TECHNOTE:
Customizing Apple Media Tool 2.0 & 2.1 Scroll Bars and Movie Controllers

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Apple Media Tool (AMT) versions 2.0 and 2.1 come with three styles of scroll bars and three styles of movie controllers built-in. This Technote describes how to customize and add new scroll bars or movie controllers to AMT 2.0, and to titles created with AMT 2.0, as well as titles created with Apple Media Tool Programming Environment (AMTPE) 2.0. This technote still applies to AMT/PE 2.1, with the changes described in the following sections.

Overview

In the Apple Media Tool, vertical and horizontal scrollbars can be added to picture media, vertical scrollbars can be added to text media, and (horizontal) movie controllers can be added to QuickTime media. (Since the various controllers share much of the same behavior, the rest of this Note uses the term *scroller* for movie controllers and horizontal and vertical scroll bars).

Developers often will want to add a custom scroller to their title. Adding a custom scroller to an AMT 1.2 title is documented in Appendix A of the *Apple Media Tool Programming Environment User's Guide* .

For AMT 2.0 (and greater) titles, the instructions to add a scroller as described in Appendix A of the *Apple Media Tool Programming Environment User's Guide* have changed (though all the information describing scroller graphic images and scroller parts is still valid). For example, the `'KVSD'`, `'KHSD'` and `'KHCD'` resources are no longer created for each scroller. Because of the changes made to AMT 2.0, there are new ways to add a scroller. This Note describes new techniques for adding scrollers to AMT 2.0 titles.

Defining A Scroller

Each scroller is defined by:

■ A graphic image (a 'PICT' resource) showing normal and highlighted versions of the scroller.
■ Formatting information describing the separation point between the normal and highlighted graphic images and the location of all the scroller's parts.
■ A graphic (`` `PICT` `` resource) in the AMT Runtime Setup dialog showing the scroller's normal state.

The following is a description of each of these scrollers:

Scroller Graphic Image

Each scroller's graphic image is stored as a `` `PICT` `` resource. This graphic consists of adjacent drawings of the normal and highlighted versions of the scroller (see Figure 1. To view any of the scroller resources you need to use a resource-editing application such as ResEdit.

IMPORTANT

Before inspecting (and changing) its scroller resources, it is a good idea to make a duplicate of your application as a safety backup. ▲

Figure 1 *Normal and highlighted drawings of a simple scroller*

Scroller Format Information

Each scroller consists of different parts: for example, a scroll bar consists of four parts: a left arrow: the body of the scroll bar; a right arrow; and a thumb or scroll box. Each part also has a size and location within the scroller:

Figure 2 *Anatomy of a scroll bar*
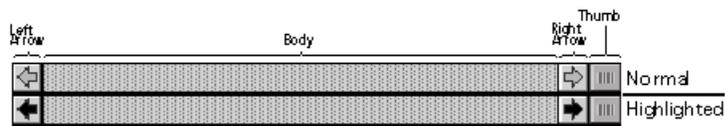
The format information for each scroller specifies the separation point between the normal and highlighted images and the location of all the scroller's parts. The format information for a scroll bar is stored by the AMT as an object of class cScrollBar (see the *Apple Media Tool Programming Envirnoment 2.0 Reference* pg. 4-40 for a description of the cScrollBar class). In addition, this information can be found in Appendix A of the *Apple Media Tool Programming Environment User's Guide* .

Format information for movie controller scrollers is stored by the AMT as an object of class cControlBar (see the *Apple Media Tool Programming Envirnoment 2.0 Reference* pg. 4-31 for a description of the cControlBar class). In addition, this information can be found in Appendix A of the *Apple Media Tool Programming Environment User's Guide* .

As an example, here is the AMT default definition for the "Funny" horizontal scrollbar object referenced on pg 5-180 of the AMTPE 2.0 Reference:

```
object oFunnyHScrollBar
is
    cScrollBar
with
    ID is 20503;
    Buffered is false;
    Transparent is true;
    Red is 255; Green is 255; Blue is 255;

    Direction is Horizontal;
    HiliteOffset is 20;

    FirstArrowOffset is 0;
    FirstArrowSize is 20;
    BarOffset is 20;
    BarSize is 580;
    LastArrowOffset is 600;
    LastArrowSize is 20;
    ThumbOffset is 620;
    ThumbSize is 20;
end;
```

For either the AMT Standard or Minimal Engine (Note that AMT 2.1 only has one engine, called simply "AMT Engine"), these object definitions can be found in the file ResourceUser.k in the KEY:ENGINE folder. For an AMT title produced by either AMT or AMTPE, these object definitions can be found in the Hierarchy.k file in the SOURCES folder of your project.

AMT Runtime Setup Dialog Scroller Display

AMT also displays each available scroller style when the Runtime Setup menu item of the File menu is selected. The graphic for this display is another 'PICT' resource. This graphic shows each available scroller in a column format. Currently, AMT provides space for only 3 scroller graphics in the display. Here is what this graphic looks like:

Figure 3 *AMT Runtime Setup Scroller Display Graphic*
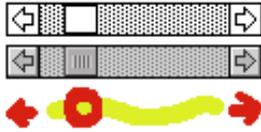
The 'PICT' resource for this graphic can be found in the file Engine.rsrc in the KEY:ENGINE folder.

Adding A Scroller

There are two ways to add new scrollers to a title:

- ■ Replace one of the existing scrollers for an AMT runtime, or
- ■ Replace one of the existing scrollers in the Minimal or Standard Engine, and use the new engine along with RunTime Maker to create a title with the new scroller.

If you replace an existing scroller in an AMT runtime, the new scroller, of course, won't be available to any other title you create — just the title it was added to. If you add a scroller to either the Minimal or Standard Engine and Runtime Maker, the scroller will be available to *any* title created with that engine and Runtime Maker.

Macintosh Titles

Replacing an Existing Scroller for a Macintosh AMT Runtime

Here are the steps necessary to add a custom scroller to an existing AMT runtime. The following instructions are ResEdit-specific, but the general ideas can be applied to any resource-editing program, like Resorcerer.

Note: the new scroller must have the exact format as the one being replaced (refer to the Scroller Format Information section above). If they are different, the format definitions must be changed and the title re-compiled (refer to the next section on Adding A Scroller to the AMT):

1.   Draw the scroller graphic image (using the formatting information described above) in the drawing program of your choice. Most drawing programs can display rulers with pixel increments so you can accurately measure your scroller's dimensions. The measurements that AMT uses are to the lines between

pixels; this is the QuickDraw coordinate system.

2.   Use the square selection tool in your drawing program to select your graphic; be accurate in your selection.

3.   Copy your selection to the Clipboard.

4.   Open your title's runtime in ResEdit.

5.   Within ResEdit, open the `PICT` resources, and create a new resource. Note the new `PICT` resource's ID number.

6.   Locate the existing scroller `PICT` resource you want to replace. Note the resource ID number of this resource, then delete the resource.

7.   Paste in the new scroller graphic from the Clipboard.

8.   Select Get Resource Info from the Resource menu for the new resource — change the resource ID to the ID of the scroller you just deleted.

9.   Close and save the new `PICT` resource.

Now launch your title. The new scroller will replace all occurrences of the old scroller.

Windows Titles

Replacing an Existing Scroller for a Windows AMT Runtime

Adding a scroller to a Windows AMT Runtime is different from adding a scroller to a Macintosh AMT runtime. You can only change the scroller resources of a title built using AMTPE. If you build your titles using only AMT, you will need to change the Windows files in the Runtime Maker CODES folder, as described later in this document (note that this operation requires AMTPE).

Windows Titles Produced With AMTPE

1.   Draw the scroller graphic image (using the formatting information described above) in a drawing program that can save PICT files. You can do this on a Macintosh, then copy the PICT file to your Windows system.

2.   Rename the PICT file you have created so that it has the same name as the ID of the 'PICT' resource of the scroller you are replacing. For example, if you are replacing the Horizontal Black and White Macintosh scroll bar (which is 'PICT' resource ID 20500), you would call the PICT file 20500.PIC.

3.   Copy the PICT file containing the new scroller into the folder KEY/RESOURCE . This will replace the old scroller image with your new one.

5.   Re-build your title with the AMTPE tools in Microsoft Visual C++ (follow the instructions as outlined on pg. 2-10 of the *Apple Media Tool Programming Environment User's Guide*).

Adding a Scroller to the AMT

Adding a scroller to the AMT requires you do the following:

■ Re-build the Standard or Minimal Engine
■ Re-build the Engine Sample project
■ Add the new scroller to the scroller display in the AMT Runtime Setup dialog box

Adding a Scroller to the Standard or Minimal Engine

Here are the necessary steps to add a custom scroller to the AMT Standard or Minimal Engine:

1.   Draw the scroller graphic image in the drawing program of your choice. Most drawing programs can display rulers with pixel increments so you can accurately measure your scroller's dimensions. The measurements that AMT uses are to the lines between pixels; this is the QuickDraw coordinate system.

2.   Use the square selection tool in your drawing program to select your graphic; be accurate in your selection.

3.   Copy your selection to the Clipboard.

4.   Open the file Runtime.rsrc, which can be found in the KEY:RUNTIME folder.

5.   Within ResEdit, open the `PICT` resources, and create a new resource. Note the new `PICT` resource's ID number.

6.   Locate the existing scroller `PICT` resource you want to replace. Note the resource ID number for this resource, then delete the resource.

7.   Paste in the new scroller graphic from the Clipboard.

8.   Select Get Resource Info from the Resource menu for the new resource - change the resource ID to the ID of the scroller you just deleted.

9.   Close and save the new `PICT` resource.

Note: if your scroller has a different format than the scroller you are replacing (refer to the section above on scroller formats), you will need to change the

formatting information in the scroller's object definition. Here are the necessary steps:

1.   Launch any text editor and open the file ResourceUser.k , located in the KEY:ENGINE folder.

2.   Locate the scroller object you wish to modify (you can search for the Picture ID resource value)

3.   Enter the new values for each field that has changed.

4.   Save your changes.

You must now re-build the engine for the new scroller definition to take effect. The following is a description of how this is accomplished:

Re-building the Standard or Minimal Engine

 Here are the necessary step to re-build an engine, as described on pg. 6-4 of the *Apple Media Tool Programming Environment User's Guide*:

1.   Launch MPW.

2.   Choose Set Project from the Key menu.

3.   Navigate to the folder for the standard engine (STANDARD ENGINE) or minimal engine (MINIMAL ENGINE). If you are using AMT 2.1, there is only one engine, which you will find in the folder AMT Engine.

4.   Choose Build Options... from the Key menu and select (at minimum) Verbose, Macintosh, Power_Macintosh and Windows.

5.   Choose Build All... from the Key menu and re-build the engine.

This will build a new engine file called AMTE, which will be left in the Release folder of your AMT Engine (or Minimal Engine or Standard Engine) folder. To use this new engine with AMT, simply copy the new engine file to the same folder as the AMT (there is no need to rename it as stated on pg. 6-4 of the *Apple Media Tool Programming Environment User's Guide*). Make sure that you remove the old engine from the folder containing AMT. The old engine will be called Minimal Engine, Standard Engine or AMT Engine.

Next, you need to add the scroller as a display item for the AMT Runtime Setup dialog (from the AMT File menu). The following is a description of how this is accomplished.

Adding a Scroller to the AMT Runtime Setup Dialog

To add the scroller as a display item in the AMT Runtime Setup dialog, you must copy the normal scroller from the scroller graphic image created above and paste it over one of the existing scrollers in the display. Here are the necessary steps:

1.   Open the file Engine.rsrc , which can be found in the KEY:ENGINE folder.

2.   Within ResEdit, open the `PICT` resources.

3.   Locate the graphic for the scroller display. Open and select the graphic.

4.   Copy your selection to the Clipboard.

5.   Using the drawing program of your choice, create a new document and paste the scroller display graphic into the new document.

6.   Open your new scroller graphic.

7.   Select the normal portion of the scroller from your graphic.

8.   Copy your selection to the Clipboard.

9.   Paste your new scroller over an existing scroller in the scroller display graphic.

10.   Select the entire scroller display graphic (that you just modified).

11.   Copy your selection to the Clipboard.

12.   Within ResEdit, Open the file Engine.rsrc again.

13.   Open the `PICT` resources.

14.   Locate the existing scroller display graphic — note the resource ID.

15.   Delete the old scroller display graphic.

16.   Paste in the new scroller display graphic from the Clipboard.

17.   Assign the old resource ID to the new resource.

15.   Close and save the new PICT resource.

Your new scroller will now show up in the AMT Runtime Setup dialog. You may now create titles containing the new scroller with AMT. However, if you were to create a runtime version of your title with RunTime Maker, RunTime Maker would not know about the new scroller. You must also add the new scroller to RunTime Maker. The following section describes the necessary steps.

Adding a Scroller to RunTime Maker

Adding a custom scroller to RunTime Maker requires you re-build the Engine Sample project (look in the folder Standard Engine:Sample, or Minimal Engine:Sample: or AMT Engine:Sample if you are using AMT 2.1). The resulting output files from the Sample project build must be copied to the RunTime Maker Codes folder. Here are the necessary steps:

Building the Engine Sample Project

1.   Launch MPW

2.   Using the Key menu, set the project to the Sample project (from the folder: Minimal Engine:Sample or Standard Engine:Sample or AMT Engine:Sample).

3.   Choose Build Options from the Key menu and select (at minimum) Verbose , Macintosh, Power_Macintosh and Windows .

4.   Choose Build All from the Key menu and re-build the project.

5.   Copy the files: Sample:Program, Sample:Program.base , Sample:Program.code, Sample:Program.data and Sample:Program.KWP from the folder Sample to the folder Runtime Maker:Codes

6.   Copy the files in the Sample:Windows folder into the KEY/SAMPLE folder on your Windows machine.

7.   Alter the required .PIC file in the KEY/RESOURCE folder to incorporate your new scroller, as described in the section Windows Titles Produced with Microsoft Visual C++, above.

8.   Launch Visual C++, and choose Open from the Project menu. Locate the file KEY/SAMPLE/PROGRAM.MAK.

9.   Choose Rebuild PROGRAM.EXE from the Project menu.

10.   When the project has rebuilt, copy the files KEY/SAMPLE/PROGRAM.EXE, KEY/SAMPLE/PROGRAM.KWP and KEY/SAMPLE/PROGRAM.INI into the folder RuntimeMaker:Codes: on your Macintosh.

NOTE: This describes the process for rebuilding the Windows components of the CODES folder in AMT 2.1. If you are using AMT 2.0, you must rebuild two CODES folders, one for the Minimal Engine and one for the Standard Engine.

The Windows components for the Minimal Engine are generated by rebuilding the KEY/SAMPLE/PROGRAM.MAK project. The Windows components for the

Standard Engine are generated by rebuilding the project
KEY/STNDSAMP/PROGRAM.MAK.

Your scroller is now available for use by RunTime Maker.

Summary

AMT and AMTPE developers may want to add custom scrollers to their multimedia titles. However, starting with AMT 2.0, the process for adding custom scrollers changed. This Technote describes new techniques for adding custom scrollers to AMT 2.0 and AMT 2.1 titles.

Further Reference

- ■ Apple Media Tool Reference Guide
- ■ *Apple Media Tool Programming Environment User's Guide*, Apple Computer.
- ■ *Apple Media Tool Programming Environment 2.0 Reference*, Apple Computer

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