Living Image®
Release Notes
Version 4.8.0

1. Purpose
This document provides a brief overview of new features and improvements in Living Image 4.8.0. This release adds acquisition support for IVIS Lumina Series III and IVIS Spectrum instruments on instrument controllers running Windows 10 64-bit. This release adds support for IVIS instruments with PHD Ultra Pump. The Living Image 4.8.0 release also provides improvements to existing software features and bug fixes.

2. New Features
Support for Harvard PDP-Ultra Infusion Pump
This version of Living Image supports the newly released Harvard PHD ultra-pump and, although discontinued, also backward compatible with the pumps previously supported.

- In the “serial Port configuration” section of CameralInfo.txt
- Add Infusion Pump Port 5 (old pump used port 10)
- Add a section as follows:
  ****************************
  * Infusion Pump Settings
  ****************************
  Infusion Pump Installed: Harvard PDP Ultra
  Infusion Pump Model: Ultra

Fluorescence non-uniformity correction. (*Evaluation Mode Only*)
- Correction for AOI dependence of emission filters
  - “fluorescence non-uniformity” correction can be using corrections tool palette section
  - User must provide information about the fluorescent reagent being imaged before the AOI correction can be applied.
Living Image applies an AOI correction to a fluorescence image using a selected probe's known spectrum.

*Note: This feature is available on evaluation mode only. Evaluation modules can be enabled from Preferences*

Support for National Instruments High Speed Data Acquisition (NIDAQ) card NI-6361

There is a shortage of NI-6321 cards, IVIS Spectrum Instruments may be shipped with either an NIDAQ 6321 or a 6361 Hi Speed card. This software supports either card as follows:

- In the “HARDWARE INTERFACE CONFIGURATION” section of camerainfor.txt
- Add NIDAQ Card Installed 6361 (or 6321)
  If no entry, only the 6321 card is supported

3. Other Improvements
This release includes a number of fixes to reported issues, as well as enhancements to existing features.

Fixes to reported issues
The following issues have been resolved:

- X-Ray Acquisition fails on XRMS machine.
- Scanned IDs not available in View menu
- Lens Distortion Correction is unavailable for images acquired on the IVIS Spectrum BL instrument
- Single image window becomes disabled after exporting movie from a MVI-2 dataset
- X-Ray image's min-max values are affected on reopening an 'X-ray on Photograph' overlay image when aggregate color scale was selected in Image Adjust palette
- When user adds a sequence using Imaging Wizard, the scintillator assembly moves to Small Animal position even though X-Ray was not selected
- X-Ray imaging mode is set as 'Mouse' in control panel even though Imaging subject 'High Resolution'/ 'Large Animal' was selected in Imaging Wizard
- Filter Selection Configuration window displays same filter selection for Planar Spectral Imaging, irrespective of the probe selection
- FOV set in sequence setup table is ignored while acquiring a sequence dataset in XRMS machine
- Down button of Manual Focus window doesn't work as expected in Spectrum and CT machines
• Tags and Comments are not getting saved with images of a dataset
• Different ROI counts are observed for specimen images depending on what image was being taken before it is in the sequential mode on X5 machine
• Application crashes on clicking the Acquire Sequence button, if the Update button was clicked after adding a DyCE sequence setup
• Application crashes on drawing sequence ROI on a particular dataset

And many minor issues fixed.

Enhancements

• GUI platform with charts are upgraded
• Disable the Imaging Mode drop-down in control panel when X-Ray checkbox is not checked, also update the Imaging Subject drop-down in Imaging Wizard accordingly

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.

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. After 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

Windows 8/10 64-bit
- 2GHz Quad Core (i5, i7) processor
- 8GB RAM recommended for IVIS Spectrum CT data analysis

Mac:
- OS X/macOS* 10.12 (sierra) to 10.15 (Catalina)
  - 2GHz Core 2 Duo or higher processor recommended
  - 4GB RAM or higher recommended for IVIS Spectrum CT data analysis

Note: Support for Mac OS X 10.11 and earlier has been discontinued in Living Image 4.8.0

* 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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<td><strong>Graphics Card Memory:</strong></td>
<td><strong>Recommended: 1GB (Dedicated)</strong></td>
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</table>
| **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.*