HyperWorks Tip/Trick 501

Applications:

HyperView, HyperGraph, MotionView

Application version:

5.1 and greater

Computer hardware:

All supported

Computer operating systems:

All supported Windows and UNIX

Categories: Subcategories

Post-processing:

Contour or animate results, XY Plot, Video

Topic:

Time synchronization in MotionView, HyperView and HyperGraph for animation, XY plot and video windows

Topic details:

Time synchronization of FE or MBD results animation, XY plot data and video data helps engineers compare computer-simulated data to real test data.

In MotionView (MV), HyperView (HV) and HyperGraph (HG), animations in the ***animation***, ***XY plot*** and ***video*** windows can be time synchronized. To set this up, in the ***Animation Controls*** panel click ***Time Scales…*** to obtain the ***Time Scales*** dialog. This dialog is pictured in Figure 1 below.

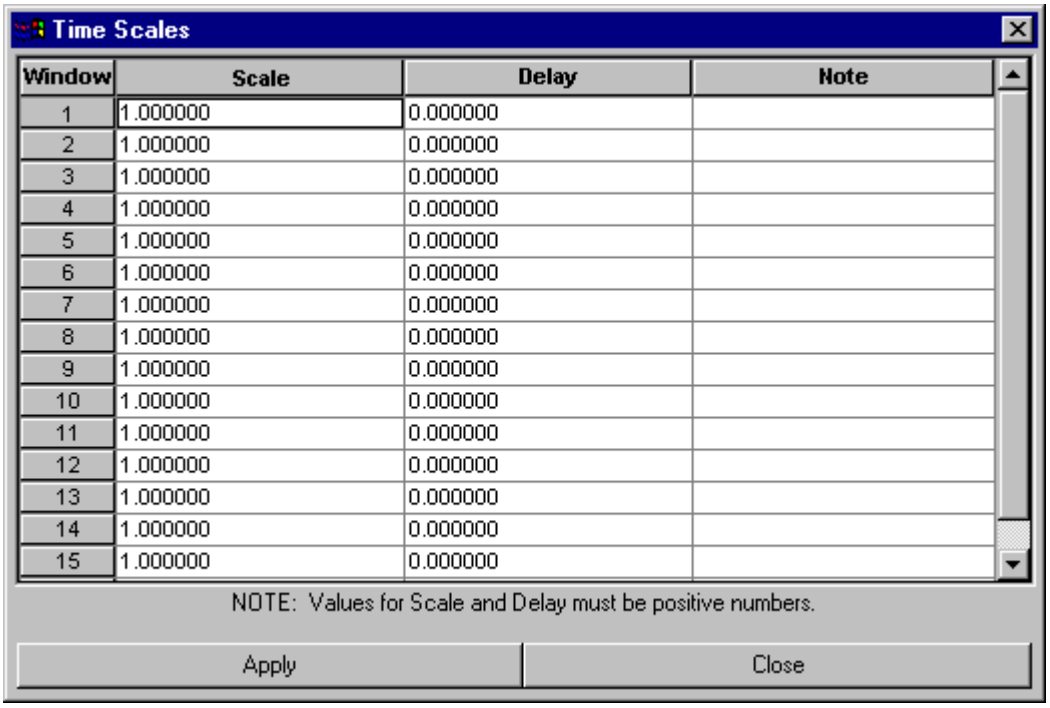

Figure 1 - Time Scales dialog

The ***Time Scales*** dialog contains a ***Scale*** and ***Delay*** field for each window on a page. Sixteen windows are listed in the dialog since sixteen windows can exist on one page. The ***Scale*** field multiplies the total run time of the window's animation by the specified amount. The animation is then scaled to run within the new time boundaries. For example, an animation that runs from 0 to 10 seconds scaled by a factor of 2 runs from 0 to 20 seconds.

When synchronizing windows, specify the appropriate ***Scale*** values for all windows on the page first. Then specify the ***Delay*** values. How to determine the appropriate values for each is described below.

Determine the *Scale* value for each window on a page

The time unit needs to be consistent among all windows on the page. If the time unit for an XY plot window is in seconds and the time unit for a video window is in milliseconds, then the XY plot window needs to be scaled by 1000. Specify 1000 in the XY plot window's ***Scale*** field.

The time unit for FE and MBD animations and XY plot data can be obtained from the analysis results while the time unit for video data can be derived from the frame rate at which the video was recorded.

Frame rate is the number of frames recorded during one second. Calculate the time for one frame to animate from the frame rate. This interval is used in the ***Scales*** field. For example, a video was recorded at a frame rate of 400 frames per second or 0.4 frames per millisecond. The time for one frame to animate is 2.5 milliseconds (1.0 frame / 0.4 frame per millisecond = 2.5 milliseconds). So, if the animation and XY plot data are in milliseconds, then specify 2.5 in the ***Scale*** field for the video window.

Determine the *Delay* value

The ***Delay*** field postpones the start of a window's animation for the specified duration. For example, the first 10 frames of the video data are pre-event. Thus, the animations in other windows on the page should be delayed by the time it takes to play the first 10 frames of that video. If it takes one frame 2.5

milliseconds to animate, then specify 25 (2.5 milliseconds * 10 pre-event frames) in the ***Delay*** field for the other windows. When the page reaches the value specified in the ***Delay*** field, animation starts in the delayed windows.

Upon setting the ***Scale*** and ***Delay*** values, the animations in the windows on the page should be synchronized.

On a related note, AVI files do not contain time information. An AVI file can be read into MV, HV and HG and the ***Time Scales…*** dialog can be used to synchronize its animation with other windows. MV, HV and HG automatically assigns a rate of one frame per second to AVI animations. Another option for specifying time information for an AVI animation is to use the HyperWorks AMF Builder. You specify a frame time interval and during the AMF Builder conversion process it is added to the outputted Altair Movie Format (AMF) file. Upon reading an AMF file into MV, HV or HG, it is automatically scaled with the other windows on the page. For more information on AMF Builder, refer to HyperWorks on-line help.

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Keywords:

HyperView, HyperGraph, MotionView, synchronize, animation, video, plot, scale, delay, time