



WHAT'S NEW IN VICON NEXUS 2.9



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About Vicon Nexus 2.9

About Vicon Nexus 2.9

Vicon Nexus 2.9 is a point release that provides features and enhancements in addition to those that were included in earlier releases of Nexus 2.

Nexus 2.9 new features and functions

Nexus 2.9 new features and functions

Nexus 2.9 provides the following new features and enhancements:

- [Improved CGM2 workflow, page 5](#)
- [Quick access to data quality information, page 6](#)
- [Overlay normalized trial data in Quick Reports, page 8](#)
- [Ability to mirror video cameras on screen, page 10](#)
- [Labeling template \(VST\) for Hybrid CAST Visual3D model, page 11](#)
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- [Improvements to Event Identification mode, page 13](#)
- [Control of popup notifications, page 16](#)
- [New pipeline operation for residual analysis, page 18](#)
- [Apply delay compensation as a batch process, page 21](#)
- [Delete all events from one context only, page 22](#)
- [New API functions for digital device data, page 25](#)
- [New SDK command to identify active subjects, page 27](#)
- [Ability to run a monitor in a pipeline, page 28](#)
- [Improved calibration volume reproducibility, page 29](#)

For a description of the other features and enhancements that have been released since Nexus 2.0, see the PDFs *What's New in Nexus 2.8*, *What's New in Nexus 2.7*, *What's New in Vicon Nexus 2.6*, *What's New in Vicon Nexus 2.5* and *What's New in Nexus 2.4*.

 To watch Nexus videos, see the [Nexus 2 tutorials playlist](#)¹ and the [Nexus 2 How To playlist](#)² on YouTube.

¹ https://www.youtube.com/watch?v=Y_O6XDTq7kk&list=PLxtdgDam3USUSleuO6UloG3ogPsFNtEJS

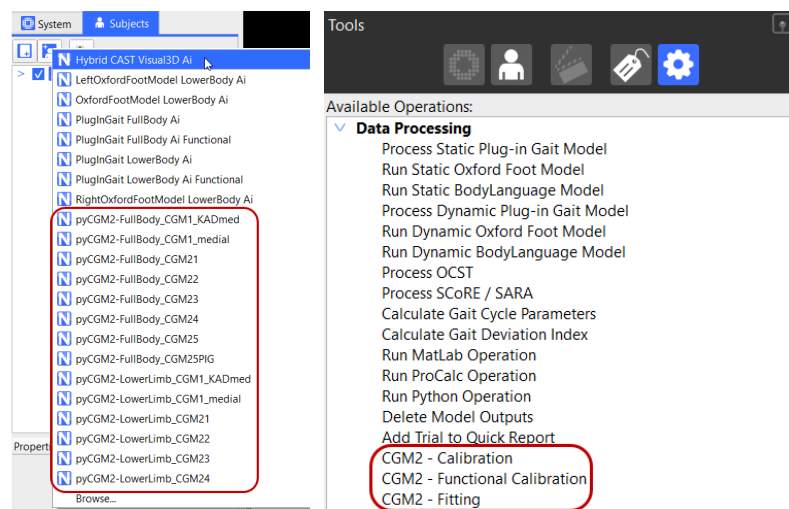
² https://www.youtube.com/playlist?list=PLxtdgDam3USVhGs9b3LTgX2YH_VQqlcDM

Nexus 2.9 new features and functions

Improved CGM2 workflow

Location: **Pipeline Tools** pane > **Data Processing** operations

The Conventional Gait Model 2 (CGM2) is now fully integrated into Nexus, so that it is automatically installed with Nexus 2.9.



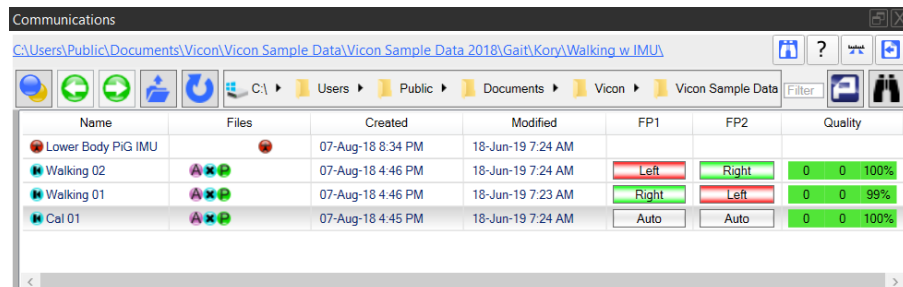
For information on using the CGM2 model with Nexus, see Modeling with CGM2 in the *Vicon Nexus Reference Guide*.

Nexus 2.9 new features and functions

Quick access to data quality information

You can now quickly obtain feedback on the data quality of all your data captures (including those prior to Nexus 2.9) on the **Data Management** tab, without having to open each trial to access the information on the **Quality** tab.

On the default **Data Management** tab, a new **Quality** column displays data quality information about each trial.



Name	Files	Created	Modified	FP1	FP2	Quality
Lower Body PiG IMU		07-Aug-18 8:34 PM	18-Jun-19 7:24 AM			
Walking 02	A x x x	07-Aug-18 4:46 PM	18-Jun-19 7:24 AM	Left	Right	0 0 100%
Walking 01	A x x x	07-Aug-18 4:46 PM	18-Jun-19 7:23 AM	Right	Left	0 0 99%
Cal 01	A x x x	07-Aug-18 4:45 PM	18-Jun-19 7:24 AM	Auto	Auto	0 0 100%

Note

To display quality information, if your trials:

- Were captured in versions of Nexus earlier than Nexus 2.9, save the trial in Nexus 2.9 (eg, by running the **Save Trial - C3D + VSK** pipeline operation).
- Include multiple subjects, you must select a single subject only.

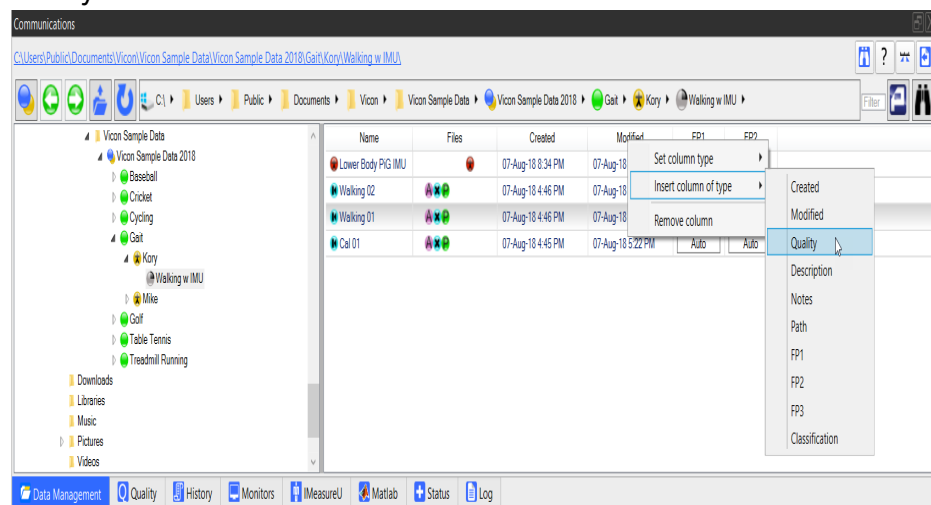
The information displayed (from left to right in the **Quality** column) is:

- Number of unused markers
- Number of gaps in this trial.
- Percentage of markers in this trial that are labeled.

Nexus 2.9 new features and functions

If you are using a custom scheme for the Data Management tab, to display a Quality column, you can either revert to the default layout or, to add a Quality column to your custom scheme:

- Right-click on a column and then click **Insert column of type** and select **Quality**.

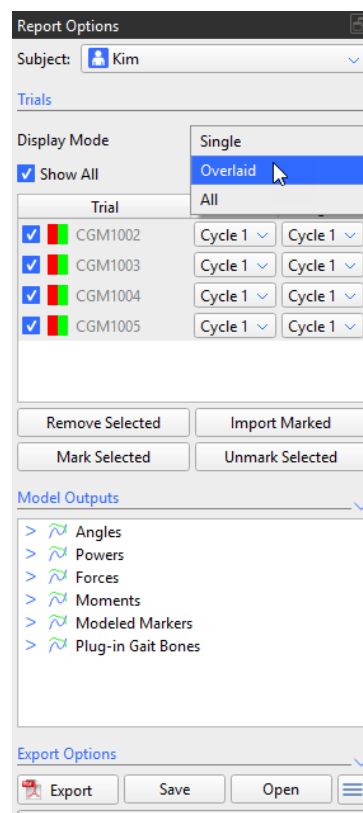


Nexus 2.9 new features and functions

Overlay normalized trial data in Quick Reports

You can now overlay normalized trial data (eg, gait data) in Quick Reports, so that you can quickly observe model outputs and intra-trial repeatability without having to use Polygon.

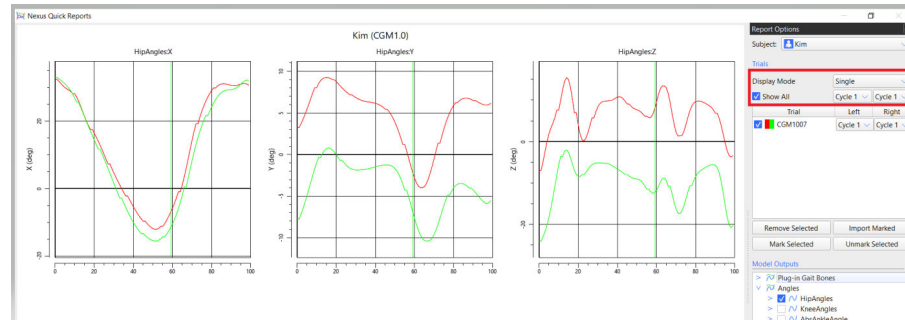
A new dropdown menu enables you to select the display mode.



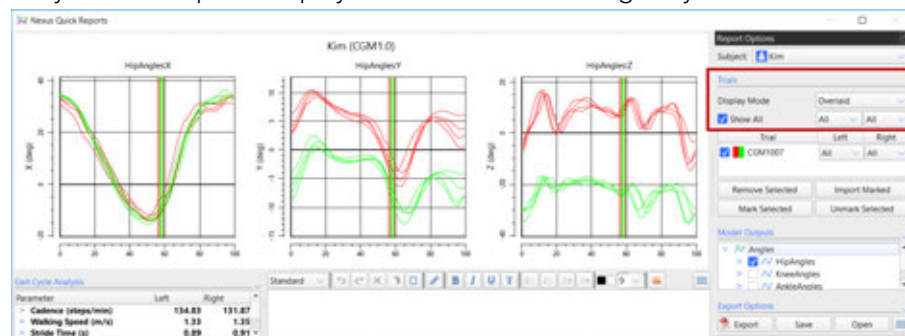
Nexus 2.9 new features and functions

You can select from these options:

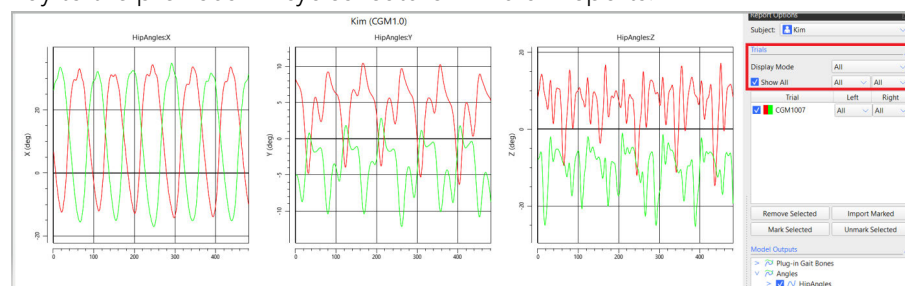
- **Single** Displays either one context (Left or Right) or both (Left and Right) for a specific cycle, for example: Left = Cycle 1, right = Cycle 1. This option displays data as a normalized gait cycle 0-100.



- **Overlaid** Displays either one context (Left or Right) or both (Left and Right) for all cycles. This option displays data as a normalized gait cycle 0-100.



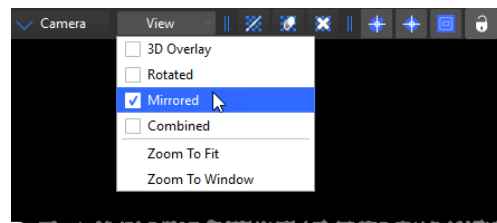
- **All** Displays either one context (Left or Right) or both (Left and Right) for all cycles. This option displays data as frames and is not normalized, in a similar way to the previous **All** cycles feature in Quick Reports.



Nexus 2.9 new features and functions

Ability to mirror video cameras on screen

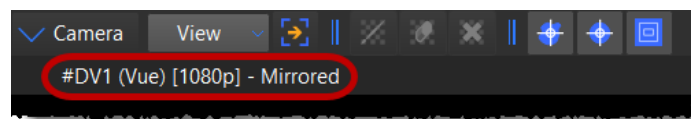
Location: View pane > **Camera** view > **View** menu



You can now mirror the view displayed for both optical and video cameras.

To select this option, in a **Camera** view, click the **View** menu and then select **Mirrored**.

To enable you to quickly identify when you are looking at a mirrored view, the view title now displays **Mirrored** when this option is selected.



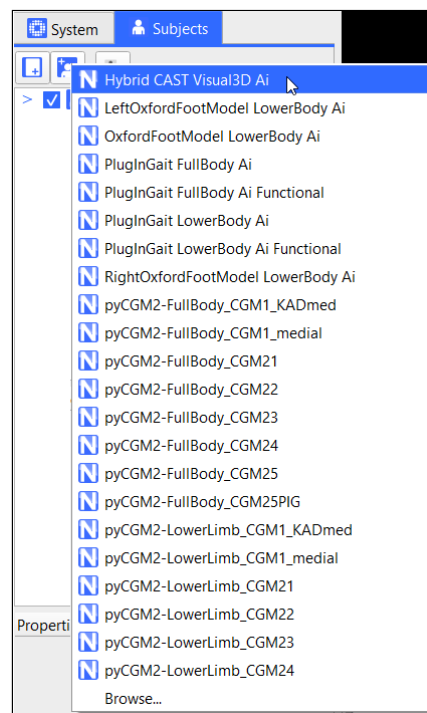
Nexus 2.9 new features and functions

Labeling template (VST) for Hybrid CAST Visual3D model

Location: **Subjects Resources** pane > **Create a new subject from a Labeling Skeleton** button or

C:\Program Files (x86)\Vicon\Nexus2.9\ModelTemplates

If you use a Hybrid CAST Visual3D model with Nexus, you no longer need to generate your own labeling template (VST). A Hybrid CAST Visual3D model is included with Nexus 2.9 so that the marker set is automatically labeled when you use the **Auto Initialize Labeling** pipeline.



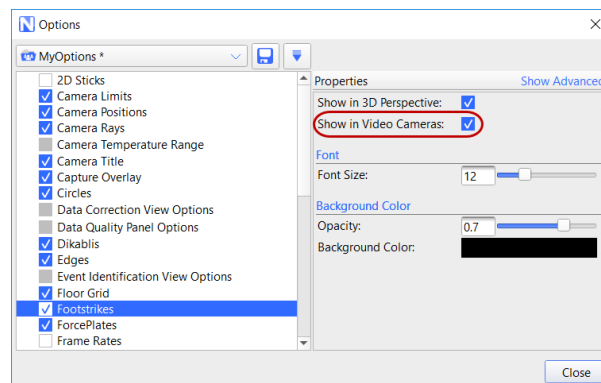
Nexus 2.9 new features and functions

Foot strike counter in Camera view for video cameras

Location: **Options** dialog box (F7) > **Footstrikes** option > **Properties** pane

You can now add a foot strike counter to the **Camera** view, enabling you to get quick feedback on foot contact when watching a video camera view.

You use the foot strike counter in the same way as in the **3D Perspective** view (see Automatically assess foot strikes).



To display a foot strike counter in the **Camera** view:

In the **Options** dialog box (F7), ensure that **Footstrikes** is selected and in the **Properties** pane on the right, ensure **Show in Video Cameras** is selected.

Note

You can't select this option while calibrating the cameras.

To change foot strike counter properties:

1. With a video camera connected and Nexus in Live mode, in the **Systems Resources** pane, select the video camera.
2. In the **Camera** view right-click and then click **Footstrike Monitor Settings**.

Nexus 2.9 new features and functions

Improvements to Event Identification mode

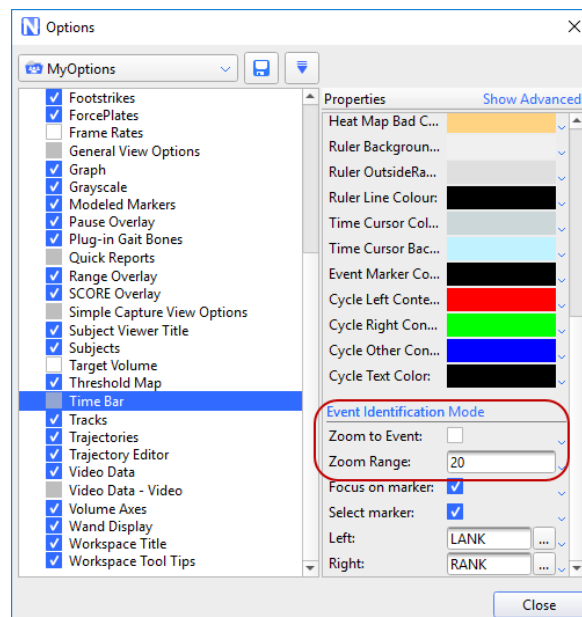
The following new options are available in Event Identification mode:

- Time bar Zoom option, page 13
- Load view type when in Event Identification mode, page 14

Time bar Zoom option

Location: **Options** dialog box (F7) > **Time Bar** option > **Properties** pane > **Event Identification Mode** section

A new option enables you to choose whether to zoom into the time bar when in Event Identification mode.



Nexus 2.9 new features and functions

To control zooming into the time bar in Event Identification mode:

- In the **Options** dialog box (F7), select **Time Bar** and in the **Properties** pane on the right, scroll to **Event Identification Mode** and select or clear **Zoom to Event**.
- When **Zoom to Event** is enabled, you can specify the **Zoom Range** (the number of frames) either side of the event that you zoomed to in the time bar. The default is 20 frames.

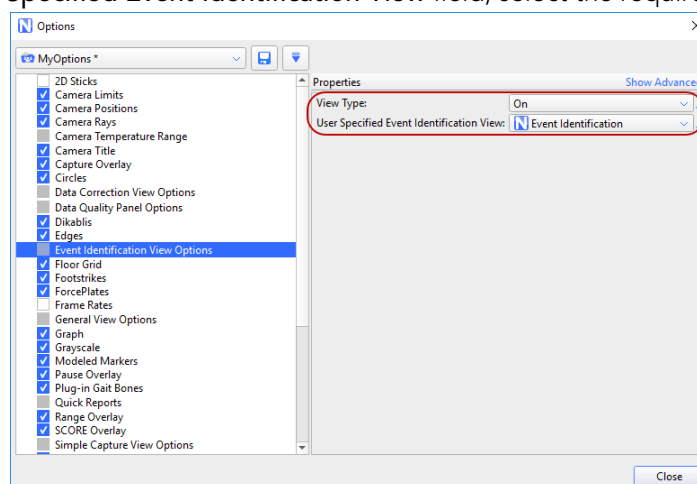
Load view type when in Event Identification mode

Location: **Options** dialog box (F7) > **Event Identification View Options** > **Properties** pane

To make it easier to identify an event more precisely, Nexus now provides an option for Event Identification mode that enables you to quickly load a specific view type. For example, you may find it helpful to be able to quickly view a graph of a particular marker, etc.

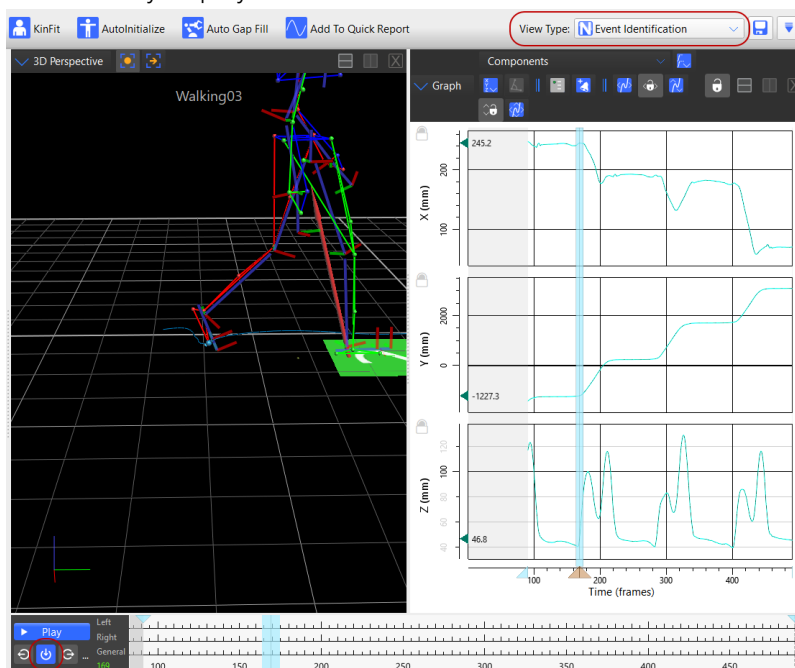
To specify the view type for Event Identification mode:

1. In the **Options** dialog box (F7), select **Event Identification View Options**.
2. In the **Properties** pane on the right, change **View Type** to **On** and in the **User-Specified Event Identification View** field, select the required view type.



Nexus 2.9 new features and functions

- When you select **Event Identification Mode**, the view type you selected is automatically displayed.



For information about using Event Identification mode, see [Add events to trials](#) in the *Vicon Nexus User Guide*.

Nexus 2.9 new features and functions

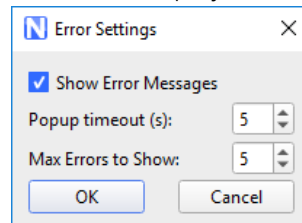
Control of popup notifications

Location: **Window** menu > **Error Message Settings** option

A new feature enables you to adjust the length of time that popup notifications are displayed and the maximum number of notifications that are displayed.

To control popup notifications:

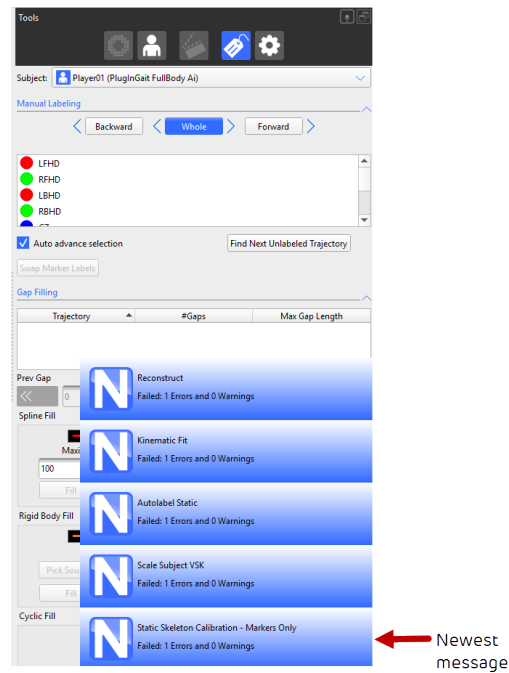
1. On the **Window** menu, select **Error Message Settings**.
2. In the **Error Settings** dialog box:
 - a. Change **Popup timeout** to the length of time (in seconds) that you want the messages to be displayed, up to a maximum time of 10 seconds.
Note that if you set **Popup timeout** to 0, the error message remains unless you either click on the message or the **Max Errors to Show** is reached, when this error message is automatically removed.
 - b. Change **Max Errors to Show** to the number of error messages that you want to be displayed at any one time, up to a maximum of 10 messages.



The default popup timeout is 5 seconds and the default number of messages is 5.

Nexus 2.9 new features and functions

If more errors occur within the **Popup timeout** period, the oldest error is removed from the top of the stack and newest is displayed at the bottom of the stack.



To open the Log, click on any of the error messages.

Nexus 2.9 new features and functions

New pipeline operation for residual analysis

Location: **Pipeline Tools** pane > **Fill Gaps & Filter Data** operations

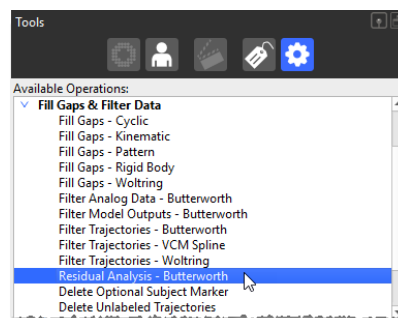
A new pipeline operation enables you to run a residual analysis to determine the optimum cut-off frequencies to apply for a low pass filter for your devices.

Results are displayed in the **Log** and saved in the trial **History**.



Important

This feature is for low pass filtering analysis only, eg, for force plates and plantar pressure plates, and not for high-pass filter devices like EMG.

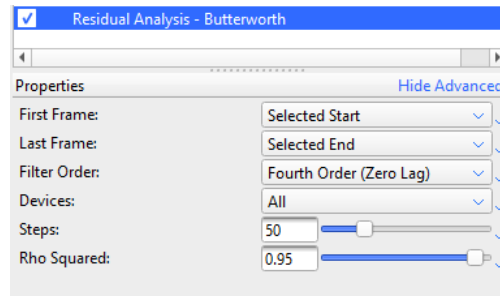


To run a residual analysis for your devices:

1. In the **Pipeline Tools** pane, expand **Fill Gaps & Filter Data** operations and double-click to add **Residual Analysis - Butterworth** to your current pipeline.
2. In the **Properties** pane, select the first and last frames on which to run the operation.
3. In the **Filter Order** field, select whether to apply **Fourth Order**, double-pass (with zero phase lag) or **Second Order**, single pass (with phase lag).
4. Select whether to apply the value to **All** or **Selected** devices.
5. In the **Steps** field, specify the number of frequencies to evaluate.
Default = 50, minimum = 5 and maximum = 200.
6. In the **Rho Squared** field, specify the minimum rho-squared value to accept.
This is used to determine the linear region of the residual-frequency curve via a simple linear regression.

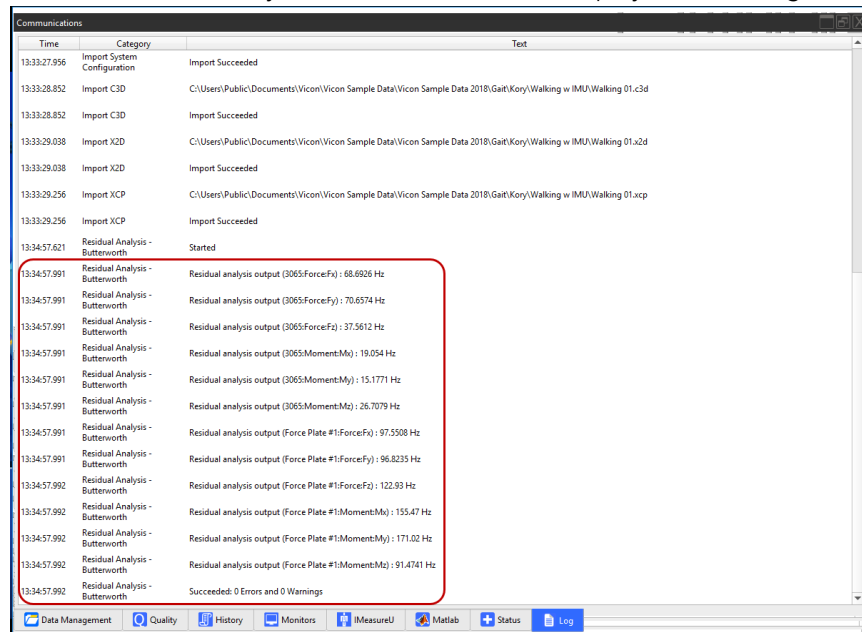
Nexus 2.9 new features and functions

Default = 0.95, minimum = 0 and maximum = 1.



7. Run the pipeline operation to produce the analysis.

The results of the analysis for each channel are displayed in the Log.

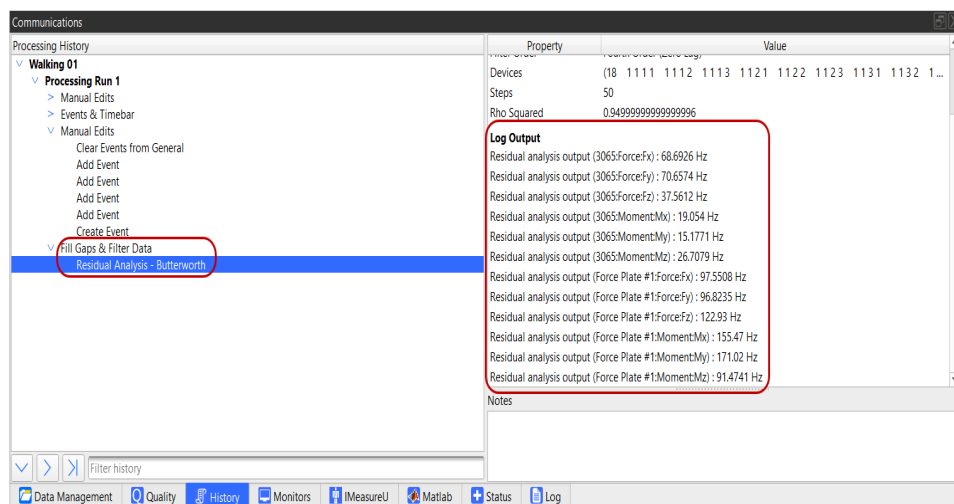


8. You can now decide which channel output to use to apply as the cut-off frequency for the **Filter Analog Data - Butterworth** pipeline operation. The filter cut-off is dependent on the type of device to which it is applied, eg, how noisy a force plate is: this may differ for analog vs. digital devices.

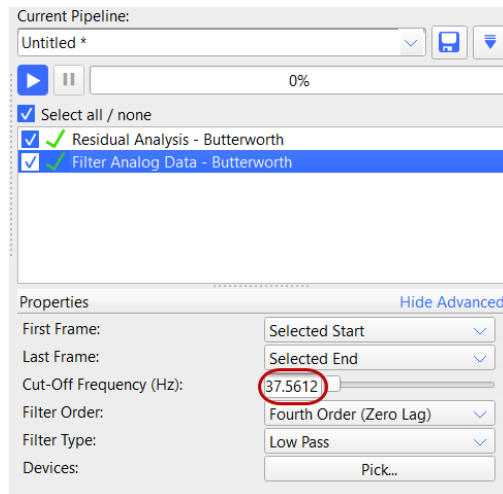
You can use the Residual Analysis as part of a batch process.

Nexus 2.9 new features and functions

Results of the Residual Analysis are saved in the trial **History**.



This example was run on the Vicon Sample Data - 2018, **Kory Gait**. (Note that as residual analysis was required on the selected force plates only, the **Devices** field was changed to **Selected** before the operation was run):

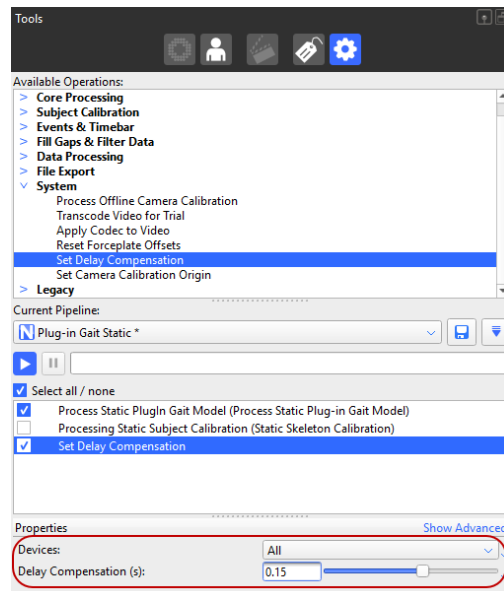


Nexus 2.9 new features and functions

Apply delay compensation as a batch process

Location: **Pipeline Tools** pane > **System** operations

The new **Set Delay Compensation** pipeline operation enables you to save time and effort by applying a delay compensation for your digital devices to multiple trials simultaneously, instead of having to open each trial individually and applying the compensation.



To apply a delay compensation to your devices:

1. In the **Pipeline Tools** pane, expand **System** operations and double-click to add **Set Delay Compensation** to your current pipeline.
2. In the **Properties** pane, in the **Devices** field, select whether to apply the value to **All** or **Selected** devices.
3. In the **Delay Compensation** field, specify the required value in seconds.
4. Run the pipeline operation to apply the value to the specified devices.
The Delay Compensation value is saved and is displayed on the **History** tab.

To apply the same delay compensation value to multiple trials, add the **Set Delay Compensation** operation to a custom pipeline and then use batch processing to run the pipeline on marked trials (see Batch process trials).

Nexus 2.9 new features and functions

Delete all events from one context only

Location: Time bar context menu

or

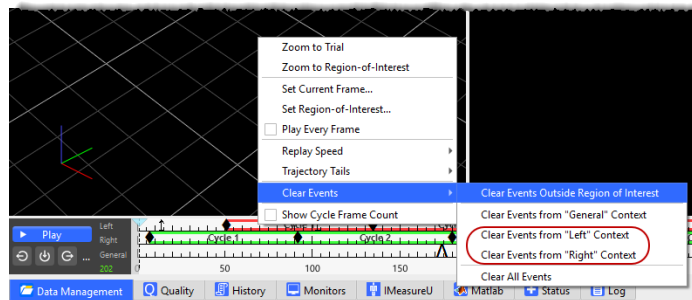
Location: **Pipeline Tools** pane > **Events & timebar** operations > **Delete Timebar Events** operation

You now have the option to clear all events for one context only (ie, for left, right, general and custom events).

You can do this either using the time bar context menu or as a pipeline operation, which enables you to run this as a batch process.

To delete events using the time bar context menu:

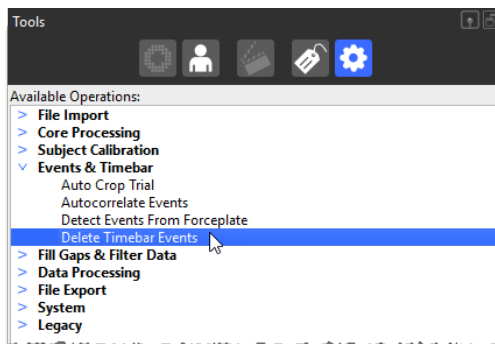
- On the time bar, right-click and then click the required option.



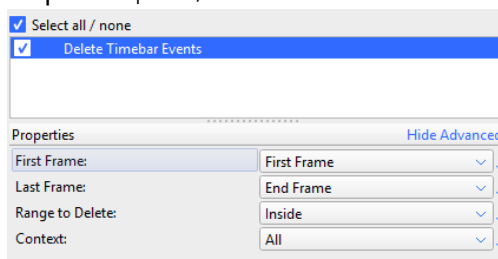
Nexus 2.9 new features and functions

To delete events using the Delete Timebar Events pipeline operation:

1. In the **Pipeline Tools** pane, expand **Events & timebar** operations and double-click on **Delete Timebar Events** to add the operation to your current pipeline.

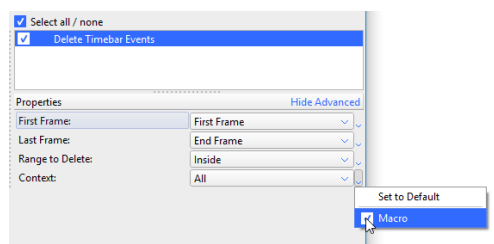


2. Select the operation that you just added to the current pipeline and in the **Properties** pane, click **Show Advanced** and select the appropriate values.



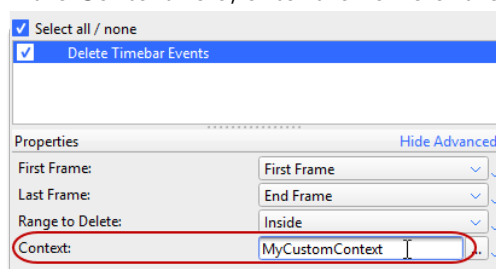
Note that to delete custom events:

- a. Click the downward arrow next to the **Context** field and clear the **Macro** check box:



Nexus 2.9 new features and functions

b. In the Context field, enter the name of the custom event:



3. Run the pipeline.

Nexus 2.9 new features and functions

New API functions for digital device data

Two new functions, `GetDeviceChannelForFrame` and `GetDeviceChannelForFrameGlobal`, enable you to access digital device data that corresponds to optical measurements.

The new functions are available in the the SDK for Python, and MATLAB.

The new functions address the issue that while the existing function `GetDeviceChannelAtFrame` provides the analog frame that contains the requested optical measurement (ie, the frame number in Nexus), for digital devices the analog frame may not align with the optical measurements. The new functions return the analog samples that correspond to the optical frame requested.

Note that these functions are not available in the Datastream.

The following is an example of using `GetDeviceChannelForFrame`:

```
import ViconNexus
vicon = ViconNexus.ViconNexus()
# ... stuff to work out what IDs are available...

# demonstrate that the frame counters are different for the system
# and the forceplate (output results are different)
# demonstrate that frame length is different (different number of
# samples, 16 vs 10)
vicon.GetDeviceChannelAtFrame(10, 1, 1, 100)
# output ([-0.475459, 1.28333, 0.554047, -0.855607, -3.24367,
-2.81851, -1.16626, -0.394893, -2.00863, -3.02354, -2.41265,
-0.732007, -0.266873, -0.487017, -0.627091, 0.381795], True,
1000.0)
vicon.GetDeviceChannelForFrame(10, 1, 1, 100)
# output ([-2.00863, -3.02354, -2.41265, -0.732007, -0.266873,
-0.487017, -0.627091, 0.381795, 1.51932, 1.49286], True, 1000.0)

# demonstrate that the forceplate has an initial sample offset
# (ForFrame initial sample is AtFrame's 11th sample at frame 1)
vicon.GetDeviceChannelAtFrame(10, 1, 1, 1)
# output ([0.18679, 0.174022, 0.191151, 0.301362, 0.0804058,
-0.479919, -1.002, -1.38398, -1.51135, -1.14212, -0.547826,
-0.127377, -0.0933952, -0.106104, -0.190911, -0.428488], True,
```

Nexus 2.9 new features and functions

```
1000.0)
# compare this to the graphed value, initial sample here is the
value at frame 1
vicon.GetDeviceChannelForFrame(10, 1, 1, 1)
# output ([-0.547826, -0.127377, -0.0933952, -0.106104, -0.190911,
-0.428488, -0.649677, -0.551753, -0.666456, -0.713149], True,
1000.0
```

Help on GetDeviceChannelAtFrame:

```
>>> import ViconNexus
>>> ViconNexus = ViconNexus.ViconNexus()
>>> help(ViconNexus.GetDeviceChannelAtFrame)
Help on method GetDeviceChannelAtFrame in module ViconNexus:

GetDeviceChannelAtFrame(self, deviceID, deviceOutputID, channelID, frame) method of ViconNexus.ViconNexus instance
    Retrieve a single frame of data
    from the channel identified by deviceID:deviceOutputID:channelID
    A device can have multiple device outputs and each device output
    can have multiple channels associated with it

    Devices can run at different rates than the trial data.
    Channel data could have multiple samples for each trial frame. All samples for a channel are output.
    Channel data list will be in the format:
    [sample1], [sample2], ... [sampleN]

    Input
    deviceID      = unsigned int, DeviceID of and existing device
    deviceOutputID = unsigned int, DeviceOutputID of the device output you are interested in
    channelID     = unsigned int, ID of the channel
    frame        = integer value, trial frame number as displayed in the application time bar
    Returns
    channelData   = numerical(double) list, component data list for the frame of size samplesPerFrame
    ready         = logical, T/F indication as to whether or not the device output is in the ready state
                  if the device output is not in the ready state, there will not be any valid data
                  associated with this device output component
    rate         = double value, sample rate of the channel data

    Usage Example:
```

Help on GetDeviceChannelForFrame:

```
>>> help(ViconNexus.GetDeviceChannelForFrame)
Help on method GetDeviceChannelForFrame in module ViconNexus:

GetDeviceChannelForFrame(self, deviceID, deviceOutputID, channelID, frame) method of ViconNexus.ViconNexus instance
    Retrieve a single frame of data
    from the channel identified by deviceID:deviceOutputID:channelID
    This function will return data corresponding to the requested optical frame.
    A device can have multiple device outputs and each device output
    can have multiple channels associated with it

    Devices can run at different rates than the trial data.
    Channel data could have multiple samples for each trial frame. All samples for a channel are output.
    Channel data list will be in the format:
    [sample1], [sample2], ... [sampleN]

    Input
    deviceID      = unsigned int, DeviceID of and existing device
    deviceOutputID = unsigned int, DeviceOutputID of the device output you are interested in
    channelID     = unsigned int, ID of the channel
    frame        = integer value, trial frame number as displayed in the application time bar
    Returns
    channelData   = numerical(double) list, component data list for the frame of size samplesPerFrame
    ready         = logical, T/F indication as to whether or not the device output is in the ready state
                  if the device output is not in the ready state, there will not be any valid data
                  associated with this device output component
    rate         = double value, sample rate of the channel data

    Usage Example:
```


Nexus 2.9 new features and functions

New SDK command to identify active subjects

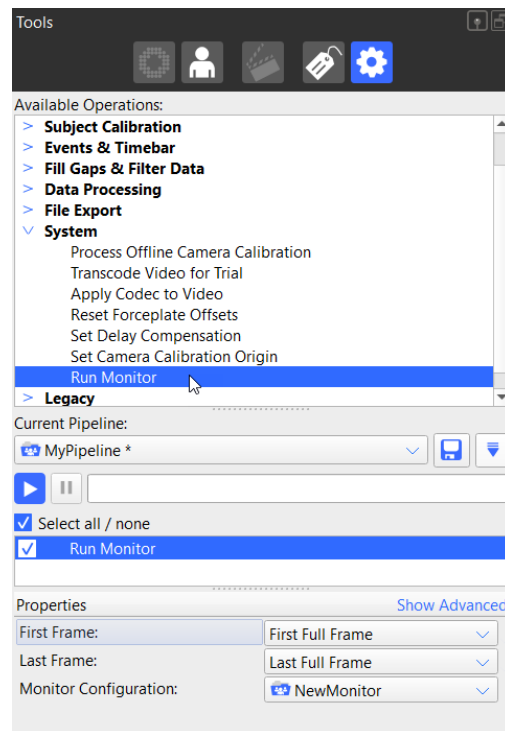
A new SDK command, `GetSubjectInfo`, lets you identify which subjects are active for the current active trial.

The new command is available in the Nexus SDK for both Python and MATLAB.

Nexus 2.9 new features and functions

Ability to run a monitor in a pipeline

Location: Pipeline Tools pane > System operations



To run a monitor as part of a pipeline:

1. Make sure that you have created the monitor you want to use (see Create a monitor in the *Vicon Nexus Reference Guide*). Also ensure Nexus is in Offline mode.
2. In the **Pipelines Tools** pane, expand **System** and then double-click **Run Monitor** to add it to the current pipeline.
3. Select **Run Monitor** and in the **Properties** pane, select the required frames and from the **Monitor Configuration** list, select the monitor you want to run.
4. Run the pipeline.

You can run the pipeline on multiple trials via batch processing.

Nexus 2.9 new features and functions

Improved calibration volume reproducibility

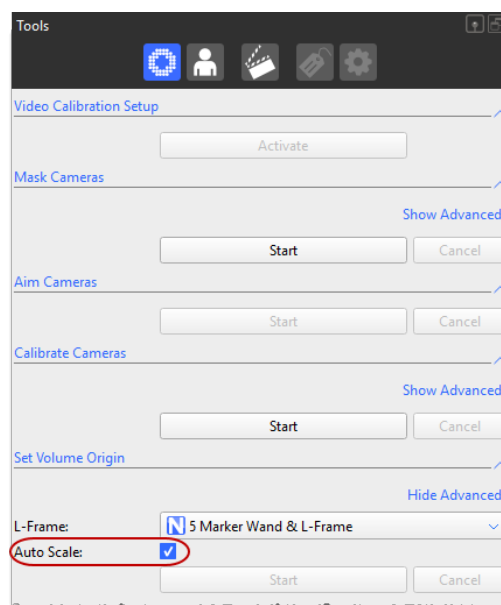
Location: **System Preparation Tools** pane > **Set Volume Origin** section > **Show Advanced** option > **Auto Scale** option

To achieve maximum positional reproducibility of the Vicon coordinate system, you can create a large custom L-Frame object from markers permanently placed around the edge of the volume. You can then use this L-Frame object for subsequent setting of the system origin.

This provides a high degree of precision of the coordinate system across the camera calibration, which is particularly useful in larger volumes.

To help with this, select the new **Auto Scale** option when you set the origin, as described below.

This improves the consistency of the volume size, further improving the positional reproducibility.



Nexus 2.9 new features and functions

Note

The following procedure describes how to create a custom L-frame in Nexus. You can instead create an L-frame object in Tracker and export it for use in Nexus, but remember to first copy it from your Tracker *CalibrationObjects* folder:

`C:\Users\Public\Documents\Vicon\Tracker3.x\CalibrationObjects`

to your Nexus *CalibrationObjects* folder:

`C:\Users\Public\Documents\Vicon\Nexus 2.x\CalibrationObjects`

To perform a camera calibration with rescale:

1. With Nexus in Live mode, mask and calibrate the cameras (see Mask unwanted reflections and Calibrate Vicon cameras in the *Vicon Nexus User Guide*).
2. Using an Active Wand, set the volume origin (see Set the volume origin in the *Vicon Nexus User Guide*).
3. Place the markers that you want to use to create the L-Frame subject around the edges of the volume.
Note that you must use at least four markers that span the whole volume.
4. In the **Capture Tools** pane, click **Start** to capture a short (eg, 5-second) trial.
5. With Nexus in Offline mode, on the **Data Management** tab at the bottom of the Nexus window, load the trial that you just captured.
6. Run the **Reconstruct** pipeline (see Reconstruct and label movement trials in the *Vicon Nexus User Guide*).
7. In the **Subject Preparation Tools** pane, go to the **Create L-Frame Subject** section.
8. In the **Create L-Frame** field, enter a suitable name (eg, My L-Frame), and click **Create**.
9. In the view pane, select the markers that you want to use to create the L-Frame subject.
10. When you have selected all markers, click **Create** again.
11. In the **Subjects Resources** pane, right-click on the subject and then click **Save Subject**.

Nexus 2.9 new features and functions

12. Right-click again on the subject, click **Export to L-Frame List** and click **Yes** when prompted.
13. With Nexus back in Live mode, in the **System Preparation Tools** pane, in the **Set Volume Origin** section, ensure **Show Advanced** is selected.
14. Click on the **L-Frame** menu to select the new L-frame and ensure **Auto Scale** is selected.
This ensures that the marker distances in the new L-frame are used for volume scaling.
15. Click **Start**.
The system scale is adjusted to provide improved positional reproducibility.

Requirements and upgrading

Requirements and upgrading

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

- [Requirements for Nexus 2.9](#), page 33
- [Systems supported for Nexus 2](#), page 35
- [Upgrading Nexus](#), page 36

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/³.)

³ <http://docs.vicon.com/>

Requirements and upgrading

Requirements for Nexus 2.9

Note the following requirements for Nexus 2.9.

- [Operating systems for Nexus 2.9, page 33](#)
- [Basler video cameras and Nexus 2.9, page 34](#)
- [MATLAB and Nexus 2.9, page 34](#)
- [ProCalc and Nexus 2.9, page 34](#)
- [Vicon IMUs and Nexus 2.9, page 34](#)

Operating systems for Nexus 2.9

Nexus 2.9 is supported under the following operating systems:

- **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.
- **Microsoft Windows 7:** Supported and has undergone limited testing.

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

Requirements and upgrading

Basler video cameras and Nexus 2.9

If Basler digital cameras will be connected to Nexus 2.9, ensure you have updated to the Basler Pylon5 SDK and drivers (v5.0.0), which are available from the Vicon website.

If you are using an Intel i340, i350 or i210 network card, when you install the drivers, select the option for **Filter drivers**, not **Performance drivers**.



Important

The Pylon5 driver supports:

- Basler GigE cameras under both Windows 10 and Windows 7.
- Basler FireWire cameras (A600 series) under Windows 7 only.

MATLAB and Nexus 2.9

If you are planning to use MATLAB with Nexus 2.9, ensure that, in addition to installing MATLAB, you install the **.Net Framework version 4.5⁴** or later.

ProCalc and Nexus 2.9

To run ProCalc with Vicon Nexus 2.9, you must install ProCalc 1.2.1 or later.

Vicon IMUs and Nexus 2.9

To connect IMUs in Nexus 2.9, you must update them via the IMeasureU Research app to 1.3 firmware or later.

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

Requirements and upgrading

Systems supported for Nexus 2

Before you install Vicon Nexus 2.9, note the following limitations on supported systems:

- Nexus captures data only from Vicon systems (including Vicon Vero and Vicon Vue, Vicon Vantage, Vicon Bonita, Vicon T-Series, and MX+ and MX cameras and units).
- Nexus 2.9 does not support connection to the Reference Video System (Nexus Slave application).

Requirements and upgrading

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 36](#)
- [Upgrading from earlier versions of Nexus 2, page 37](#)
- [Upgrading from Nexus 1.x, page 38](#)

Note

Although data collected in Nexus 2.9 (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:

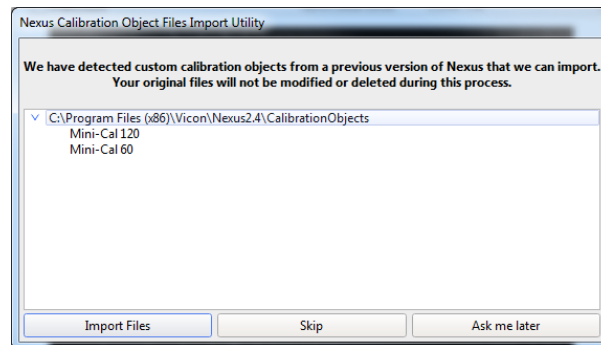
- Data collected in earlier releases of Nexus can be reprocessed in Nexus 2.9 because calibration (.xcp) files that were created in earlier releases are fully compatible with Nexus 2.9. Note that if you load a calibration (.xcp) file that was created in an earlier release of Nexus into Nexus 2.9 and save it, Nexus maintains its compatibility with earlier releases.
- You can use earlier releases of Nexus to view data that was collected in Nexus 2.9 (that is, you can open Nexus 2.9 .c3d files in Nexus 2.7 and earlier).
- However, calibration (.xcp) files that are created in Nexus 2.9 are not backward-compatible, that is, they cannot be read by releases of Nexus earlier than 2.7, and loading will fail if attempted.

Requirements and upgrading

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 2.9 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 2.9 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.

Requirements and upgrading

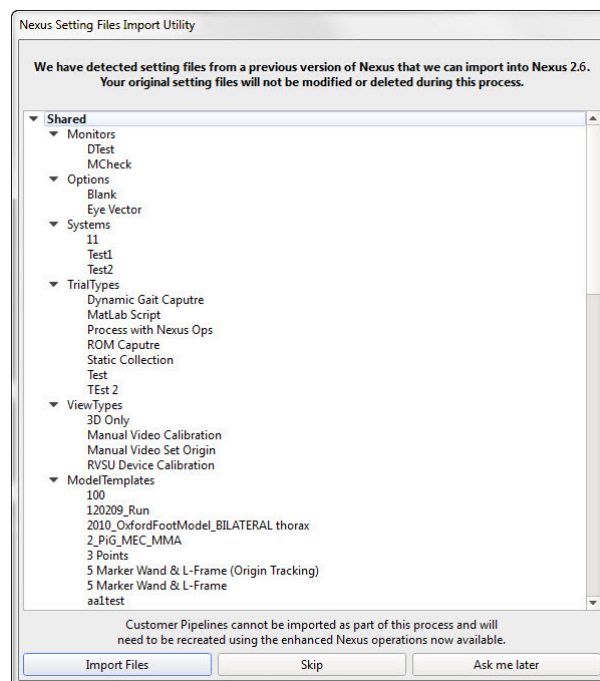
Upgrading from Nexus 1.x

Note

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

Nexus 2.9 installs into its own folder, called *Nexus2.9*. If you already have Nexus 1.x installed, it will remain installed alongside the new Nexus installation.

On installation, Nexus 2.9 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 2.9.



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

Requirements and upgrading



Important

Custom pipelines are not copied from earlier versions of Nexus, so if you want to use your old pipelines, copy them from the following Vicon product installation folder (by default in *C:\Program Files (x86)\Vicon* or *C:\Program Files\Vicon*):

\Nexus\WorkstationPlugins

and paste them to the following location in the Vicon production installation folder (by default in *C:\Program Files (x86)\Vicon* or *C:\Program Files\Vicon*):

\Nexus2.#\LegacyPlugins

They will then be available in the **Legacy** pipeline operations in Nexus 2.9.

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

Requirements and upgrading

Regulatory information

For Vicon Nexus regulatory details, see Vicon Nexus regulatory information in the Nexus documentation area of the Vicon website (docs.vicon.com⁵).

⁵ <http://docs.vicon.com/>

Addressed issues

Addressed issues

Issues addressed in Vicon Nexus 2.9.3

The following general issues have been addressed in Vicon Nexus 2.9.3:

- CGM2 has been updated to version 3.2.13.
- CGM2 global angle outputs have been corrected.
- Trials that are located in paths with non-ASCII characters now process correctly.

Issues addressed in Vicon Nexus 2.9.2

The following general issues have been addressed in Vicon Nexus 2.9.2:

- The T-Series indicator light now flashes during calibration to indicate progress.
- Video calibration activates when you click Calibrate.
- When in event ID mode, selecting the next event does not deselect the video display.

The following issues in Data Management have been addressed in Vicon Nexus 2.9.2:

- Data Management no longer requires a top level to use Nexus.
- Subject files are no longer renamed when renaming the parent session, even if they are not associated.
- Clicking on the column header sorts trial names.
- Double-clicking the movie icon file in ProEclipse imports all AVIs, not just the one in a placeholder when using Polygon.
- Primary and secondary sorting has been improved for the force plate columns.
- Columns can be sorted alphabetically and chronologically.
- ProEclipse recognizes capitalized C3D file extensions.

Addressed issues

Issues addressed in Vicon Nexus 2.9.

The following issues are among the total that were addressed in Vicon Nexus 2.9:

- Nexus now runs the Butterworth Filter on a trajectory with large gaps.
- External changes to a VSK are no longer reverted if the Refresh Subject > From VSK option is used after a SaveTrial operation.
- If Assume Foot Flat selected (short trials), foot segment is now correctly created.
- Nexus buffer efficiency has improved.
- Contexts are now refreshed within the time bar when moving between trials.
- Advanced Gait Workflow (AGW) Combined Processing operations parameters are now the same as the default reconstruction and labeling parameters.
- You can now load trials with the same name but from different patient sessions into Quick Reports.
- Searching for modeled markers using MATLAB or Python no longer generates a virtual marker if the marker position has changed.
- Reading of XML marker node errors has been updated.
- Events are now correctly identified when using a Boolean AND whilst scrolling through a trial.
- Repeatedly running auto-initialize subject does not shrink the labeling skeleton.
- AGW Static Trial type opens only if the AGW Lower Body workflow is selected.
- Nexus 2.8 Non-zeroed force plates now correctly assign kinetic gait cycles to the time bar.
- Plug-in Gait ground reaction force outputs now display the correct force plate units.
- Adding a segment to Plug-in Gait does not remove the existing parameterization.

Known issues

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*.)

Description	Workaround
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.	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.
The Nexus Quick Reports window does not have a Close button.	To close the window, press F4.
A crash can occur if any Noraxon EMG error messages are not dismissed before shutting down Nexus.	Dismiss all Noraxon EMG error messages before exiting Nexus.
When run via the Run Python operation, the Load Trial command in the Python SDK is not able to load a trial.	Run the Python script from IDE or command line.
Some of the latest versions of the FFDSHOW video encoder fail to work properly.	Vicon recommends the use of <code>ffdshow_rev3562_20100907</code> .
Running a legacy VPI operation removes non-standard model outputs.	Use the equivalent native operations.

Known issues

Description	Workaround
AMTI digital device plugins missing required dependencies.	For AMTI Digital Device V1_00.vdd, download Microsoft Visual C++ 2008 SP1 Redistributable Package (x86) from https://www.microsoft.com/en-gb/download/details.aspx?id=5582 For AMTI Digital Device V1_10.vdd, download Microsoft Visual C++ 2010 Redistributable Package (x86) from https://www.microsoft.com/en-gb/download/details.aspx?id=5555
Basler cameras do not work under Windows 10 with Pylon drivers earlier than Pylon5.	If Basler cameras will be connected to Nexus 2.5 or later, update to the Basler Pylon5 SDK and drivers (v5.0.0), which are available from the Vicon website.
Device drivers for Cometa/Wave depend on your Windows version.	For Windows 10 device drivers, contact Cometa. For Windows 7 device drivers, contact Vicon Support.
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).	To use Preview mode with Vantage cameras, select a system frame rate below 80Hz.
When you right-click the Devices node on the System Resources pane, Noraxon is not available in the Add Digital Device menu.	When you install the Noraxon plug-in (ViconInterfaceForNoraxon - v1.0.2.1.msi), change the installation path to C:\Users\Public\Documents\Vicon\Nexus2.x\DigitalDevices\
Noraxon Telymyo DTS device halts camera and analog data delivery when Noraxon devices are housed/not charged.	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.
Unable to run legacy Static Gait Model under Japanese Windows. Log entry reads: No parameter file found	The legacy Plug in Gait model does not support international character sets. Instead of using the legacy Plug-in Gait model, use the native Nexus 2 replacement gait model (found under Data Processing pipeline operations: Process Static Plug-in Gait Model and Process Dynamic Plug-in Gait Model).

Known issues

Description	Workaround
Export c3d at the end of a pipeline does not clear the trial and leaves the trial with a dirty flag (*).	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.
Video capture duration can be limited directly after deletion from SSD storage.	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.
Spaces in variable names can cause BodyLanguage to fail.	When creating subject parameters for use in BodyLanguage modeling, use underscores instead of spaces.
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.	NEVER create Eclipse databases in locations that require administrator privileges to read or write.
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).	Avoid starting captures soon after changing the hardware setup.
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.