

Metrics Processing

The objective of this tutorial is **to provide an overview of metrics processing in Visual3D**. Most metric processing functionality is available through the [Command Pipeline](#), so it is advisable to complete [that tutorial](#) first.

Metrics are discrete quantitative values of signals such as maximum value, median value, value at a specified frame. In other words, metrics do not have a time-base like the other signals. These metrics are a distinct [type](#) of data in the Visual3D [data tree](#).

Metrics also refer to combinations of other metric values. For example, the metric describing the range of motion of a joint angle during a movement would be the difference between the metric defining the maximum value of the joint angle and the minimum value of the joint angle. The metric describing the time for a step cycle would be the time from Right Heel Strike to Right Heel Strike.

Data

The [ZIP file](#) can be downloaded to support working through this tutorial. This is the same data as is used for the [command pipeline tutorial](#) and it contains:

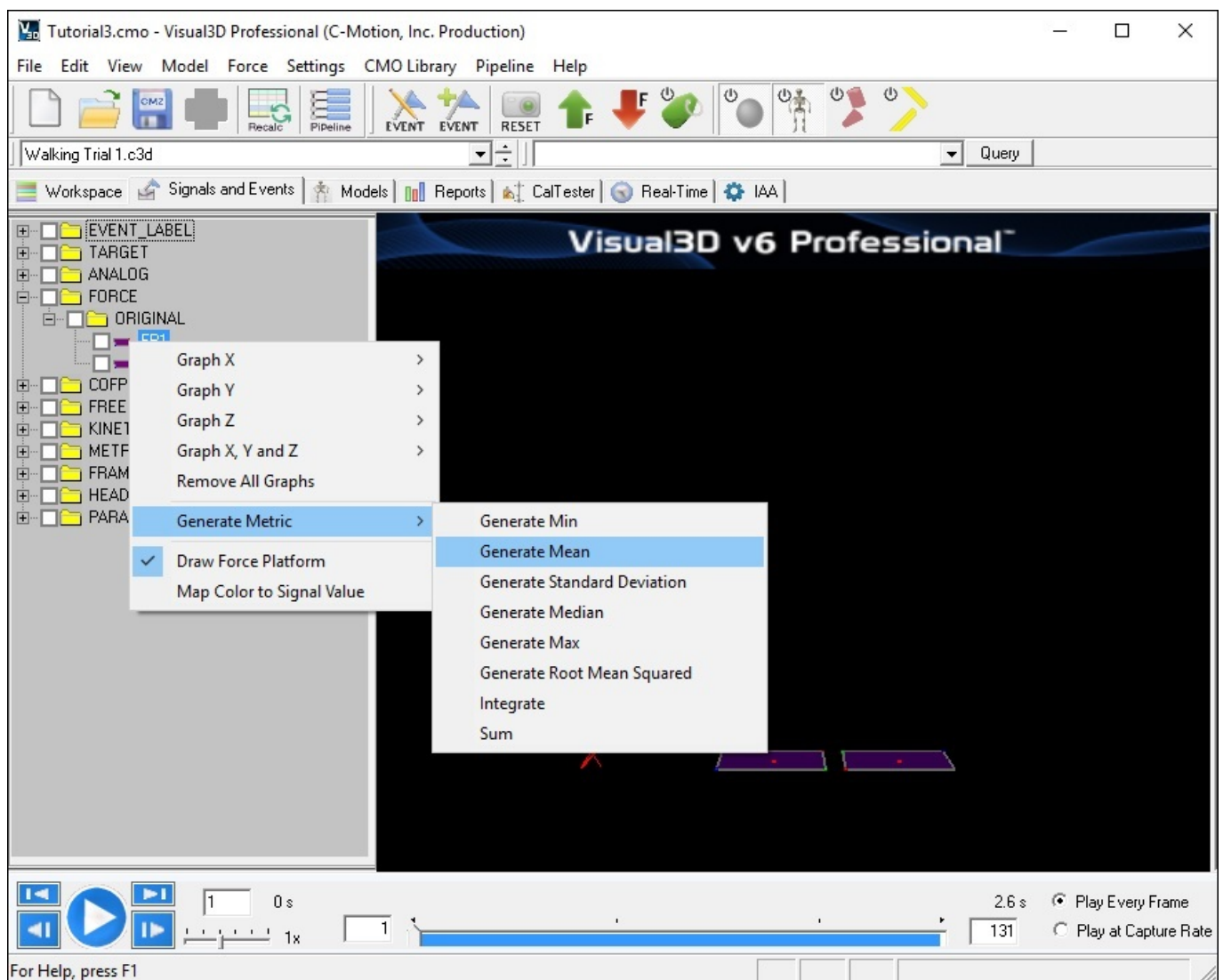
- **Tutorial3_Start.cmz**: The starting file for this tutorial, developed from Visualizing Data previous tutorial,
- **Tutorial3_Final.cmz**: The motion file with applied pipeline commands from examples in this tutorial.
- **Tutorial3_CommandPipeline_Script.v3s**: Pipeline script with preset commands which can be loaded in through the workshop dialog box.
- **Walking Trial 1.c3d**: Uncorrected movement trial from start of Tutorial 2.
- **Corrected Walking Trial 1.c3d**: Corrected movement trial from Tutorial 2

Preparation

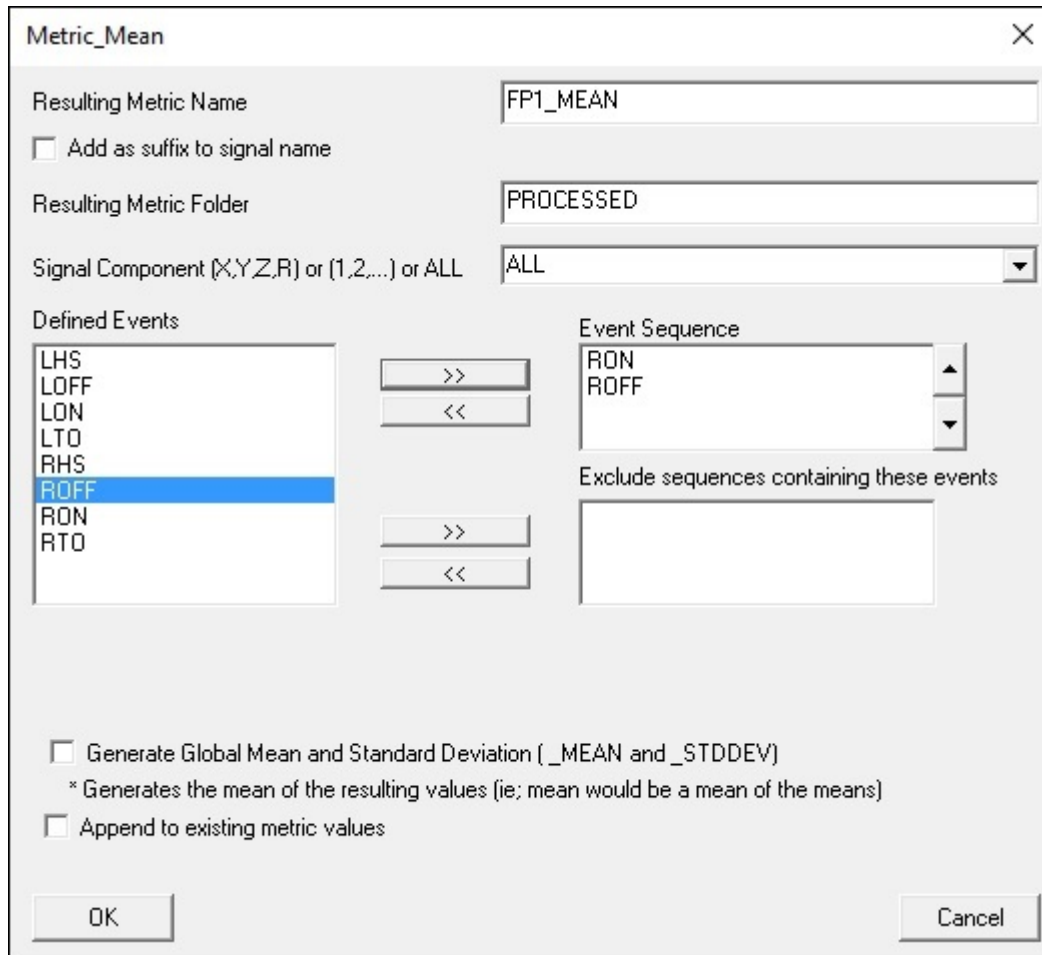
- Open the file Tutorial3.cmo
- Click on the Signal and Event Processing Tab to visualize the animation of the model based on the movement data and the model that was applied to it. If the animation doesn't appear in the 3D Animation viewer, check the active file combo box on the tool bar. It should read 'Walking Trial 1.c3d' rather than ALL-FILES.

Create mean FP1 signal during right stance

- Create the mean for the FP1 signal between the RON and ROFF Events
- Expand the FORCE folder in the Data Tree.
- Select the FP1 signal with the Right Mouse Button
- Select the Generate Mean in the Generate Metric Selection



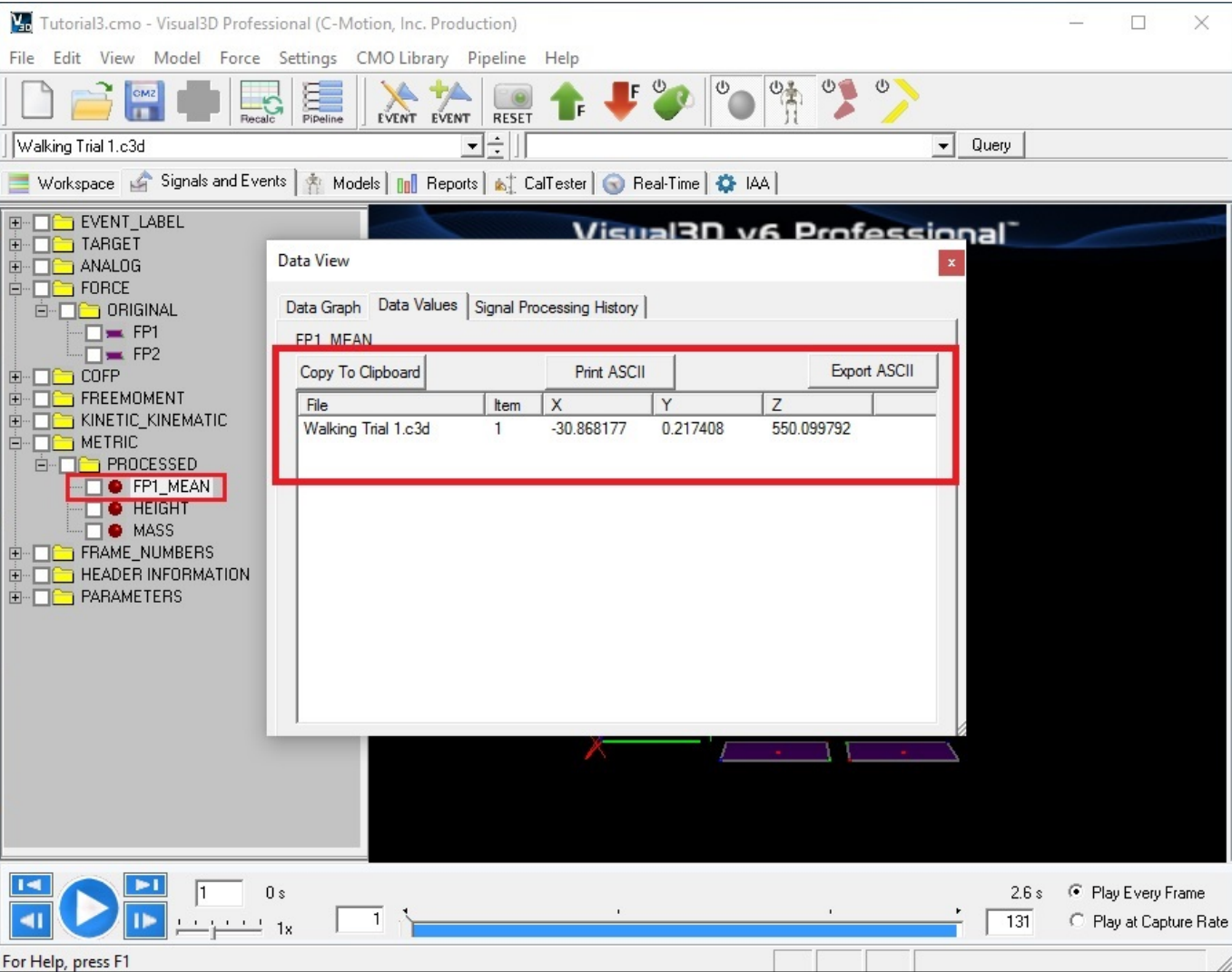
- Fill in the edit boxes as shown below



The image shows a 'Metric_Mean' dialog box with the following fields and options:

- Resulting Metric Name:** A text box containing 'FP1_MEAN'.
- Add as suffix to signal name:** An unchecked checkbox.
- Resulting Metric Folder:** A text box containing 'PROCESSED'.
- Signal Component (X,Y,Z,R) or (1,2,...) or ALL:** A dropdown menu set to 'ALL'.
- Defined Events:** A list box containing 'LHS', 'LOFF', 'LON', 'LTO', 'RHS', 'ROFF' (highlighted), 'RON', and 'RTO'.
- Event Sequence:** A list box containing 'RON' and 'ROFF'.
- Exclude sequences containing these events:** An empty list box.
- Navigation buttons:** '>>' and '<<' buttons between the 'Defined Events' and 'Event Sequence' boxes, and another set of '>>' and '<<' buttons between the 'Event Sequence' and 'Exclude sequences' boxes.
- Generate Global Mean and Standard Deviation (_MEAN and _STDDEV):** An unchecked checkbox with a note: '* Generates the mean of the resulting values (ie; mean would be a mean of the means)'. This option is disabled.
- Append to existing metric values:** An unchecked checkbox.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

- The resulting metric value contains the mean for the FP1 signal between the RON and ROFF Events



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