Living Image®

Release Notes
Version 4.7.3

1. Purpose
This document provides a brief overview of new features and improvements in Living Image 4.7.3. This release adds acquisition support for IVIS Spectrum CT instruments on instrument controllers running Windows 10 64-bit. The Living Image 4.7.3 release also provides improvements to existing software features and bug fixes.

2. New Features
Windows 10 Support for Acquisition on more IVIS Instruments
The 64-bit version of Windows 10 is now fully supported for acquisition using the following instrument models:

- Lumina Series III LT
- Lumina Series III
- Lumina Series III XRMS
- Lumina S5
- Lumina X5
- Spectrum BL
- Spectrum
- Spectrum CT

Other Minor Features
- In sequences and clicks with only a photograph, non-quantitative Free Draw ROIs can be created as a method of measuring the area of features in the image.
- In FOV A on Lumina X5 instruments, f/6 and f/8 can be used for X-ray acquisition.

3. Other Improvements
Users of Lumina Series III and Spectrum instruments should see the release notes for Living Image 4.7.0 and 4.7.1 for fixes that were implemented in those releases but that were only available to Lumina S5.
and Lumina X5 users. Users of Spectrum CT instruments should see the release notes for Living Image 4.7.2 as well, as that release was not available for Spectrum CT. This release includes a number of fixes to reported issues, as well as enhancements to existing features.

**Fixes to reported issues**

- Auto scaling doesn't work as expected for some images when the units are set to Radiant Efficiency.
- Living Image attempts to acquire an X-ray image through the IVIS Acquisition Test Panel when the X-ray interlock is off.
- When acquiring a sequence with X-ray and the X-ray arm button is not engaged, the acquisition fails without warning.
- Duplicate messages are displayed when attempting to use the Scanned IDs before initializing the IVIS.
- Improved behavior of the Scanned IDs window when working with tiled or maximized sequence and image windows.
- After importing scanned IDs, Subject ROI names would not update until the mouse was moved over the ROI label.
- The auto-background sequence would not run correctly more than once after a computer restart.
- An issue prevented fluorescence and luminescence images from being acquired as part of the same sequence in non-MVI-2 sequences.
- When loading as a group, the correct default colormap is applied to X-ray images.
- Load Sequence in the Acquisition Control Panel does not properly set up the X-ray Imaging Mode for sequences that include X-ray.
- Changing the color of a 3D ROI affects the slice planes as well as the 3D view.
- Multiple issues with the Load As Group window.
- On Lumina II instruments, the "High" filter could not be reached from some other filter positions.

**Enhancements**

- Allow the "Image Layer" column to be removed from the ROI Measurements.
- Disable the "Colorize" option while acquiring a sequence.
- Improved fiducial detection with Smart Trays on IVIS Lumina S5 and X5 through calibration of the Smart Tray positions. If upgrading a Lumina S5 or X5 that was running an earlier version of Living Image, please contact Customer Support for help to take advantage of this improvement.
- Updated the Visual Studio Runtime libraries that are installed with Living Image.
- Updated the X-ray panel drivers on Spectrum CT for compatibility with Windows 10.
- The auto-save location is now updated when the preferences dialog is closed rather than waiting until Living image is re-launched.
- Speed up Spectral Unmixing acquisition by changing the default order of a sequence so that the emission filter wheel is moved as few times as possible.
4. Known Issues

Structured light can occasionally fail with a transient error
When acquiring structured light images on a Spectrum or Spectrum BL, it can occasionally fail with the error message “Unable to determine the subject height using auto focus image, cannot continue with structured light imaging.” This is a transient error. Attempting to acquire the structured light images a second time will typically succeed, and the error may not return for some time.

Must change security settings on Windows 10 to open data using drag-and-drop
Living Image supports opening sequences by dragging and dropping a sequence folder onto the application. Because Living Image must run using administrative credentials and the Windows Explorer does not do so, Windows 10 prevents this feature from working unless the local security policy is changed. To enable this feature in Living Image, disable the local security policy “User Account Control: Admin Approval Mode for the Built-in Administrator account.” Contact your local IT support personnel for help making this change.

USB devices can temporarily interfere with instrument communication
If a USB thumb drive or other USB device is inserted or ejected from the controller after the instrument has been initialized, a warning may appear in the activity window indicating that a USBIO problem occurred, e.g. the stage temperature could not be read. This is a transient warning that should not affect normal operation of the instrument.

Quantum/Spectrum co-registration with carbon bed
Registration of a Quantum µCT image with the structured light surface from an IVIS Spectrum is facilitated by a hardware bed with a custom designed fiducial. In some cases, unexpected deflection in the hardware bed makes it algorithmically challenging to detect the fiducial. A modified hardware bed is available upon request.

Access to network locations on Windows 8/10
Living Image requires administrative privileges to run on Windows, which can cause conflicts with User Account Control (UAC) when accessing network resources on Windows 8 and Windows 10. Drive letters that correspond to network locations will not be visible to Living Image when it is run as an administrator. To access network locations from within Living Image, specify the UNC path to that location instead of using the mapped drive letter. For more information, see https://support.microsoft.com/en-us/kb/937624.

Windows 8/10 on high DPI displays
On “high DPI” displays, that is, displays with better than 96 dpi, Windows 8 and Windows 10 will default to scaling buttons and other UI elements to make them larger. This can cause display problems with certain parts of Living Image, such as the tool palette. To avoid these problems, click the Control Panel link to “Make text and other items larger or smaller” and then set the scaling to “Smaller – 100%” on Windows 8 or move the slider all the way to the left to the “smaller” setting on Windows 8.1.
changing that setting, you will need to log out of the computer and log back in for the changes to take effect.

On Windows 10, in the “Display” Settings panel, set the value of the “Change the size of text, apps, and other items” slider to 100%. After changing that setting, you may need to log out of the computer and log back in for the changes to take effect.

3D settings on computers with dual graphic cards

If your computer (mostly laptops) is equipped with dual graphic cards, please follow the next figure to default the high-performance graphics card for the Living Image software. Otherwise, Living Image 3D viewer, especially with the 3D Multi-Modality tool, may not function correctly when running on low-end integrated graphics hardware. The image below shows an example of a laptop with both Intel integrated graphics and NVIDIA graphics. Open the NVIDIA control panel and click on “Manage 3D settings.” In the “Program Settings” tab, add the Living Image executable (livingimage.exe) as the program to customize and then set the preferred graphics processor to “High-performance NVIDIA processor.”

5. Analysis PC System Requirements

   PC:
   Windows 7 32-bit
   2GHz Core 2 Duo or higher processor recommended
   4GB RAM
Windows 7/8/10 64-bit
2GHz Quad Core (i5, i7) processor
8GB RAM recommended for IVIS Spectrum CT data analysis

Mac:
OS X/macOS* 10.10 to 10.12
2GHz Core 2 Duo or higher processor recommended
4GB RAM or higher recommended for IVIS Spectrum CT data analysis

* OS X/macOS is supported for the analysis module only. A Mac computer equipped with an ATI Radeon video card or certain Intel Iris Graphics chipsets is required for 3D Multi-Modality support on OS X.

6. Video Card Requirements
3D Multi-Modality tools require that the graphics processing unit (GPU) meet the minimum specifications shown below. If the appropriate license is not installed or the GPU does not meet these specifications, the 3D Multi-Modality tools will not appear in the tool palette.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
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<tbody>
<tr>
<td>OpenGL Version Requirement*</td>
<td>OpenGL 2.0 and above</td>
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<tr>
<td>OpenGL Extension Requirement*</td>
<td>GL-EXT-Texture3D</td>
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</table>
| Graphics Card Memory: | Recommended: 1GB (Dedicated)

Consumer Graphics Cards (Desktop/ Mobile, Windows/Mac)
Supported:
– NVIDIA® GeForce® 8 Series and above (8, 9, 100, 200, 300 and 400 series)
– ATI Radeon™ HD 4000 Series and above (4000 and 5000 series)
– Intel HD 3000 and above and Intel Iris/Iris Pro Graphics (Mac)
  Recommended:
  – Desktop - NVIDIA GeForce GT 240 and above
  – Mobile - NVIDIA GeForce GT 230M and above

Workstation Graphics Cards (Desktop/ Mobile, Windows/Mac)
Supported:
– NVIDIA® Quadro® NVS Series and Above (NVS & FX series)
– ATI FireGL™ V5600 and Above (FireGL, FirePro & CrossFire series)
  Recommended:
  – Desktop - Quadro FX 1800 and above
  – Mobile - Quadro FX 880M and above

*If these specifications are not met, the 3D Multi-Modality tools will not appear in the tool palette.

Note: Support for Mac OS X 10.9 and earlier has been discontinued in Living Image 4.7. MacOS 10.13 and later are not yet fully supported in Living Image 4.7.