

## Creating “Living” Diagrams with Playback Function for PowerPoint®

As of ArtemiS 10 resp. NoiseBook 10, the “Copy Metafile” function is available in an extended version: If desired, the user can copy diagrams to the clipboard and paste them into PowerPoint® in a way that preserves interactive diagram features, such as zooming and the magnifying glass, so they can still be used during the presentation. However, PowerPoint® is usually unable to display the playback cursor used in ArtemiS (with ATP 01) or NoiseBook. Nevertheless, there is a way to create a visible playback cursor.<sup>1</sup> In order to do this, it is necessary to integrate a suitable sound file along with a short VBA code into the PowerPoint presentation.

This Application Note explains how to create such an interactive diagram including a playback cursor by using ArtemiS. The creation with NoiseBook is done accordingly.

### Preparations in ArtemiS

First the desired time-dependent analysis of a time domain signal must be calculated in ArtemiS and displayed, for example in a Data Viewer window. Once the desired diagram is available, the Properties dialog of the “Copy diagram/metafile” function can be opened with the keyboard shortcut [Ctrl]+[Shift]+[F] (see figure 1). Instead of the shortcut, this window can also be opened via the menu command “Edit” -> “Copy diagram/metafile (Properties)”.

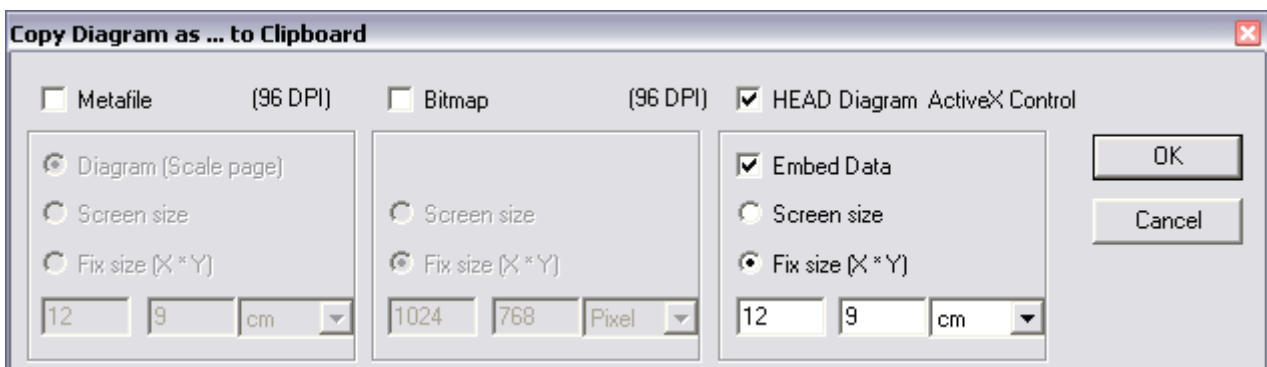


Figure 1: Properties dialog of the “Copy diagram/metafile” command

In this dialog you can specify how the diagram is to be copied to the clipboard. Three options are available. Besides “Metafile” and “Bitmap”, the option “HEAD Diagram ActiveX Control” can be selected. This function is required for exporting interactive diagrams.

As soon as the “HEAD Diagram ActiveX Control” function is activated, additional configuration options become available:

<sup>1</sup> With certain restrictions – see section “Notes” at the end.

- “Embed Data”: If this option is selected, the analysis data are treated as part of the object and are thus embedded into the diagram, i.e. there is no reference to an external file, and the data need not be carried along separately if the diagram is moved to another place.
- “Screen Size”: When copying the diagram, the diagram size currently shown on the screen is applied.
- “Fix size”: If this option is used, the desired diagram size can be specified in pixels, inches or centimeters. (Note that the actual size displayed in the presentation is subject to additional factors in PowerPoint®, which cannot be controlled by ArtemiS. Therefore it may be necessary to adjust the final size of the diagram manually in PowerPoint®).

When all settings have been configured as desired, they can be saved for future diagram exports with the “OK” button. Clicking this button also copies the current active diagram to the clipboard. If additional diagrams are to be exported with the same settings, you can use the keyboard shortcut [Ctrl]+[F] or the “Copy Metafile/Diagram” command in the “Edit” menu. In the next step, the copied diagram is pasted from the clipboard into the desired position in the PowerPoint® presentation. This can be done with the keyboard shortcut [Ctrl]+[V] or the “Paste” command in the “Edit” menu).

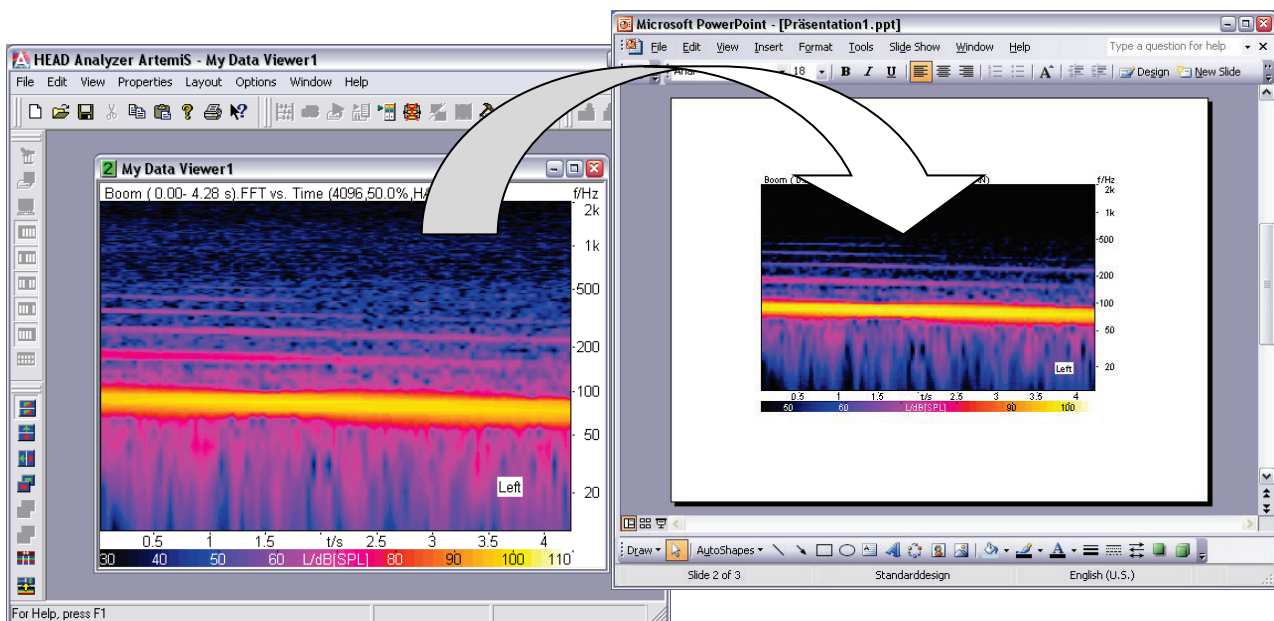


Figure 2: Pasting the copied diagram into a PowerPoint® presentation

To allow the file to be played back in PowerPoint®, it is necessary to create an additional sound file that is supported by PowerPoint®. Such a file can be saved, for example, with the Wave Export function. If several signals are exported, it is important to observe the appropriate signal range, so the volumes of the signals correlate to each other when being played in PowerPoint®. The various configuration options for the Wave Export function of ArtemiS are explained in a separate Application Note.<sup>2</sup>

<sup>2</sup> The Application Note “Wave Export”, as well as many other Application Notes covering various subjects, is available for download in the Download Center of the HEAD acoustics website (<http://www.head-acoustics.com>).

### Embedding the Exported Wave File in the PowerPoint® Presentation

To link the playback of the file to a diagram already pasted into PowerPoint®, the following steps are required:

- To play the sound file, PowerPoint® needs to execute a macro. This is only possible if the security settings of your PowerPoint® allow the execution of macros. Under “Tools” -> “Macro” -> “Security”, select the setting “Medium” or “Low”.
- Now use the “Object” command in the “Insert” menu to open a selection box, where you select the “Windows Media Player” for the playback of the exported wave file. The Media Player window is then shown on your PowerPoint® slide and can be resized and positioned as desired (e.g. below the diagram, see figure 3).

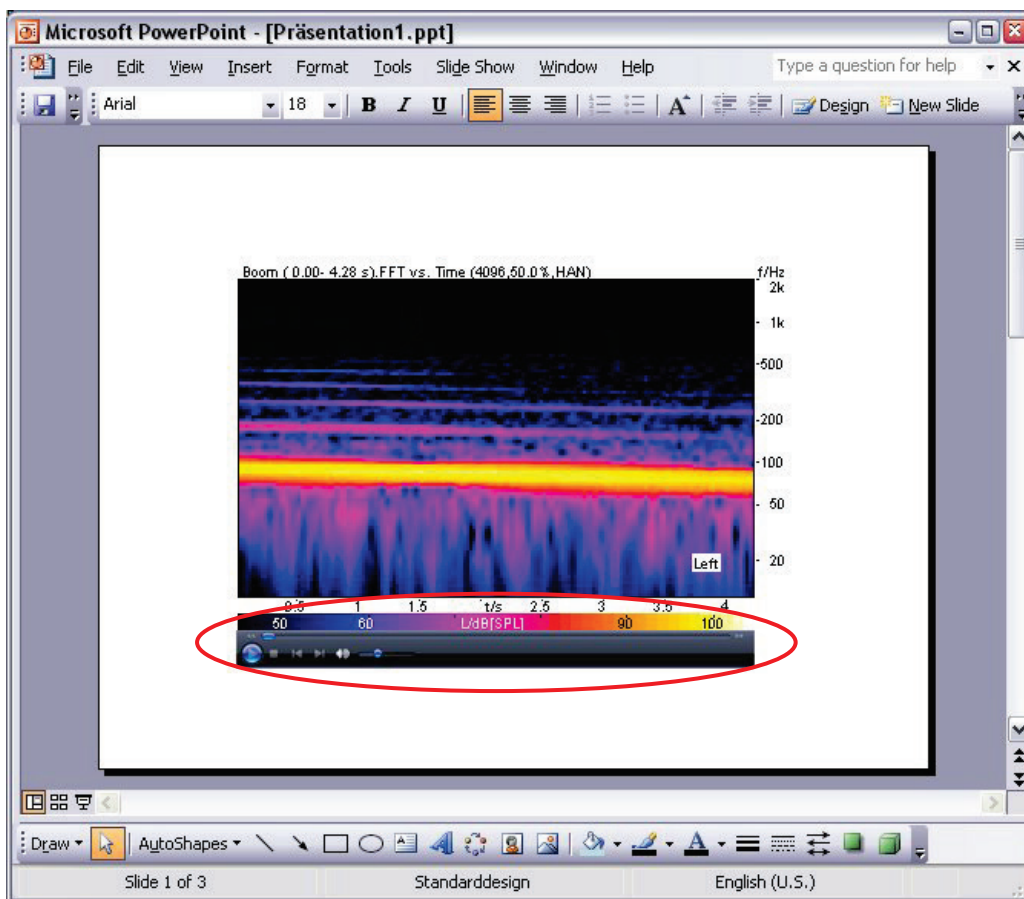


Figure 3: PowerPoint® slide with interactive diagram and Windows Media Player

- Now open the “Properties” dialog of the Windows Media Player via the context menu (right mouse button).
- In the “URL” field, enter the path and file name of the wave file corresponding to the diagram. You can enter the complete (absolute) path or a path relative to the location of the PowerPoint® file. Using a relative path has the advantage that the link to the wave file will still work if the presentation is started on a different computer, provided that the wave file is transferred along with the PPT file and the path of the wave file relative to the PPT file remains the same on the new computer. A relative path is specified by the prefix “.\”.

- Examples:        absolute path “E:\Soundfiles\Sound1.wav”  
                      relative path “.\Sound1.wav” (the wave file referenced this way must reside  
                      in the same folder as the PowerPoint® file)
- In the next step, you need to adapt the VBA code of the Windows Media Player in order to display a playback cursor in the diagram when the wave file is played. The existing VBA code is displayed as soon as you double-click on the pasted Windows Media Player window with the left mouse button (see figure 4).

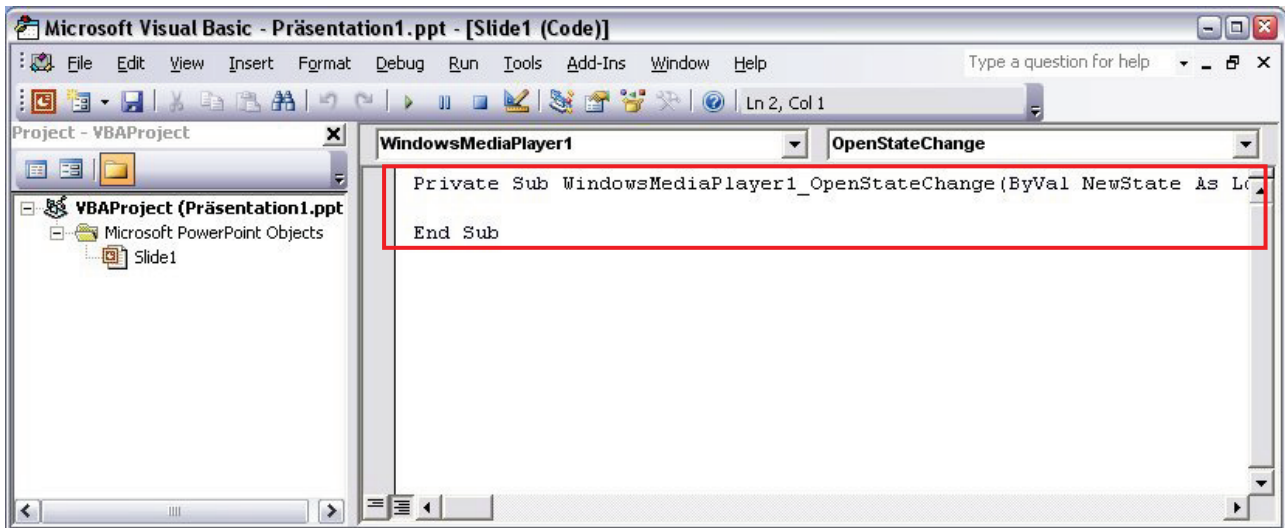



Figure 4: VBA code of the Windows Media Player

Now delete the two default code lines (highlighted in figure 4) and replace them with the code shown below (see figure 5). This code activates the playback cursor in the diagram as soon as the playback is started in the Windows Media Player.

The correction value “BufferDelay” specified in the code is set to 0.33 seconds in this example. This value is used to synchronize the playback cursor with the sound playback. You might have to change this value, as it depends on the sound card used. Furthermore, the “StartOfMark” value needs to be adapted if the exported time domain signal does not start at 0.0 seconds.

- Then quit the script editor by clicking on the  button.

After proceeding as described above, you can now start your presentation with the interactive diagram. Once the slide containing the diagram appears on the screen, the playback of the wave file is started automatically and the playback position is indicated by the playback cursor.

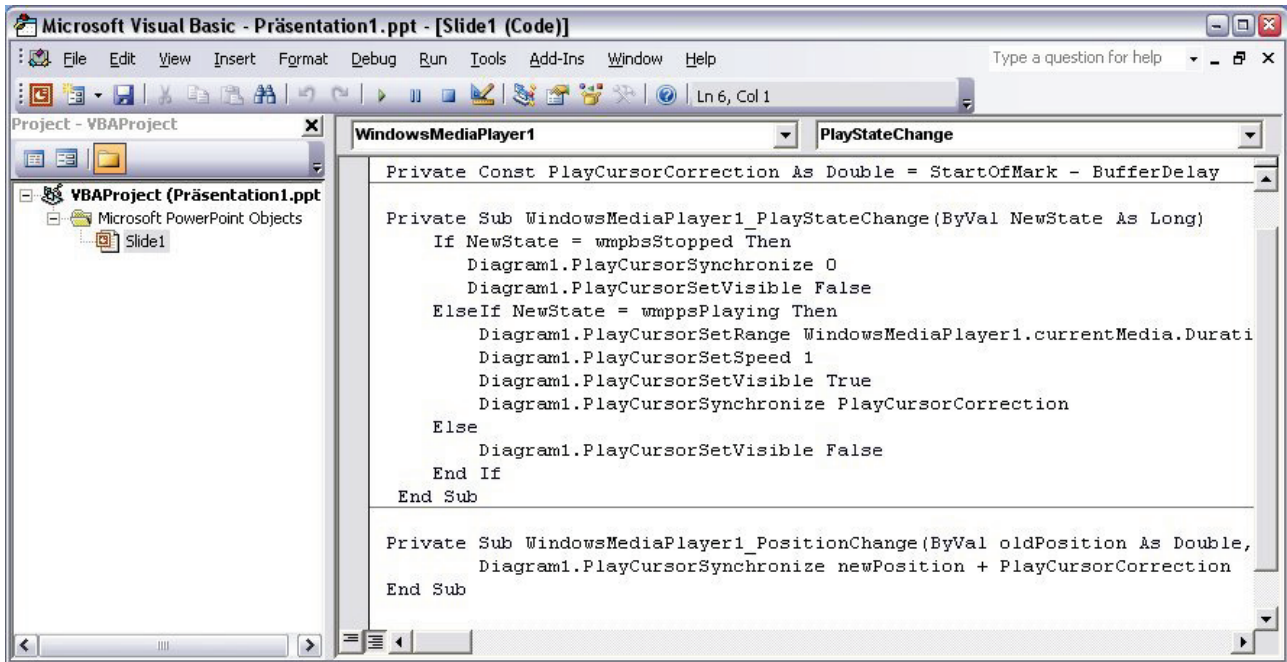


Figure 5: Modified VBA code for the Windows Media Player

```
Private Const StartOfMark As Double = 0#
Private Const BufferDelay As Double = 0.33
Private Const PlayCursorCorrection As Double = StartOfMark - BufferDelay

Private Sub WindowsMediaPlayer1_PlayStateChange(ByVal NewState As Long)
    If NewState = wmpbsStopped Then
        Diagram1.PlayCursorSynchronize 0
        Diagram1.PlayCursorSetVisible False
    ElseIf NewState = wmppsPlaying Then
        Diagram1.PlayCursorSetRange WindowsMediaPlayer1.currentMedia.Duration
            + PlayCursorCorrection, PlayCursorCorrection
        Diagram1.PlayCursorSetSpeed 1
        Diagram1.PlayCursorSetVisible True
        Diagram1.PlayCursorSynchronize PlayCursorCorrection
    Else
        Diagram1.PlayCursorSetVisible False
    End If
End Sub

Private Sub WindowsMediaPlayer1_PositionChange(ByVal oldPosition As
        Double, ByVal newPosition As Double)
    Diagram1.PlayCursorSynchronize newPosition + PlayCursorCorrection
End Sub
```

## Notes

- Since this type of export stores the analysis data in the document along with the diagram, the size of the PowerPoint® file can grow significantly. To reduce the file size, activate only one channel (if possible) when calculating the diagram in ArtemiS, or use the “Split channels” mode. That way, the data set only contains results of the displayed channel. General-

ly, the results of 2D analysis functions (e.g. level vs. time) require a lot less memory than those of 3D analyses. Furthermore you can save additional storage space by exporting an MP3 file from ArtemiS instead of the wave file and embed it in the PowerPoint® file in the same way as described above.

- In case you don't need interactive control of a diagram any longer, you can disable it and turn the interactive diagram into an ordinary image file. To do so, use the keyboard shortcut [Ctrl]+[X] to cut the diagram out of the slide and then use the "Paste Special" command in the "Edit" menu to insert the diagram again as an image (e.g. Windows metafile) in the desired position.
- If you copy a PowerPoint® file including an interactive diagram to another computer, the interactive diagram will only be displayed correctly in PowerPoint® if ArtemiS 10 or NoiseBook 10 is installed on this other computer as well. However, a PowerPoint® file with an interactive diagram can also be used on computers without ArtemiS or NoiseBook. In this case, you need to install the latest version of the *HEAD Explorer Extension*. This software can be used without a key file and dongle.<sup>3</sup> When copying the PowerPoint® file to another computer, make sure that the corresponding sound file is copied as well and, if required, modify the path to the sound file in the Properties dialog of the Windows Media Player object.
- In order to use the interactive diagrams in Power Point® according to description, the file has to be saved in .ppt format and not as .pptx file. In addition to that, the security settings in PowerPoint® should allow for the usage of ActiveX objects.
- The "BufferDelay" correction value mentioned above depends on the sound card used. If the PowerPoint® file is copied to another computer with a different sound card, it may be necessary to adapt this value. Also, note that the buffer delay causes the playback cursor to disappear before the end of the file. For example, if the delay is set to 0.33 seconds, the last 0.33 seconds of the file cannot be visualized with the playback cursor in the diagram.

Do you have questions for the author? Contact us at [imke.hauswirth@head-acoustics.de](mailto:imke.hauswirth@head-acoustics.de). We are looking forward to your feedback!

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<sup>3</sup> Please contact us if you wish to use the *HEAD Explorer Extension*. Your HEAD acoustics representative will gladly provide it to you.