



WHAT'S NEW IN VICON NEXUS 2.14?

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About Vicon Nexus 2.14

Vicon Nexus 2.14 is a point release that provides features and enhancements in addition to those that were included in earlier releases of Nexus 2. For more information, see [Nexus 2.14 new features and improvements, page 4](#).

Nexus is 64-bit only

Nexus is 64-bit only. In most cases, you should upgrade to the latest version of Nexus to benefit from the latest functionality. Before you upgrade, note the following points:

VDDs (Vicon digital device files)

- **64-bit VDDs** When you install the plug-in for your device, ensure that the 64-bit version of the VDD is correctly installed to the folder:
`C:\Users\Public\Documents\Vicon\Nexus2.x\DigitalDevices64\`
- **32-bit VDDs** If you use a VDD (Vicon digital device file) that does not have a 64-bit version, continue to use Nexus 2.12.# until the vendor of your VDD releases a 64-bit version of the VDD. For information about the availability of the 64-bit version of the VDD, please contact the vendor.

OpenGL solution for non-NVIDIA graphics processors

The OpenGL solution for non-NVIDIA graphics processors is supported for Nexus 2.14 (see [Graphics processors for Nexus, page 18](#)).

Note that a different version of the DLL is required for Nexus 2.13 and 2.14 than for earlier releases of Nexus.

Update to ProEclipse

Nexus 2.14 provides an updated version of ProEclipse so that the path to Vicon Polygon now uses the *Program Files (x86)* folder when called from a 64-bit application.

Nexus 2.14 new features and changes

Nexus 2.14 provides the following new and changed features:

- [Use more FLIR video cameras in a Nexus system, page 5](#)
- [Improvements to using Python with Nexus, page 6](#)
- [Updates to CGM2, page 7](#)
- [Run an executable file from within Nexus, page 8](#)
- [Make pipelines read-only, page 9](#)

Use more FLIR video cameras in a Nexus system

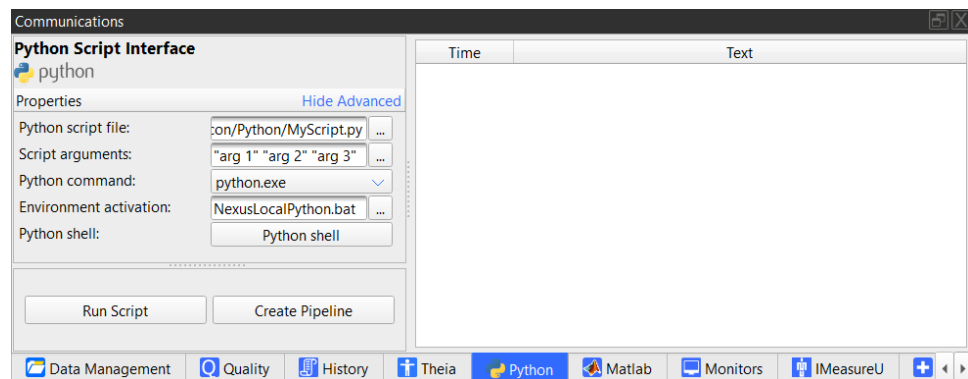
Nexus 2.14 offers the ability to use up to eight FLIR cameras in your Nexus system, enabling you to use post-processing with Theia.

Note that, to take advantage of this new functionality, you must use an advanced PC. For details, contact [Vicon Support](#)¹.

¹ <mailto:support@vicon.com>

Improvements to using Python with Nexus

A new Python tab is now available in the Communications pane. Here, you can set the path to your Python installation, and can conveniently run a script without having to include it in a pipeline operation.



By default the Run Python Operation pipeline operation uses the path to the Python script from the Python tab as its default location, but you can change it on a per-operation basis if required.

For more information, see Run a Python script from within Nexus in the *Vicon Nexus Reference Guide*.

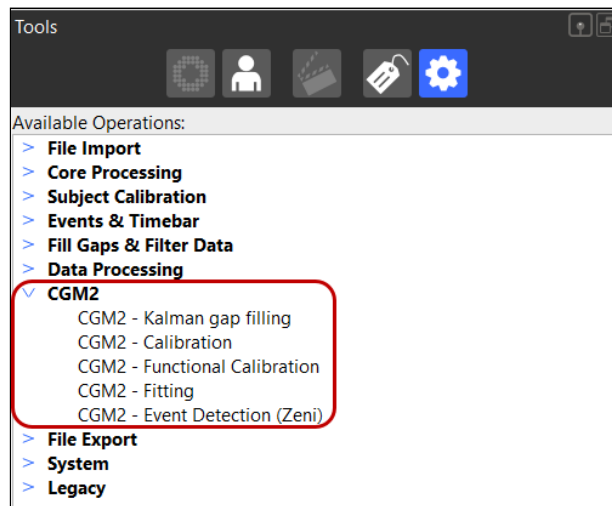
⚠ Using Python 2 with Nexus 2.14

The sample scripts that are installed with Nexus are compatible with Python 3. If you want to run Python 2 scripts, either the machine you are using must have Python2 in its PATH, or if you are using both Python 2 and Python 3, create .bat files to configure the Python environment that is needed to run the required script.

Updates to CGM2

CGM2 has been updated to 4.2 and now uses Python 3 – both are installed with Nexus.

To make it easier to find the CGM2 pipeline operations, including the new operations for event detection and Kalman gap-filling, they are now displayed in their own section in the **Available Operations** list in the **Pipeline Tools** pane.



For information about using CGM2 with Nexus, see *Modeling with CGM2* in the *Vicon Nexus Reference Guide*.

Run an executable file from within Nexus

Nexus 2.14 enables you to run an executable file (written in compiled languages such as C++ or C#) from a Nexus pipeline operation. You can use this feature to speed up or update processing and produce a more automated workflow, for example:

- To quickly run an application you've written that takes filter-related parameters as command line options by connecting to Nexus using the offline SDK, loading the data, filtering using the provided filter parameters, and updating the model output data in Nexus.

or

- For legacy VPIs that you want to continue to use in the latest 64-bit version of Nexus, you could port them to use the offline SDK rather than the VPI interface.

For information on how to run the **Run External Application** pipeline operation, which enables you to do this, see **Run an executable from a Nexus pipeline operation** in the *Vicon Nexus Reference Guide*.

Make pipelines read-only

You can now create a read-only folder that contains pipelines to be used within Nexus so that users of your Nexus system can use a standardized set of pipelines. This enables you to create pipelines that all users of Nexus can access, but that are protected from editing. It is particularly useful if you need to meet MDR requirements for running standardized pipelines that must not be altered by the user.

For more information, see *Make pipelines read-only* in the *Vicon Nexus Reference Guide*.

Requirements and upgrading

For information about requirements and systems supported for this version of Nexus, see:

- [Requirements for Nexus 2.14](#), page 11
- [Systems supported for Nexus 2](#), page 13
- [Upgrading Nexus](#), page 14

 **Note**

The Vicon motion capture system and the Nexus software, manufactured by Vicon Motion Systems Limited, have been tested prior to shipment and meet the metrological requirements as detailed in the Medical devices directive.

(See *Regulatory information* in the Nexus documentation area of the Vicon website, docs.vicon.com/2.)

² <http://docs.vicon.com/>

Requirements for Nexus 2.14

Note the following requirements for Nexus 2.14.

- [Operating systems for Nexus 2.14, page 11](#)
- [Basler video cameras and Nexus 2.14, page 11](#)
- [MATLAB and Nexus 2.14, page 11](#)
- [ProCalc and Nexus 2.14, page 12](#)
- [Vicon IMUs and Nexus 2.14, page 12](#)

For information on graphics cards, see [Graphics processors for Nexus, page 18](#).

For information on optimizing performance for AMD CPUs, see [Improving system performance on AMD CPUs³](#).

Operating systems for Nexus 2.14

Nexus 2.14 is supported under the following operating system:

- **Microsoft Windows 10, 64-bit** (this is the Vicon-recommended OS):
Compatible with and fully supported. Installation, software operation and required third-party drivers tested.

Although Nexus may install and function under other Microsoft Windows operating systems, Vicon does not support or recommend this.

Basler video cameras and Nexus 2.14

Nexus 2.14 does not support the use of Basler video cameras. To use Basler video cameras with Nexus, use Nexus 2.12.1 or earlier.

MATLAB and Nexus 2.14

If you are planning to use MATLAB with Nexus 2.14, ensure that, in addition to installing MATLAB, you install the [.Net Framework version 4.5⁴](#) or later.

³ <https://docs.vicon.com/display/Connect/Improving+system+performance+on+AMD+CPUs>

⁴ <https://www.microsoft.com/en-gb/download/details.aspx?id=30653>

ProCalc and Nexus 2.14

To run ProCalc with Vicon Nexus 2.14, you must install ProCalc 1.2.1 or later.

Vicon IMUs and Nexus 2.14

To update IMU firmware for Nexus 2.14, use Vicon Capture.U Desktop. For information, see the [Vicon Capture.U User Guide](#)⁵.

⁵ <https://docs.vicon.com/display/IMU>

Systems supported for Nexus 2

Before you install Vicon Nexus 2.14, note that Nexus captures data only from Vicon systems (including Vicon Vero and Vicon Vue, Vicon Vantage, Vicon Bonita, and Vicon T-Series cameras and units).

Upgrading Nexus

This section describes functionality that is dependent upon the version of Vicon Nexus that is being upgraded:

- [Upgrading from Nexus 2.7 and earlier, page 14](#)
- [Upgrading from earlier versions of Nexus 2, page 15](#)
- [Upgrading from Nexus 1.x, page 16](#)

Note

Although data collected in Nexus 2.14 (ie, .c3d files) can be viewed in earlier releases of Nexus, you cannot reprocess this data (ie, .x2d with .xcp files) in releases earlier than 2.7.

Upgrading from Nexus 2.7 and earlier

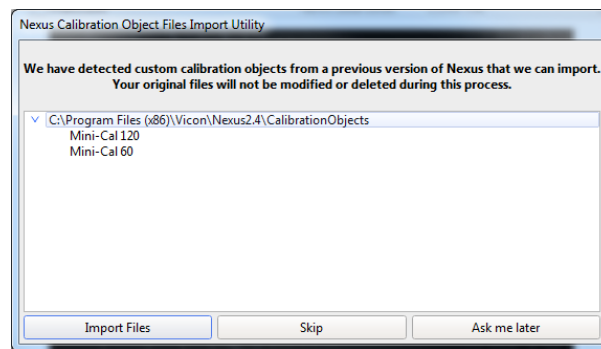
Improvements to camera calibration that were provided by Nexus 2.7 have the following effects on compatibility of data between releases:

- Data collected in earlier releases of Nexus can be reprocessed in Nexus 2.14 because calibration (.xcp) files that were created in earlier releases are fully compatible with Nexus 2.14. Note that if you load a calibration (.xcp) file that was created in an earlier release of Nexus into Nexus 2.14 and save it, Nexus maintains its compatibility with earlier releases.
- You can use earlier releases of Nexus to view data that was collected in Nexus 2.14 (that is, you can open Nexus 2.14 .c3d files in Nexus 2.7 and earlier).
- However, calibration (.xcp) files that are created in Nexus 2.14 are not backward-compatible, that is, they cannot be read by releases of Nexus earlier than 2.7, and loading will fail if attempted.

Upgrading from earlier versions of Nexus 2

If you are upgrading from a previous version of Nexus 2, during installation a dialog box gives you the option of adding the **Auto Intelligent Gap Fill** button and/or the **Add to Quick Report** button to your Nexus toolbar. For more information on these features, see *Automatically fill gaps in trial data* in the *Vicon Nexus User Guide* and *Quick Reports* in the *Vicon Nexus Reference Guide*. To add the additional button(s) to your toolbar, click **Upgrade Files**.

On first launch, Nexus 2.14 scans the installation directories of earlier versions of Nexus 2 and offers to automatically transfer custom objects that it finds.



If you click **Import Files**, Nexus 2.14 copies custom calibration objects from earlier versions of Nexus (2.0 and later) to the **Public Documents** folder (eg, `C:\Users\Public\Documents\Vicon\Nexus2.x\CalibrationObjects`).

Important

When you create new custom calibration objects, ensure you save them into this folder (not to the Nexus installation folder), so that they are available to future versions of Nexus.

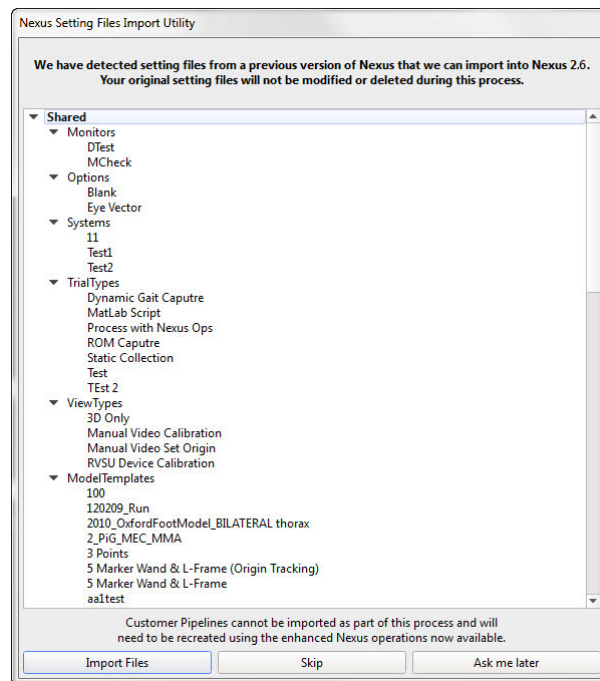
Upgrading from Nexus 1.x

Note

This section applies only to versions of Nexus that are earlier than 2.0.

Nexus 2.14 installs into its own folder, called *Nexus2.14*. If you already have Nexus 1.x installed, it will remain installed alongside the new Nexus installation.

On installation, Nexus 2.14 automatically scans for Nexus 1.x files, displays a list of any older files that it finds, and provides an automated system for importing these into Nexus 2.14.



This process copies all the old files and converts the copies, ensuring that original files are not moved, altered, or destroyed.

For more information on the installation and licensing process, see *Installing and licensing Vicon Nexus*.

Regulatory information

For Vicon Nexus regulatory details, see *Vicon Nexus regulatory information* in the Nexus documentation area of the [Vicon website](https://docs.vicon.com)⁶.

⁶ <https://docs.vicon.com>

Graphics processors for Nexus

Nexus is tested and fully supported with NVIDIA graphics processors. This is the Vicon-recommended graphics processor for PCs that are to run your Vicon system and Nexus software.

Using other graphics processors is not recommended and may affect the performance of the software.

If you experience issues with the software and you have been informed by Vicon Support that this is due to the graphics processor, note these points:

- Issues can occur when you first start the software, or may be due to a driver or Windows update.
- If you previously had a working configuration, consider rolling back the driver version or restoring Windows to a working restore point.
- Some laptops have both a dedicated graphics processor and an integrated processor. You can select the processor for use by an application. You can usually find the option for this by right-clicking the application's shortcut. You can find further general controls in the NVIDIA control panel.

If an NVIDIA processor is not available and Nexus stops responding, the following workaround may help. It involves installing an additional file to the Nexus program directory. To do this, you need read/write access to this location and may require the help of an administrator.

1. Download and unzip the file found in the OpenGL section at the bottom of [the Nexus page](#)⁷ on the Vicon website.

Note that two versions of the DLL are available on this page. Ensure you select the required version of the DLL, which depends on your version of Nexus:

- **Nexus 2.13 and later** – Download the 64-bit version
- **Nexus 2.12 and earlier** – Download the 32-bit version

2. Rename the file to *opengl32.dll*.

Note that filename is `opengl32.dll` for the 64-bit version, as well as for the 32-bit version.

⁷ <https://www.vicon.com/software/nexus/?section=downloads>

3. With Nexus closed, place the *opengl32.dll* file in the folder that contains the Nexus executable (*Nexus.exe*), for example:
C:\Program Files\Vicon\Nexus2.14
4. Launch Nexus.
5. Repeat Step 3 for any other instances of Nexus.

This solution mitigates any issues that are due to the graphics processor which you may experience whilst you're running Nexus, however, performance, such as redraw and general navigation, may be adversely affected. This solution has been tested on a limited number of Intel graphics cards for Windows 10.

Addressed issues

The following issues have been addressed in the latest release of Nexus:

- User-created normalized model output units are now handled properly when saving and re-loading a C3D.
- Digital device sync port can now be re-assigned to None after it has been previously been assigned to a port.
- File reader updates to better handle large *.history* files.
- Analog channels are no longer duplicated when running pipeline operations when the internal component IDs start at a value greater than 1.
- Plug-in Gait operation now skips subjects that do not appear to be using the Plug-in Gait marker set, eliminating the need to deselect non-Plug-in Gait subjects when processing.
- Plug-in Gait operation now calculates the upper body outputs that it can when the head is missing, as it did in versions of Nexus earlier than 2.13.
- SDK update: MATLAB utility object NexusSegment now retains subject information during the Create call when using matrices as the input data.
- Export ASCII operation now better handles raw frame data output for devices without subsamples such as Blue Trident devices.
- The example scripts that are supplied with Nexus are now compatible with Python 3.


Known issues

The following issues are known to exist in this release.

(For information on CGM2 issues, see Known issues for CGM2 in the *Vicon Nexus Reference Guide*.)

Issue	Workaround
<p>If you add a Run ProCalc Operation to a pipeline and, in the Schemes section of the Properties pane, try to select a Vicon ProCalc read-only scheme, you cannot select any of the read-only schemes as they are not listed.</p>	<p>In ProCalc, open the required read-only scheme and save it as a custom name. The scheme is automatically saved to the relevant folder: <code>C:\Users\Public\Documents\Vicon\Eclipse</code> In Nexus, you can now select it in the Properties for Run ProCalc Operation.</p>
<p>If you select multiple FLIR video cameras in Nexus, right-click and then click Reboot, some cameras are not rebooted and in the System panel, they are displayed with yellow warning icons. For each camera that did not reboot, an error is displayed in the Log.</p>	<p>Re-select the FLIR cameras that failed to reboot and reboot them again.</p>
<p>When using Auto Capture Setup to specify settings for data capture, if you are using FLIR video cameras and set Capture before start to more than 1 second, capture fails and an error message is displayed.</p>	<p>When using FLIR video cameras, do not set Capture before start to a value greater than 1s.</p>
<p>When more than four video camera views are displayed at the same time in offline mode, a noticeable lag occurs in the views during playback. The performance of the data capture is unaffected.</p>	<p>During playback or when scrubbing in the time bar, do not display more than four video camera views with the 3D Perspective view.</p>

Issue	Workaround
<p>If you run the Autolabel Static pipeline operation on a trial that contains multiple subjects, only one of the marker sets is labeled, and the labeling ignores which subject is selected.</p>	<p>Use manual labeling instead of the Autolabel Static pipeline operation.</p>
<p>If you directly connect a Tobii recorder to the network card on the PC using an Ethernet network cable, start Nexus and add Tobii Pro Glasses 3 as a digital device, and then unplug the Ethernet cable from the recording unit and plug it back in, Tobii Pro Glasses 3 don't reconnect to Nexus and an error is displayed: Source data unavailable. This issue may also occur when you initially connect a Tobii recorder directly via Ethernet, if the Tobii Pro recorder is turned on before you start Nexus.</p>	<p>If, after you've started Nexus, you need to disconnect a Tobii recorder that is connected via Ethernet to the network card on the PC, after reconnecting the Tobii recorder, turn the recorder off and then turn it on again.</p>
<p>If USB3 cameras are physically connected (ie, plugged in) when you start up the PC, some cameras may only work at 16 Hz max.</p>	<p>Unplug the affected cameras and plug them back in.</p>
<p>If you are using a FLIR camera, when you start masking or calibrating, and also when masking or calibration ends, a warning may be briefly displayed informing you that the DV camera is not set to a valid frame rate.</p>	<p>None. This is expected behavior: masking and calibrating are unaffected and the warning quickly disappears.</p>
<p>If you have opened Theia outside of Nexus, and then try to run Theia processing through Nexus, the trials are not processed.</p>	<p>Before running Theia processing from Nexus, close any other instances of Theia that are currently running.</p>

Issue	Workaround
<p>When you're using Tobii Pro Glasses 3, if the glasses are disconnected from an Ethernet connection and then reconnected, in Nexus, the device continues to be displayed as not contributing (with a gray Play icon) and it stops sending data.</p>	<p>To return the device to full functionality, perform a manual resync. To do this: In the Nexus System tree, right-click Local Vicon System and then click Resynchronize.</p>
<p>The sample rate value for AMTI Force Plates displayed in the System tree doesn't match the Acquisition rate that is selected in the Properties of the AMTI Devices Controller. Except in the case of the initial value, the sample rate that is displayed in the System tree is the last selected Acquisition rate, not the current rate.</p>	<p>In the Properties of the AMTI Devices Controller, temporarily change the value (up or down) for Fz Threshold. The sample rate for the force plates in the System tree changes to match the selected Acquisition rate of the AMTI Devices Controller.</p>
<p>When you select a connected Delsys Trigno EMG digital device and in its Properties, set the Trigger Mode to Triggered and then configure the correct sync port, the Delsys device disconnects, and in the System tree, its icon goes gray. Devices do not reconnect until you set the Trigger Mode back to Not Triggered.</p>	<ol style="list-style-type: none"> 1. In the Nexus System tree, right-click Local Vicon System and then click Resynchronize. 2. Wait for the Delsys device icon(s) to go green and during the next 4–5 seconds (while the device icons are green), press the START Trigger push button  at the top right (below the power indicator) on the Delsys Trigger Module. Delsys devices stay connected and green, synchronized and ready to capture a trial.
<p>When you're using a Blue Trident sensor to capture movement, and have Global Angle selected, global angles are streamed, but both global angles and 9-axis raw data is captured to the sensor.</p>	<p>None</p>

Issue	Workaround
<p>When you're using Vicon Blue Trident sensors, at high device counts, some sensors begin to drop packets, so some flickering may be observed in the view pane.</p>	<p>When working with a large number of sensors, reduce the Bluetooth stream rate or the number of enabled axes. This issue does not affect the data recorded to the device.</p>
<p>If you drag the Report Options pane to outside of the Nexus Quick Reports window and release the mouse button, then try to drag it back, it does not re-attach inside the Nexus Quick Reports window.</p>	<p>To restore the Report Options pane to its previous docked location, double-click its title bar, then drag it to the required position within the Nexus Quick Reports window.</p>
<p>The Nexus Quick Reports window does not have a Close button.</p>	<p>To close the window, press F4.</p>
<p>A crash can occur if any Noraxon EMG error messages are not dismissed before shutting down Nexus.</p>	<p>Dismiss all Noraxon EMG error messages before exiting Nexus.</p>
<p>When run via the Run Python operation, the Load Trial command in the Python SDK is not able to load a trial.</p>	<p>Run the Python script from IDE or command line.</p>
<p>Device drivers for Cometa/Wave depend on your Windows version.</p>	<p>For Windows 10 device drivers, contact Cometa.</p>
<p>When the system frame rate is set above 80Hz, if you enable Preview mode, no preview is displayed for Vicon Vantage cameras (the Camera view is blank).</p>	<p>To use Preview mode with Vantage cameras, select a system frame rate below 80Hz.</p>
<p>When you right-click the Devices node on the System Resources pane, the required digital device is not available in the Add Digital Device menu.</p>	<p>When you install the relevant plug-in, ensure that the VDD is correctly installed to the folder: C: \Users\Public\Documents\Vicon\Nexus2.x\DigitalDevices64\</p>

Issue	Workaround
<p>Noraxon Telymyo DTS device halts camera and analog data delivery when Noraxon devices are housed/not charged.</p>	<p>Digital devices now have an Enabled parameter in their Properties pane. To prevent a given manufacturer's plugin from holding up the rest of Nexus, clear Enabled for ALL devices from that manufacturer.</p>
<p>Unable to run legacy Static Gait Model under Japanese Windows. Log entry reads: No parameter file found</p>	<p>The legacy Plug in Gait model does not support international character sets. Instead of using the legacy Plug-in Gait model, use the Nexus 2 replacement gait model (found under Data Processing pipeline operations: Process Static Plug-in Gait Model and Process Dynamic Plug-in Gait Model).</p>
<p>Export c3d at the end of a pipeline does not clear the trial and leaves the trial with a dirty flag (*).</p>	<p>The Export C3D operation does not write out the subjects associated with the trial. To remove the dirty flag on a trial, save the entire trial, which saves all associated files (x2d, xcp, etc), using the Save Trial - C3D + VSK operation.</p>
<p>Video capture duration can be limited directly after deletion from SSD storage.</p>	<p>After deleting your video files, wait a few seconds before starting your next capture. This is because some Solid State Drives require a few seconds to recover full Write speed after file deletion.</p>
<p>Spaces in variable names can cause BodyLanguage to fail.</p>	<p>When creating subject parameters for use in BodyLanguage modeling, use underscores instead of spaces.</p>
<p>Nexus can suffer many problems if Eclipse databases are created in locations that are Read-only. These problems range from data silently failing to save to crashes.</p>	<p>NEVER create Eclipse databases in locations that require administrator privileges to read or write.</p>
<p>Starting a capture very soon after a change to the system frame rate, or a resynchronization, can result in erratic capture behavior (failure or dropped frames).</p>	<p>Avoid starting captures soon after changing the hardware setup.</p>

Issue	Workaround
PAL or NTSC camcorders are included in Active Wand camera calibration if the MX system is set to run at the same standard (i.e. PAL or NTSC).	Before performing active wand camera calibration, disable the camcorders.