PreciPoint

- **HistoQuest** can import **PreciPoint** files. Batch import is supported and reading on the fly feature is available as well.
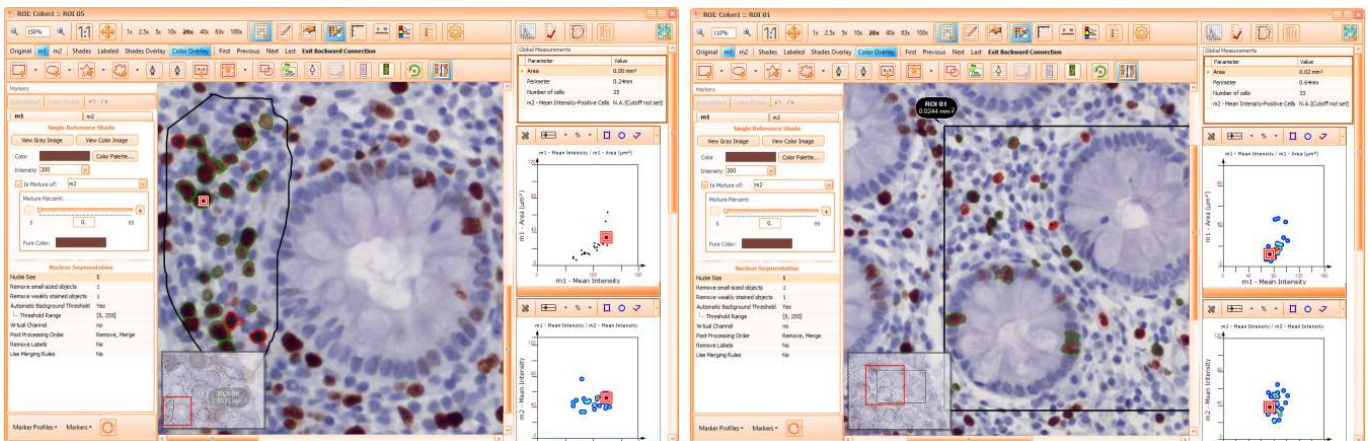
➤ Support for Multiple Detail Windows

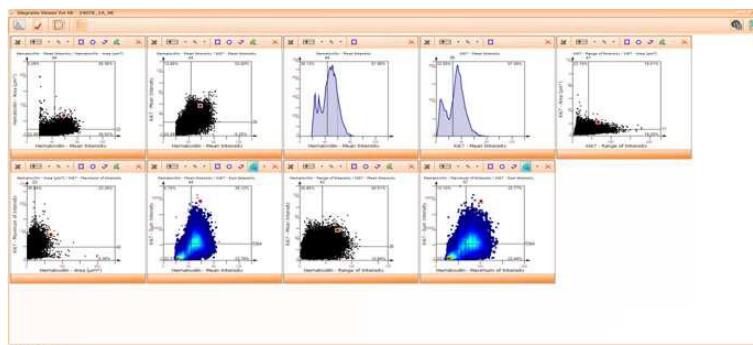- It is now possible to simultaneously open multiple samples in the **Detail Window**.

HistoQuest Features Overview

- **Support for multiple raw data**: for each detail window you can open a raw data window.
- **Support for backward/forward connection**: for each detail window you can start a backward/forward connection window.

- **Support for scattergram detail window**: for each detail window you can open a scattergram detail. **Detail Manager window**: this feature helps when having many detail windows opened. Show All Diagrams in Detail Window
- You can visualize the diagrams for a processed region in a detail window, by choosing **View/Hide Diagrams from Detail Window** button ( ). All the diagrams will open in a dedicated detail window.
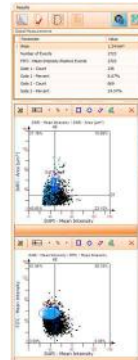
➢ Global Measurements

- The global measurements is a new control in **HistoQuest 7**, where the application displays the information about the area of samples/regions, number of events, number of positive events and information about the gates.

- This control is also available in the **Diagrams Viewer.**
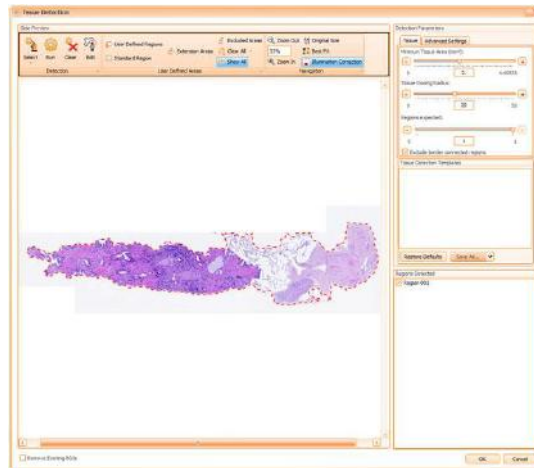
➢ Show Smoothen Image

- **Smoothen Image** button (   ), found in the main viewer toolbar, is enabled by default in **HistoQuest**.
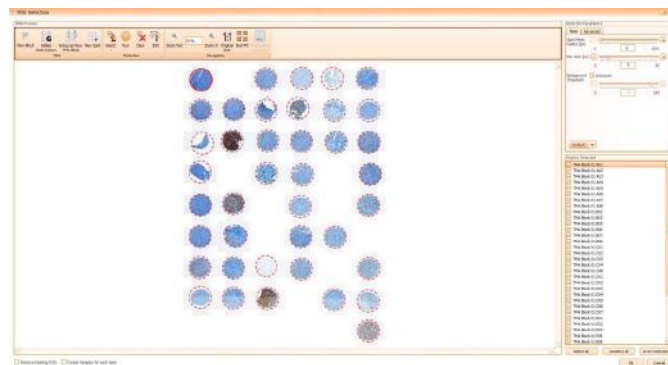
➢ Tissue Detection feature

- **Tissue detection** feature is now available in **HistoQuest** like it is currently in **StrataQuest** and **TissueFAXS**.
- This tool will perform an automatic detection for the entire sample or from a selected area.
- It brings:

- Interactive Sample Viewer

- Possibility to define Excluded Areas from detection

- Possibility to define Extension Areas included in detection

- Edit detected regions

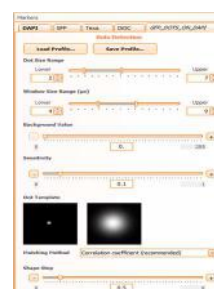- Manual definition of regions

- Run detection on a selected area

➢ TMA Detection feature

▪ TMA detection feature is now available in **HistoQuest** like it is currently in StrataQuest, HistoQuest and TissueFAXS. This tool will perform an automatic detection for the entire sample

▪ It brings:

- Interactive Sample Viewer

- Possibility to define new TMA block

- Possibility to group TMA spots as new TMA block

- Possibility to manually define new TMA spot

- Edit detected TMAs

- Run detection on a selected area

➢ Add DOTS Detection parameters in user interface

▪ It is now easier to adjust the parameters for DOTS detection, as the user can manually modify the values depending on each staining.
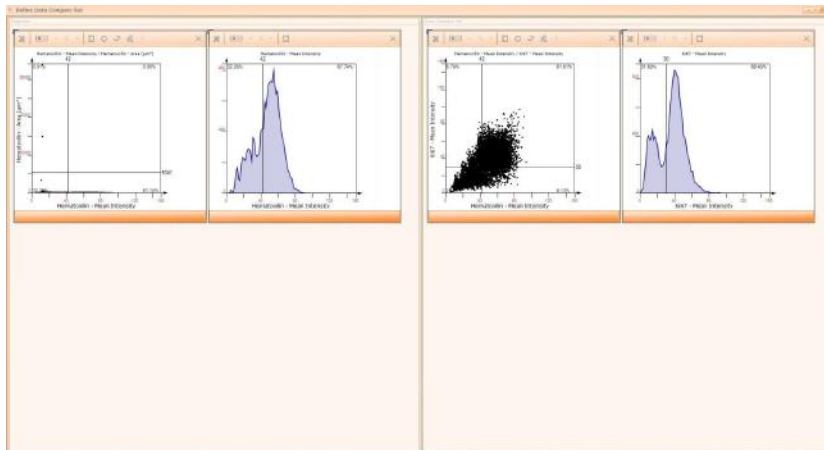
➢ Human Protein Atlas

▪ **Human Protein Atlas** can be accessed in **HistoQuest** from the main toolbar button (

).

➢ Compare sets: update with Define by Drag and Drop

The **Compare Sets** feature includes now the possibility to define by drag and drop.

➢ Automatic Backup/Restore for experiment Versions

▪ HistoQuest automatically makes backups for each experiment once in a while, and stores these backups in a database.
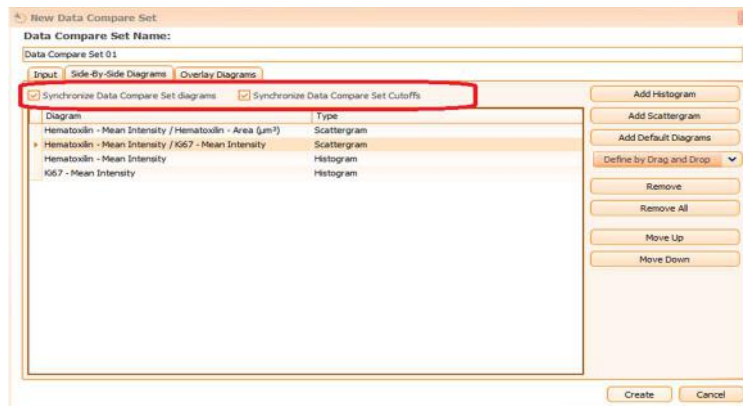▪ Autosaving is done once in every 5 minutes.

➢ Synchronize Data Compare Sets

▪ Using this option, the diagrams from the current compare set will be synchronized with the diagrams from the detail window.
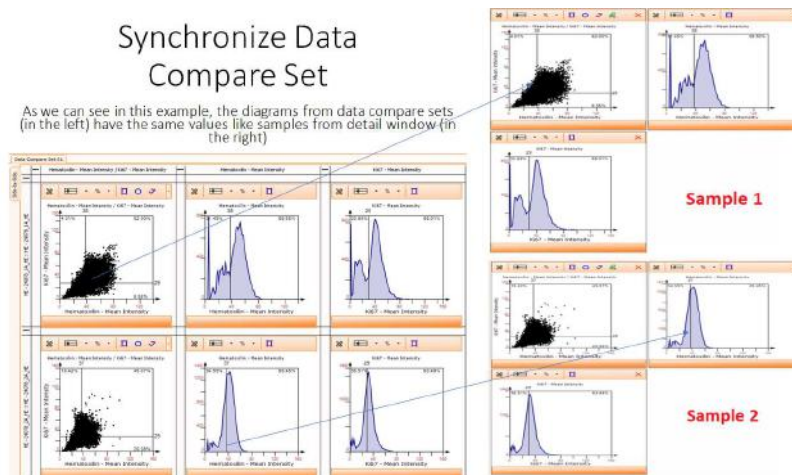
- The synchronization will be bidirectional. Meaning, changes made on the diagrams in the **Data Compare Set** will be seen on the diagrams from detail window and vice versa.
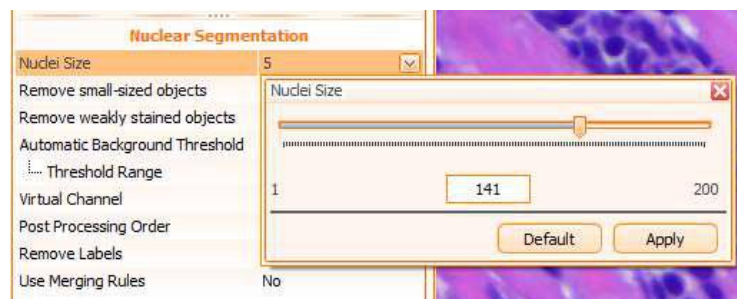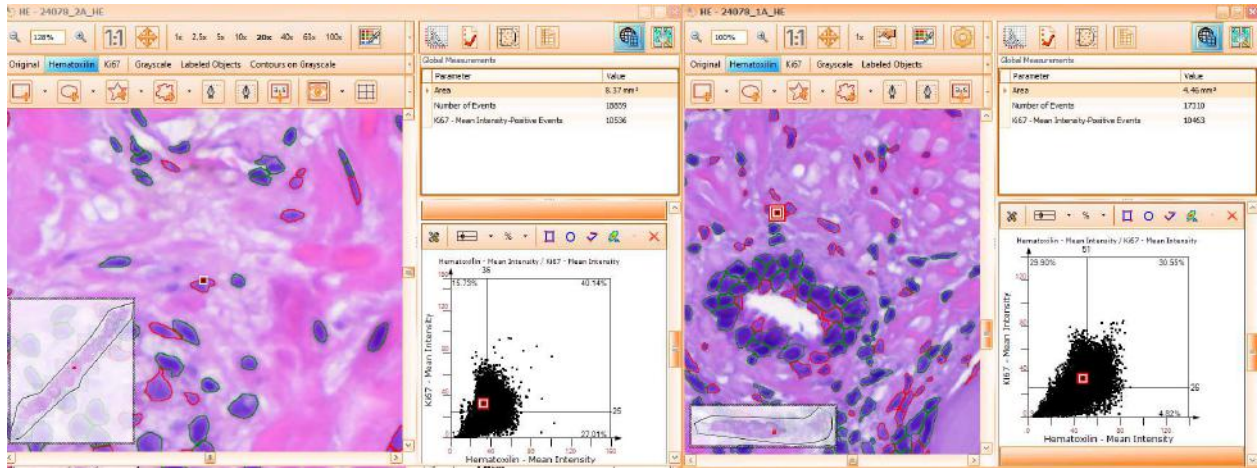

> Large nuclei detection in nuclear segmentation

- Nuclear segmentation now allows detecting large nuclei by increasing **Nuclei Size** up to 200.
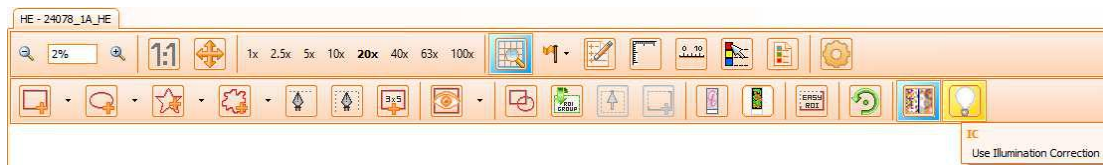

> Multiple Backward Connection

- It is possible to have 2 different samples in backward connection at the same time.
- Also, **HistoQuest** allows opening **Raw Data** for each detail window. This functionality is available for diagram details or diagram viewer as well.
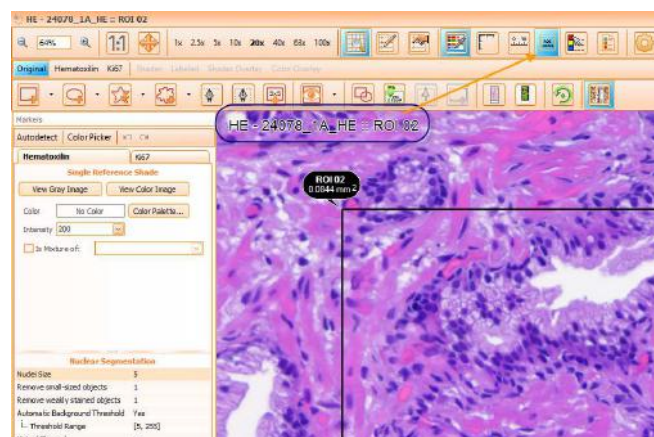
HistoQuest Features Overview

➤ Illumination Correction button added to main toolbar

▪ The **Illumination Correction** button (🔆) can be opened from the main toolbar.

➤ Show Region Name on the viewer

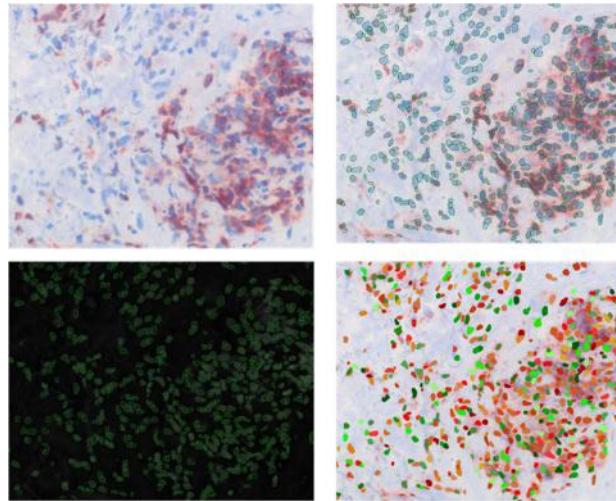▪ **Show Region Name** on the viewer button: this button shows/hides the region name on the sample.

V7.1

➤ Nuclear segmentation using DNN

▪ HistoQuest now has a new segmentation method for nuclei detection, called Nuclear segmentation – Deep Learning. It is a Nuclear segmentation that uses Deep Neural Networks. It can work on gray images (corresponding model must be selected).

➢ New caching mechanism

▪ Fast image switching;
▪ Image cache which holds last used images;
▪ Default size is 2.5GB but can be configured;
▪ Works on any image (original or processed);
▪ Improves image switching in viewer – i.e. when toggling between two processed images
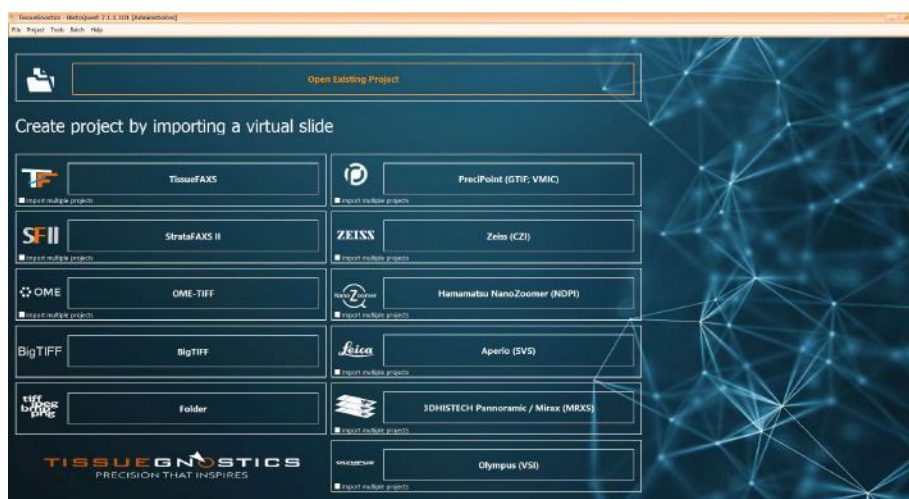
➢ Export as BigTIFF

▪ The results (masks) of an entire virtual slide can be now exported as BigTIFF.

➢ Reading on the fly for 3DHistech (Pannoramic, Mirax)

▪ Reading on the fly is available for 3DHistech (Pannoramic, Mirax), which means almost instantly created projects and no more images extracted on the hard disk.

➢ Batch import

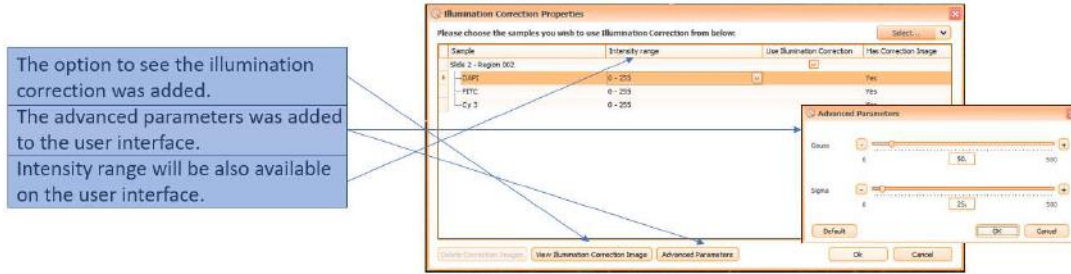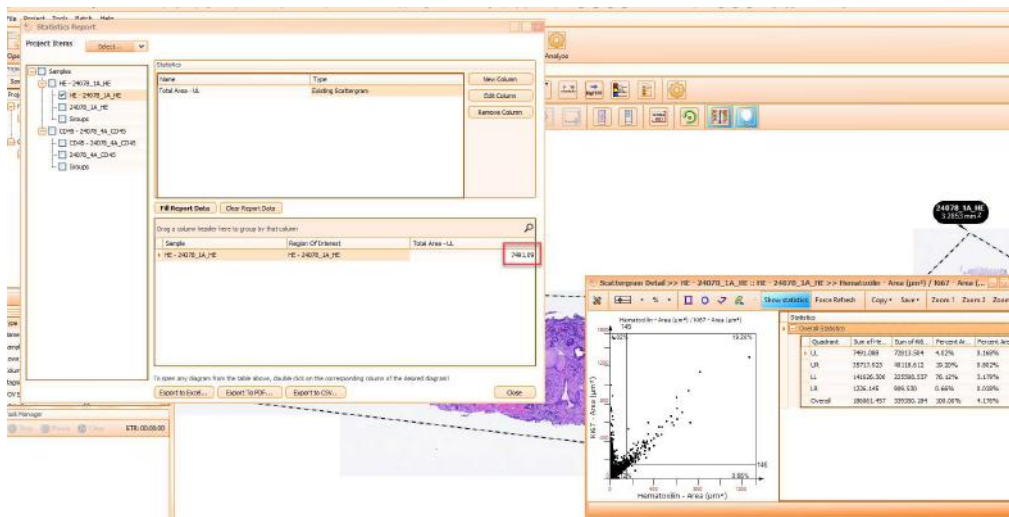▪ Batch import is available for all external import sources.

➢ Illumination correction improvements

The computation of shading correction has been modified to take advantage of multiple cores in the CPU. This means that for bigger projects there will be a noticeable speed improvement, depending on your configuration.
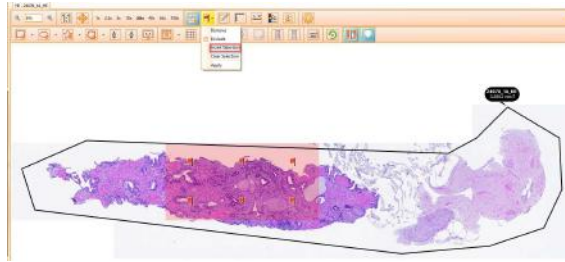

➢ View diagrams from Statistics Report

▪ For statistics computed based on a diagram, the user can open this diagram directly from **Statistics Report** using a double click on the result.

➢ Comments from TissueFAXS available in HistoQuest

▪ Comments from TissueFAXS (slides, regions), patient information and patient number are available in HistoQuest.

➢ Invert selection during excluding/removing FOVs

▪ Added flags selection can be inverted for an easier excluding/removing.

> ➢ Show Total Area in Global Measurements when Total Area Measurement is used

- When **Total Area Measurement** is used, HistoQuest will display in Global Measurements section from detail window the total area for every marker.
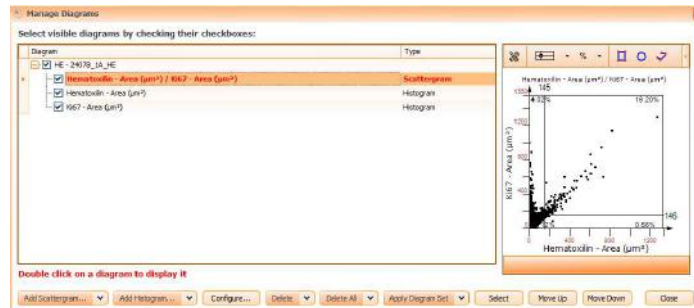

> ➢ Adjust number of cores

- Number of cores set in HistoQuest is automatically adjusted according to the number of cores present on any given machine (currently the default is 3 cores are used).

> ➢ Manage diagrams – Move Up/Move Down

- Manage diagrams windows has now the option to change order of diagrams using Move up/Move down buttons.

> ➢ Backward Connection icons

- In order to be more intuitive, Backward connection data viewing has now icons.