



QCShow Author

A mechanism designed to create and distribute
high-quality lectures and presentations
worldwide at very low costs

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QCShow Author

Version 1.2



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Foreword

From QCShow's very first days, the intention has always been to create a mechanism to distribute very high quality lectures over the internet at very low costs, perhaps one-thousandth the cost of creating an equivalent televised lecture.

But the intention has also been to make the creation of these lectures to be so simple that anyone can do it.

There are only three distinct actions required to assemble a lecture in QCShow. They are:

- *Recording the sound,*
- *Converting your slides to the proper format, and*
- *Synchronizing the two.*

To accomplish these tasks, three separate programs have been written. They are:



SoundRecorder



ScreenCapture



SoundEditor

Each program does what it says it does, and its operation, once you become familiar with it, becomes extremely simple with just a little practice. Indeed, if you were sitting here with us, we've found that we can explain the operation of each program in just a few minutes.

If that's true, why is the manual so thick? Consider it a love letter from us to you. We recommend that you read each chapter just before you begin its task. We've tried to include not only the necessary instructions on how to use each program, but also bits of advice on problems that we've run into while creating lectures ourselves.

*We expect you to do great things
with QCShow Author.*

*The Authors of
QCShow Author
May, 2005*

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The philosophy of QCShow

Introduction

1.0 How a Lecture is Assembled in QCShow

Three distinct activities are required to assemble a lecture in *QCShow*: (i) recording the sound, (ii) converting your *PowerPoint*, *Adobe Acrobat* PDF, or other images into the proper format, and (iii) synchronizing the two.

To that end, three programs have been written as a part of the *QCShow Author* package:

- *SoundRecorder*
- *ScreenCapture*
- *SoundEditor*

Each program will be described in detail in their own chapter to follow. These programs were constructed to be as simple as possible and yet allow you to produce exceptionally high-quality presentations, making you the equivalent of a one-person educational television studio.

1.1 The Design Objectives of QCShow

QCShow was designed to allow the creation and distribution of superior quality lectures worldwide at very low costs, not only in terms of money but in time, bother and bandwidth requirements. To this end, two products, *QCShow Player*, a freely-downloadable player, and *QCShow Author*, an inexpensive content authoring tool, were created.

The criteria that governed the design of *QCShow* are:

- Maximal simplicity
- Highest possible quality presentation
- Extremely low costs, in both content preparation and delivery.

Because of these attributes, *QCShow* may well have a revolutionary impact on the nature and methods of the distribution of information. This will be especially true in those areas where information tends to be especially dense, such as the lectures associated with upper-level high-school through graduate school, continuing professional educational courses, and in technical commercial sales and training presentations.

QCShow presentations compare very favorably with satellite television transmissions; indeed, many have commented that it provides a higher quality mechanism for the transmission of lectures worldwide than does television, yet at an enormously reduced cost, perhaps one thousand times less.

1.2 The Intended Audience

QCShow was designed for those processes that are commonly associated with higher level class lectures, plenary talks at scientific meetings, continuing professional education, in-house technical training, and sales. Although the primary motivations underlying the creation of *QCShow* were to serve the long-distance education community more inexpensively and more easily than any previous technology, the value of *QCShow* however extends beyond traditional academic uses.

The major commercial markets for *QCShow* will lie in the demand for internal training, corporate policy disseminations, and product use lectures. Indeed, the requirement for developing internal training procedures is among the most pressing that most organizations face.

But there are other uses as well, some formal and others quite informal. Daily or weekly military or corporate briefings, complete with detailed charts, are very easily done in *QCShow*. The process of assembling a presentation is not all that different than creating a televised lecture, but now it can be created and transmitted at one thousandth the cost of television.

This dramatic reduction in cost means is that a television-like process is now available to organizations that could never have previously thought of using television. School journalism classes in middle, junior and senior high schools can now create and transmit to their communities the equivalent of a televised school newspaper. Similarly slideshows equivalent to music videos are capable of being produced by anyone, just as “podcasting-with-pictures” is as easily done.

1.3 The Design Criteria

The criteria that were used to realize these goals were these:

QCShow Player

- The presentation must be capable of operating under continuous play conditions, without unnecessary interruption, at telephone modem speeds, delivered without any form of degradation in the realized presentation, anywhere in the world.
- The playback should be exceptionally good looking and possess high-quality sound.
- The playback should be capable of being paused, repeated, or stepped through at high speed, as often as the listener wishes.
- Initial wait times before the presentation begins should be made minimal, even at low bandwidth.

QCShow Author

- The effort expended by author in creating a narrated slide show should be no more than 10% greater than the effort that the author would have expended in the creation and delivery of his *PowerPoint* slides. Keeping the cost of the construction of the deliverable lectures to an absolute minimum (measured primarily in time and bother) was of paramount concern.
- No other equipment than that found in a normal, sound-capable Windows-based PC should be necessary for the creation of the wide-area, internet-based lectures.

1.4 The Anatomy of a Lecture

For several years prior to the commencement of the construction of *QCShow*, lectures were analyzed to determine what their fundamental attributes. Several conclusions were derived, some of which may perhaps seem counterintuitive:

- The preponderance of information content of a lecture resides in the speaker's voice.
-

- Large, crisp clear images are more informative than small, fuzzy, jerky moving pictures. Static images allow study. Moving images are often represent nothing more than a fleeting distraction.
- Low-bandwidth delivery is essential to the success of the overall project.

Perhaps surprisingly, the information content of a lecture does not lie predominantly in the image. You can obtain a sense of the truth of that statement by going to the web.

There are currently more than 800,000 sets of *PowerPoint* slides on the internet at the moment, but if you look at the vast majority of these slide sets, you can get no more than an inkling of what the authors said during their presentations. The slides by themselves – unless they simply recapitulate a printed page filled with text – are generally a very poor indicator of the speaker's message.

We estimate that only approximately 30% of the informational content of a lecture lies in the slide images. The majority of the information, perhaps 70%, resides in the voice of the speaker, and no more than 5% in gestures and facial expressions. Nevertheless, while the audio portion of the lecture carries the majority of the information, a voice track by itself is generally uninteresting. Synchronized visual content is the means by which the speaker's statements come alive. Fortunately, these two attributes, voice and static images, are the two processes that can be highly compressed and yet retain excellent quality.

1.5 How Bandwidth Is Allocated in QCShow

The natural rate at which slides proceed during a lecture has been consistently agreed upon to be about 1 slide per minute. At bandwidths of 30-50 kbps (telephone modem speeds), sufficient time exists to download a high-quality image and a highly compressed sound slice for that minute's conversation.

QCShow operates at an 800 x 600 screen resolution. A high quality, low-loss, full-screen JPEG image at that screen resolution requires 20-150 kilobytes. When translated into download time at less than 40 kbps, an image requires approximately 5 to 40 seconds to download. Similarly, a minute's worth of compressed sound requires about 20 seconds. At one slide per minute, sufficient time exists to transmit both a high-quality image and sound slice.

The sound compression algorithm used in *QCShow* is *Ogg Vorbis*, a protocol that produces higher-quality sound than does the MP3 (MPEG Layer-3) algorithm, particularly at lower bandwidths. The resulting sound quality in *QCShow* at 18 kbps, the bandwidth assigned to the audio file, is comparable to FM radio.

1.6 The Importance of Low-bandwidth Delivery

Bandwidth is much like money. If you have more than you need, you never think about it. But if you don't, it's all that you think about. 150 million people in the United States are estimated to have internet access, but less than 30 million of those have broadband access.

This leaves 80% of the population of the United States unable to readily utilize any internet technology that requires a bandwidth much greater than approximately 45 kbps. While this percentage will drop over time, and at some future point may even drop precipitously, there will always be a – perhaps large – population that will be stuck at telephone modem speeds. But the United States is not the only intended audience for *QCShow*. *QCShow* should work as well in villages in Bangladesh and Burma as it does in Boston. While the *QCShow* protocol was designed to work only better at higher bandwidths and with faster computers, the primary emphasis underlying its design remains for it to work well at telephone modem speeds and on slow PCs.

But there are also two other overriding reasons for low-bandwidth designs however. They are:

- server bandwidth
- lecture file size.

Server bandwidth limitations are an often underestimated problem. In 1999, MIT announced that they were going to put all their coursework onto the internet, but they quickly discovered that when video was served at the highest bandwidth, 15 simultaneous streams would "crash their network." Nonetheless, even at the highest bandwidth presentation, the images were difficult to watch. When presented at full speed, the recorded video stream was jerky and ill resolved.

The second important attribute of low-bandwidth encodings is that they imply small file sizes, both on the server and in the client. Because of the high com-

pression levels used in *QCShow*, the file sizes associated with *QCShow* lectures tend to be quite small. A 45-minute classroom lecture generally consumes about 10 MB, thus a standard 39-session college semester class will require only slightly more than half a CD to store. Perhaps even more interesting, at these file sizes, all of the core lectures for an entire four-year college education can be stored onto a single DVD.

The small file sizes also allow large libraries of *QCShow*-formatted lectures to be distributed on CDs very inexpensively in areas of the world where internet connections are not readily available.

2

Recording the Sound Track

SoundRecorder

2.0 Using the Soundrecorder

Recording the sound for a presentation is quite simple, but it's also the one attribute that least lends itself to being easily redone. A bad sound track is not only hard to clean up, it also adds a sense of unprofessionalism that makes your presentations hard to watch.

Luckily, good sound files are not hard to create, thus this chapter will not only emphasize the technical details on how to use *SoundRecorder*, it will also provide bits of advice on how to maximize the quality of your recordings.

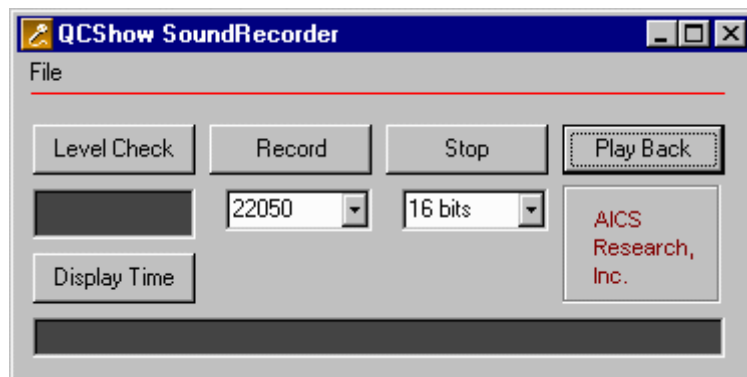


Figure 2.1. *QCShow SoundRecorder, the free audio recording software provided with QCShow Author.*

There are two primary methods by which you will create a sound track:

- recording a speaker live, on stage, while giving a keynote address
- as an individual author, sitting alone, dictating the narration

Both methods are easily supported, but you will approach them slightly differently, thus we'll discuss both procedures in the next few pages.

2.1 Scenario A: Recording a Live Presentation in a Professional Setting

Keynote addresses, plenary lectures, public lectures and the like are often given in hotel ballrooms, lecture halls, auditoriums and large classrooms. Any auditorium or meeting room that is equipped with a public address system will have a mixer board somewhere. The sound mixer board may be much more complicated than the one shown in Fig 2.2, or it can be much simpler, but in all cases there will be an AUX (auxiliary) output jack, often located in the upper right hand corner of the board.

The AUX output jack is the only item we care about. The sound quality taken from this tap is likely to be excellent.



Fig. 2.2. A standard professional-quality stage audio mixer board and the necessary connecting cable to your laptop.

It will be from the AUX jack that a cable needs to be run into your PC's audio input. The AUX output jack is most normally a ¼ inch phono jack, while PC's almost always use a 1/8 inch minijack for their audio input. The difference in connector sizes can be accommodated by using a converter cable (or an audio connector converter kit), both of which are readily purchasable from a local electronics store, such as Radio Shack.

You may require some help from the audio-visual person in charge of the audio mixer board in order to insure that the AUX output is being feed with a signal, but that's about all the help that you should need. You should be able to control everything else from your laptop PC.

2.1.1. Recording the Live, On-Stage Lecture

The procedure for recording a live lecture in an auditorium or a hotel meeting room is composed of only these few steps:

- For best results, set the *SoundRecorder* to record at 22050 samples/second, 16 bits/sample.
- A sound level check will need to be performed prior to the talk to insure the proper feed level to the recorder. The procedure to do this is outlined in detail in Section 2.3 below. A final check should be made as close to the time that the speaker will be speaking, possibly during the time that a host emcee is speaking.
- Once the levels seem stable, **press STOP** on *SoundRecorder* to quit the level check. **Press RECORD** a short time (30 seconds or a minute) before the speaker begins to speak to insure that we capture all of the speaker's comments.
- Once the recording begins, there is nothing more to do until the session is over. To insure that you don't stop the recording by accident, be sure to move your mouse cursor away from the **STOP** button during the recording session
- At the end of his talk, perhaps after a question-and-answer session, **press** the **STOP** button. **Save** the recording to a file of your choosing, using the "File" pulldown menu. The save may take some time, perhaps a minute or so. A great deal of data was created during the recording.
- If you then wish, you can press the **PLAYBACK** button to listen to the recorded talk, or double-click on the newly saved file's icon, invoking Windows Media Player.

2.2 Scenario B: Recording Narration or a Lecture to a Small Audience

In a very small venue, such as a classroom, or for a narration conducted alone in an office, wireless microphones are the preferred form of audio input device. Although wireless microphone systems are available at very low prices (approx. \$50), we've been most pleased with a combination of Radio Shack products combining to \$165 in total.

The three pieces are: Radio Shack's tie-clip omnidirectional electret microphone (Catalog number 33-3013; \$24.99), their 900 MHz Wireless Transmitter (Catalog number 32-1252; \$49.99), and 900 MHz Wireless Receiver (Catalog number 32-1250; \$89.99), as illustrated below.



Fig. 2.3. *The Radio Shack 900 MHz 8-channel wireless microphone combination (<http://www.radioshack.com>)*

Regardless of the cost of the wireless microphone system that you use, they all tend to be extremely simple to use and are immediately ready to connect to the audio input jack on your PC or laptop.

2.2.1 Recording Narration or an Intimate Lecture

The procedure for recording narration or an intimate lecture is composed of only a few steps. Although the use of the wireless microphone is identical in both cases, let us emphasize the narration scenario in the steps to follow:

- For best results, set the *SoundRecorder* to record at 22050 samples/second, 16 bits/sample.
- A sound level check will need to be performed prior to beginning a narration to insure the proper feed level to the recorder. The procedure to do this is outlined in detail in Section 2.3 below. We recommend turning the audio gain on the wireless microphone to full-on and controlling the sound

level using the Microsoft controls.

- Once the levels seem stable, **press STOP** on *SoundRecorder* to quit the level check.
- **Press RECORD** and begin a test narration in order to assess the sound quality of the room you're in. Small rooms often have hard walls very near to you, thus you may find that you have a noticeable echo in your recordings, an echo you've never heard before simply because you've become accustomed to it. If that's the case, try to either soften the walls of your room or move to a larger room or one with softer walls.
- Similarly, there may be one or more fans running in the room that you haven't been previously aware of. When narrating a lecture by yourself, in a room alone, turn off as many of the heating and cooling fans as you possibly can and back away from your PC. The fan noises will be recorded as a background hiss, something you don't want. Creaky floors and creaky chairs should also be eliminated, if at all possible. The ideal condition will be a recording that is perfectly quiet when you're not speaking. Professional narrators work in very soft walled rooms without any form of air conditioning and often complain about their discomfort, but that discomfort is borne in pursuit of a very clean recording.
- **Press RECORD** a short time (30 seconds or a minute) before you begin to speak to insure that all of your comments are captured. This "leader" material can be very easily edited out using *SoundEditor*.
- Narrating a lecture while alone in a room by yourself is often harder than speaking to a live audience. If nothing else, you seem to become more self-conscious of your mistakes. But if you flub anything, just say it again and keep going. You will find that your mistakes are very easily scrubbed out of the final presentation.
- At the end of your narration, **press** the STOP button. **Save** the recording to a file of your choosing, using the "File" pulldown menu. The save may take some time, perhaps a minute or so. A great deal of data was created during the recording.
- If you then wish, you can press the PLAYBACK button to listen to the recorded talk, or double-click on the newly saved file's icon, invoking Windows Media Player.

2.3 Setting the Sound Level

Beginning with *Windows 95*, Microsoft incorporated a surprisingly good audio system into its operating system. To bring the audio controls to the fore, **doubleclick** on the speaker icon that you'll generally find at the bottom-right of your screen:



Fig 2.4. *The speaker icon.*

Once clicked, you will see this Playback Volume Control Panel appear:

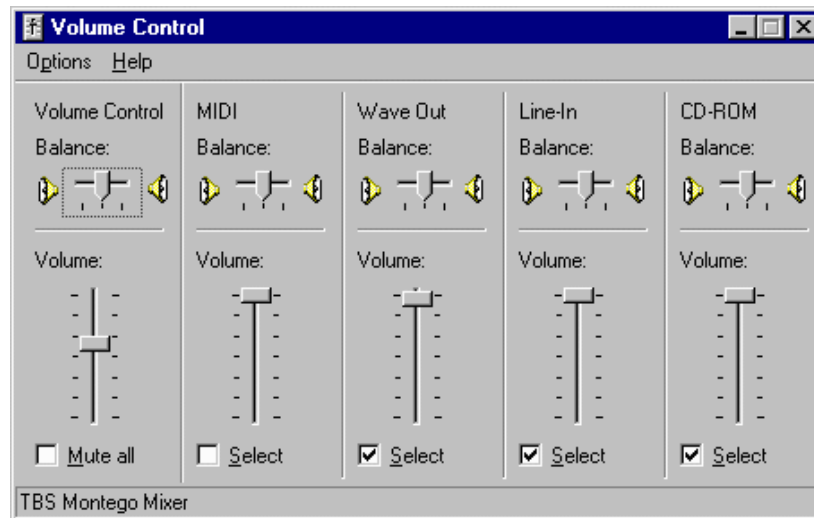


Fig. 2.5. *The Playback Volume Control Panel in Windows.*

The various controls (Volume, MIDI, Wave Out, Line-In, CD-ROM, etc.) on the panel are user-defined, but you should always expect to see the Volume Control slider bar, which is on the left in Fig. 2.5. The Playback Control Panel is the default panel, but to set the recording level, we need the Recording Control Panel.

To get to the Recording Control Panel, **click** on the Options pulldown menu and **select** the Properties Option. You will then see the following form:

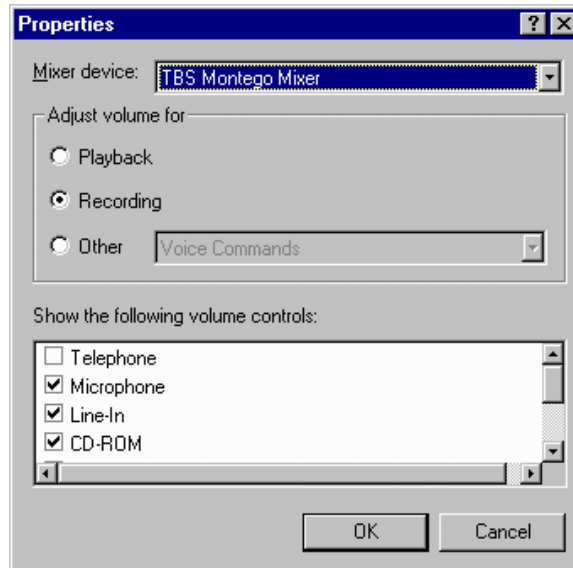


Fig. 2.6. The properties form.

Select the Recording radio button and **press** the OK button. At this point, the Recording Control Panel will appear.

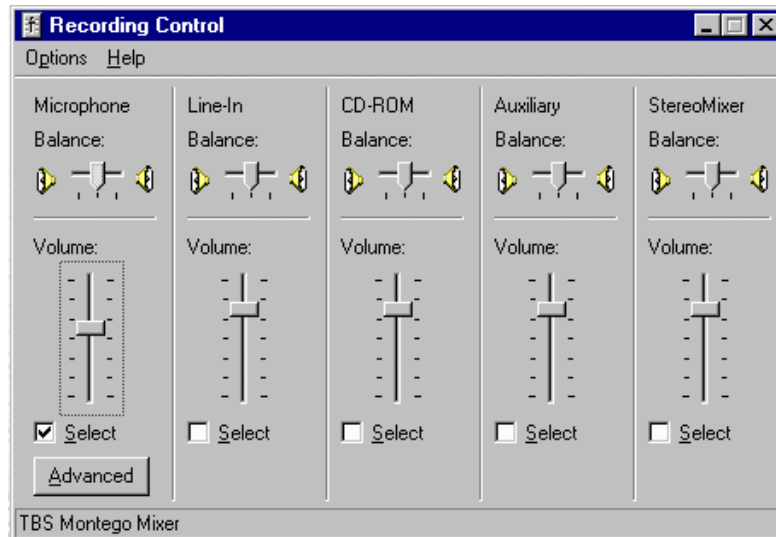


Fig. 2.7. The Recording Control Panel.

Leave this panel up for your recording session. You'll want to use the Microphone Volume slider bar to properly set your recording level. Be sure that the Microphone Select box is checked. The checkmark indicates that this input is active.

There are two common input voltage levels in commercial audio equipment, "microphone" and "line" level, but they aren't compatible. "Line level" is approximately 500 times larger than the microphone level. If the input to your soundcard is "too loud," **click** the ADVANCED button. Doing this will bring up the Advanced Controls panel:



Fig. 2.8. *The Advanced Controls panel.*

If the signal is too loud, **unlick** the Mic Gain checkbox and then press CLOSE. This will attenuate the incoming voltage signal by 10 times (-20 dB), which should be enough for you to find an appropriate level with the slider bar. Conversely, if the input signal is too weak, **check** the Mic Gain checkbox so that the signal is amplified by 10 times.

To set the proper input level for recording, press the LEVEL CHECK button on the *SoundRecorder* and have someone perform a level check by speaking into the microphone. The ideal level set will have the green bar just barely getting into the red area only on the loudest peaks.

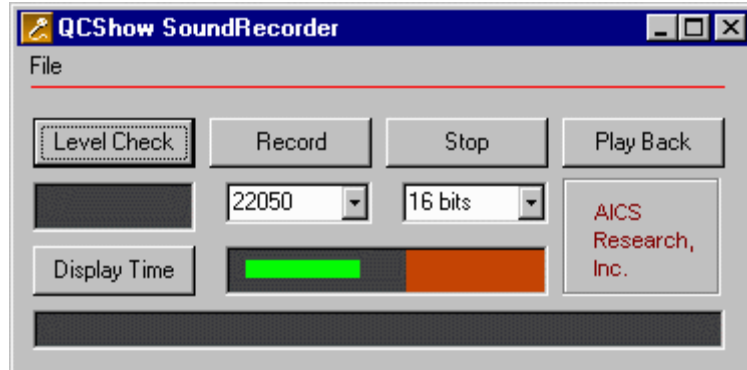


Fig. 2.9. *The level check process for SoundRecorder.*

Everyone speaks at about the same level when giving a talk, but please be aware that when people are performing a sound check, they often speak more softly than the speaker will. If you think that that's the case, be sure to set the level even a bit lower so that the green bar never quite touches the red area.

Having the green bar hit the top of the red area is said to be the ultimate evil. It's at this point that the signal is "clipped" and the signal becomes distorted. Worse, the information that would have been recorded if it weren't for the clipping is irretrievably lost and cannot be recovered. If the clipping is severe enough, the entire recording will be ruined.

Press the STOP button to quit the level check.

2.4 Recording the Speaker

When recording, insure that the two selection boxes are set to 22050 samples/sec and 16 bits/sample. These are the default settings and will provide a very high quality audio recording, although they will generate 158 MB of data per hour.

Thirty seconds to a minute before it appears that the speaker is going to begin speaking, **press** the RECORD button. Leave the recorder on until it is clear that the speaker has quit speaking. This "leader" and "trailer" material can be easily trimmed off during the assembly of the talk.

The *SoundRecorder* must be in a STOPPED condition before it can begin recording. The *SoundRecorder* was designed so that the STOP button must be pressed between each function. This requirement helps eliminate the possibility of pushing the wrong button and losing a recording.



Fig. 2.10. *The SoundRecorder in record mode.*

When a recording is in progress, you will see a screen like that shown in Fig. 2.10. Once the recording begins, the level indicator bar must disappear. The digitized sound is being written into virtual memory, at the very lowest level in Windows. This "file" has no name, thus it can only have one accessor at a time. The advantage is however that a recording of any length may be in this mode, so long as you don't exceed your available disc space.

When the recording is complete, **press** the STOP button. **Save** the file using the File pulldown menu, using a name of your choosing.

2.5 Obtaining the Best Possible Recording

The placement of the microphone is crucial to obtaining a good recording. Two forms of microphones tend to be used. The older is the podium-mounted microphone, but it has its disadvantages. It tends to pick up the rumblings of a speaker tapping the podium and often injects hum into the recording due to its long cable runs. But much worse, it ties the speaker to the podium. Should the speaker walk across the stage, the sound recording level will quickly drop to unusable levels.

Because of these problems, the more common type of microphone in use nowadays is the wireless lapel microphone, as seen below. This frees the speaker to wander as he wishes.



Fig. 2.11. *The proper placement of a lapel wireless microphone..*

The ideal placement of the lapel microphone is at sternum-height. This is high enough to get the microphone out of the way of the speaker hitting it with his hands or smothering it with his crossed arms, but not so high that it picks up breath sounds.

A lapel microphone is very sensitive to anything rubbing against it, thus it should be placed in a location that jewelry, necklaces or ties will not likely touch it during the recording session. If they do, that rubbing may be very clearly heard on the recording and may well be louder than the speaker's voice, rendering the recording potentially unusable.

Watch the morning television or Sunday news programs and observe where the professionals place these microphones. They are virtually always placed in the same location, at sternum height, in an area free from the impacts of hands, arms or jewelry.

Similarly insure that the microphone's wiring is not where the speaker will catch it with his hands during his talk. The speaker is not likely to notice that he's somehow grabbed the wiring and that the microphone is now dangling at his feet.

2.6. Minimizing Hum and Ground Loop Noise

The second attribute that we want to guard against is injecting 60 Hz ground loop hum. The ideal situation would be to run the PC wholly off of batteries, as an electrically isolated system, so that the PC doesn't "touch" any other electric component for the duration of the recording. You can actually run your PC off of batteries if you wish for short recordings, but it is unwise for an hour-long lecture.

A normal PC's power "brick" is constructed of a step-down transformer and direct-current rectifier circuit, emulating a battery. Ordinarily, the step-down transformer would be more than enough to isolate the electrical noise and hum that is often present on the power lines from getting into the audio circuit of the PC. Unfortunately, most power bricks don't provide that isolation however. They run the grounding line from the three-prong wall socket directly through the power brick and attach it to the body of the PC, potentially injecting whatever noise that is on the lines directly into the PC's audio circuit.

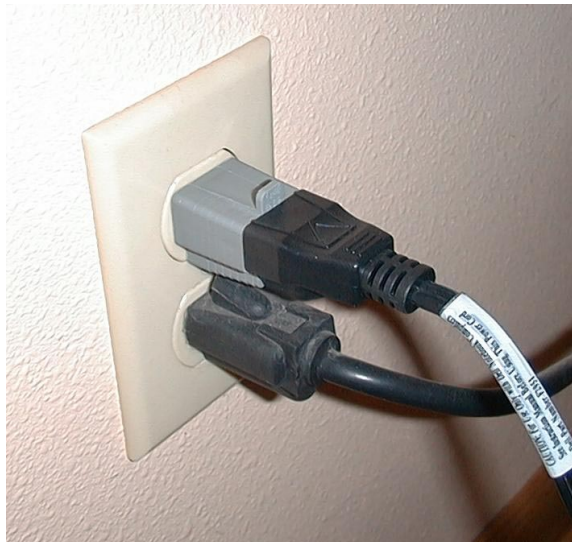


Fig. 2.12. A three-to-two prong converter breaks the grounding circuit for the laptop and thus eliminates ground loop noise and hum.

The trick to eliminating ground loop hum is to break the grounding circuit. This can easily be done by inserting a two-prong to three-prong converter be-

tween the power brick's plug and the wall socket. This very simple trick virtually eliminates the possibility of injecting ground loop hum into the recording and should always be done when deriving power off the mains.

Breaking the grounding circuit does however slightly increase your shock hazard, so please don't do this while recording a lecture while sitting in a bathtub full of water.

3

Capturing the Images

ScreenCapture

3.0 An Introduction to ScreenCapture

Creating the images for your presentation is the second step in preparing your presentation for transmission over the internet. Generally you will already have used some sort of authoring tool, such as Microsoft's *PowerPoint*, to create your slides. It's at this stage that we will now use *QCShow Author's ScreenCapture* program to convert those slides for broadcast.

ScreenCapture is a very simple program, designed to automatically capture your *PowerPoint* or Adobe PDF slide images and convert them into image files suitable for *QCShow*.

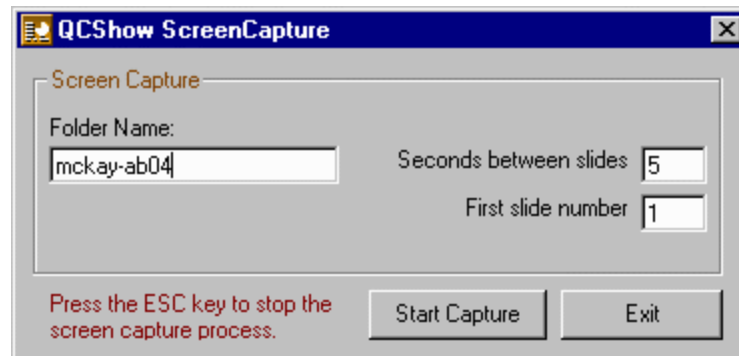


Fig 3.1. *The ScreenCapture program.*

ScreenCapture accomplishes this task by taking a “snapshot” of the full screen while *PowerPoint* or PDF is running, analyzing each image, converting the captured bitmap into the best possible encoding for low-bandwidth transmission and then automatically advancing to the next slide. The process is repeated until all of the images have been captured.

You only need to enter three pieces of information in *ScreenCapture* before you press the START CAPTURE button:

- The name of the folder you wish to put your images in.
- The time in seconds between “snapshots” of the screen.
- The number you wish to use for the first slide captured.

Images Folder Name

The folder name you specify in Fig. 3.1 will contain all of your captured images. This folder will be created as a subfolder of “captures.” If you installed *QCShow Author* at its default location, the “captures” folder will be found at:

c:\Program Files\AICS Research\qcshow author\captures

Your images folder will reside inside the “captures” folder, as seen in this file-tree diagram:

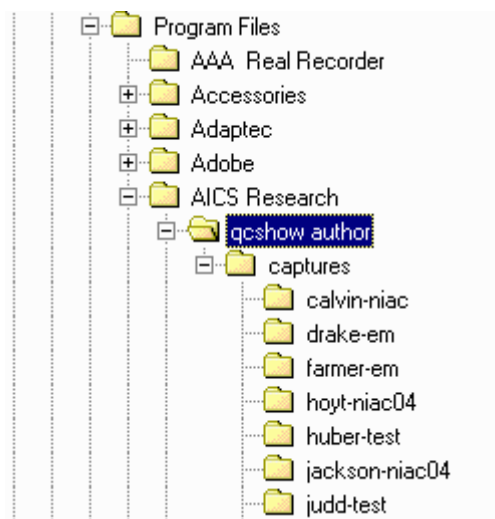


Fig 3.2. *The file tree for the “captures” subfolder and your captured image presentation folders.*

The name you choose for your images folder may be anything you wish, but we recommend a meaningful name. That name might be a combination of the speaker’s name and the occasion, such as “drake-em,” a talk given by Drake at

an Early Mars Conference.

In contrast to the names that you will choose in the next chapter, the names for your captured images folders will never be seen by your viewers, thus virtually any name is acceptable.

Time Between Slides

The default setting for the time between captures of the slides is five seconds, but there are occasions where you might have to lengthen that time, particularly so for some animated *PowerPoint* presentations or if the PC you are using is rather small and old.

QCShow doesn't broadcast *PowerPoint's* animations. It only transmits the final, stable image. However some *PowerPoint* authors create animations that require more than five seconds to become stable, zipping and zooming around the screen for a bit of time. If *ScreenCapture* should take its snapshot before the screen is completely stable, it's not an irrecoverable sin. You will simply end up with two images of the same slide, one an intermediate rendition and the other the final stable image. The intermediate slide can be edited out of the presentation when using the *SoundEditor* presentation assembler, as explained in the next chapter. However it is our recommendation, in order to keep things as simple as possible, to redo the capture process with a longer interval between slides.

Similarly, if you're on an older, slower, smaller machine, the image processing time in *PowerPoint*, as it advances slide-to-slide, may take longer than five seconds. *PowerPoint* operates at two image resolutions, "print" and "screen." If the slide author has set his image resolution at "print" quality, the image file sizes can be quite large and may take some time to process before the next slide is available.

PowerPoint has an internal image compression mechanism that's relatively unknown. Uncompressed images are what make *PowerPoint* files so large. When an image is put into *PowerPoint*, it's entered in "print quality" mode, meaning that it maintains its maximum resolution. Printing requires many more pixels than does a screen display, but *QCShow* will not use your slides for anything but screen displays thus most of that additional file space is wasted.

The conversion of your slides from print quality to screen quality is the

mechanism that often greatly compresses your slide file size. To initiate this compression, click on any image in your *PowerPoint* slides. Once done, handles will appear on the image. If an image toolbar doesn't appear simultaneously, right-click on the image and cause the toolbar to display from within the menu.

There is an icon on the toolbar that is a small rectangle with four arrows pointing towards the corners of the square. This is the compression icon. Click on it and then choose the "web/screen" setting for "all pictures in document," leaving the compress and crop option boxes checked. The compression process may take some time. If so, an additional benefit will be that your presentations will load and display much faster than they have in the past. In the past, this compression has had to be done repeatedly on an individual basis, as you've displayed each slide before. If you wish to keep the original quality image file, save the compressed file with a new name.

First Slide Number

Just very occasionally, you may want to combine several *PowerPoint* slide sets into one longer presentation. Using the slide number value, you can do this quite easily. Following the capture of your first *PowerPoint* set of slides, look in the captured image folder and determine the largest number used. Your images will be numbered in sequence: drake-em001.gif, drake-em002.jpg, ... etc.

Add one to that largest number and enter its value into the first slide number's setting and begin the capture of the second set of slides. By doing this, your slide images will be created in a properly numbered sequence. Repeating this process will allow you to string together as many *PowerPoint* presentations as you wish into one larger, more coherent slide show.

3.1 Capturing PowerPoint Images

PowerPoint and PDF (*Acrobat Reader*) are the two most likely programs you'll use with *ScreenCapture*, but their usage is slightly different. The following instructions are for using *ScreenCapture* with *PowerPoint*.

Step 1.

Launch *PowerPoint* and open the presentation you intend on capturing.

Step 2.

Now launch *ScreenCapture*. *ScreenCapture* will automatically set your screen resolution to 800 x 600, if it is not already there. This is only a temporary resizing. When *ScreenCapture* is exited, it will return your screen back to the settings you had before it was launched. *ScreenCapture* is designed to be “always on top” when visible (Fig. 3.3).

Step 3.

Use your mouse to click on a non-active area of *PowerPoint* to set “focus” to the program (a program with “focus” has a colored “grab bar” at the top of its window. All other windows’ grab bars will be gray). Once *PowerPoint* has focus, press the F5 key to start *PowerPoint*’s slide show.

Step 4.

With the full-screen *PowerPoint* presentation now visible, press the START CAPTURE button on *ScreenCapture*. At this point, the *ScreenCapture* program will disappear, but this icon



Fig 3.3. *The PowerPoint pointer icon.*

is likely to appear in the bottom-left corner of the *PowerPoint* display. Type Ctrl+H to hid the pointer icon. If you don’t, the icon will show up on your captured slides.

Step 5.

There’s nothing more for you to do now. *ScreenCapture* will wait the designated number of seconds, capture the current image and then automatically advance the slide in *PowerPoint*. It will repeat this process until all of the slides have been displayed.

Should anything go wrong, you can abort the capture process by pressing the ESC key. Otherwise, *ScreenCapture* will continue recording your slide show’s images until it advances past the end of the presentation. At

that point, *PowerPoint* will quit its full-screen mode and the *ScreenCapture* program will reappear. Press EXIT to quit the *ScreenCapture* program. Your images are now in the folder that you specified and you're ready to synchronize your recorded sound with the slides.

3.2 Capturing Adobe PDF Images

The Adobe *Reader* (PDF) instructions are very similar to those used with *PowerPoint*, but with a few caveats.

Step 1.

Launch Adobe *Reader* and open the presentation you intend on capturing.

Step 2.

Now launch *ScreenCapture*. *ScreenCapture* will automatically set your screen resolution to 800 x 600, if it is not already there. This is only a temporary resizing. When *ScreenCapture* is exited, it will return your screen back to the settings you had before it was launched. *ScreenCapture* is designed to be “always on top” when visible (Fig. 3.3).

Step 3.

Use your mouse to click on a non-active area of *Adobe Reader* to set “focus” to the program (a program with “focus” has a colored “grab bar” at the top of its window. All other windows’ grab bars will be gray). Once *Reader* has focus, press the Ctrl+L to set *Reader* to full-screen mode.

Step 4.

With the full-screen PDF presentation now visible, press the START CAPTURE button on *ScreenCapture*. At this point, the *ScreenCapture* program will disappear.

Step 5.

There's nothing more for you to do now. *ScreenCapture* will wait the designated number of seconds, capture the current image and then auto-

matically advance the slide in Adobe's *Acrobat Reader*. It will repeat this process until all of the slides have been displayed, but unlike when used with *PowerPoint*, *ScreenCapture* will not stop automatically.

When *PowerPoint* presents a slide show in full-screen mode, it launches a new window. When that window disappears at the end of presentation, *ScreenCapture* senses that disappearance and quits as well. Unfortunately this doesn't occur with *Acrobat Reader*. You will need to manually press the ESC key at the end of the presentation.

What happens if you don't stop *ScreenCapture* promptly after the last slide? Nothing terrible. You will simply wind up with multiple copies of the last slide, which you can manually delete from your images folder using a standard Windows' file delete function — or you can ignore the multiple images and simply not use them in the sound-slide synchronization process to come.

Should anything go wrong during the capture process, you can abort the capture process by pressing the ESC key. Otherwise, *ScreenCapture* will continue recording your slide show's images until you manually stop it at the end of your presentation. Press EXIT to quit the *ScreenCapture* program. Your images are now in the folder that you specified and you're ready to synchronize your recorded sound with the slides.

3.3 Things That Occasionally Go Wrong

Adobe *Acrobat* PDF files are simpler than *PowerPoint*, thus you're much less likely to experience any problems capturing PDF images. Because *PowerPoint* is a significantly more complex program, there are a number of things that can go wrong, and we'll try to outline the most common problems here.

3.3.1 A Red X in a Square Appears in Place of an Picture

In this circumstance, an image is missing and all you're seeing is the outline of a box where the image should appear, but with a large red X in its place. This "placeholder" occurs because the PC you're running on has either exhausted its graphic resources or it's missing some critical software component. You can sometimes recover from this error by rebooting your PC and only running the two necessary programs, *PowerPoint* and *ScreenCapture*, but not always.

At the worst, your PC may be just too small to load the necessary image into the *PowerPoint* slide. If so, the only real cure may be to move to a larger, newer PC for the screen capture process.

3.3.2 Backgrounds and Templates Aren't as They Should Be

Over the years, there have been a number of *PowerPoint* versions, and they are not all compatible with one another. Sometimes things just don't work properly. This circumstance generally occurs when you import a *PowerPoint* presentation onto your PC that was created on a different version of *PowerPoint*. There is no easy cure for this problem other than to suggest keeping as many different versions of *PowerPoint* nearby as possible.

3.3.3 Presentations Created on Macs Often Have Problems on PCs

The two most common problems encountered when trying to read *PowerPoint* presentations created on a Macintosh are incompatible image file formats and fonts.

Missing Images

If you should encounter a missing image with the following note in its place:

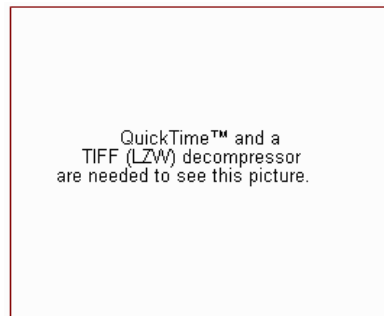


Fig 3.4. A *QuickTime* marker.

there's nothing you can do to rectify this problem on a PC. The necessary software doesn't exist for Windows. You're either going to have to ask the person supplying the Mac-generated *PowerPoint* file to either send you a JPEG or GIF-encoded version of the missing images or, better yet, have them transmit their entire *PowerPoint* presentation to you in Adobe PDF format.

The “Save As PDF” feature is now available as a standard part of Mac OS X. To create the PDF file, open the presentation in *PowerPoint*, go to File/Print, and select “Save as PDF...” In the following window, set the save location to Desktop. Assign a file name (with a .pdf extension) to the resulting document, and then click Save.

Missing (or badly rendered) Fonts

Microsoft *Windows* supports two kinds of fonts, *TrueType* and “printer” fonts. The “printer” fonts are in reality native Adobe *PostScript* fonts, but for copyright and competitive reasons, Microsoft doesn’t mark them as such.

Mac users are far more likely to use *PostScript* fonts in their presentations than are *Windows* users, and may well have used fonts that you do not have on your machine. In either case, you may find that in order to improve the appearance of the Mac-generated slides on your PC that you will have to go through the *PowerPoint* slides and manually substitute a similar *TrueType* font for each of the missing fonts, including possibly changing the point size of the font in order for the text to wrap as the original author intended.

Again, an always effective alternative is to have the Mac user create an Adobe PDF file, as outlined in the previous section, and send that to you in place of the original *PowerPoint* file.

4

Assembling the Lecture

SoundEditor

4.0 An Introduction to SoundEditor

SoundEditor is the heart of the *QCShow Author* process. This is the program that brings everything together, allowing you to merge your image and sound files and make them ready for internet or CD distribution.

SoundEditor is also the point at which you become the equivalent of a television director and select what will go into the final presentation and what will be deleted. This is undoubtedly the most enjoyable and creative part of the process of preparing a presentation.

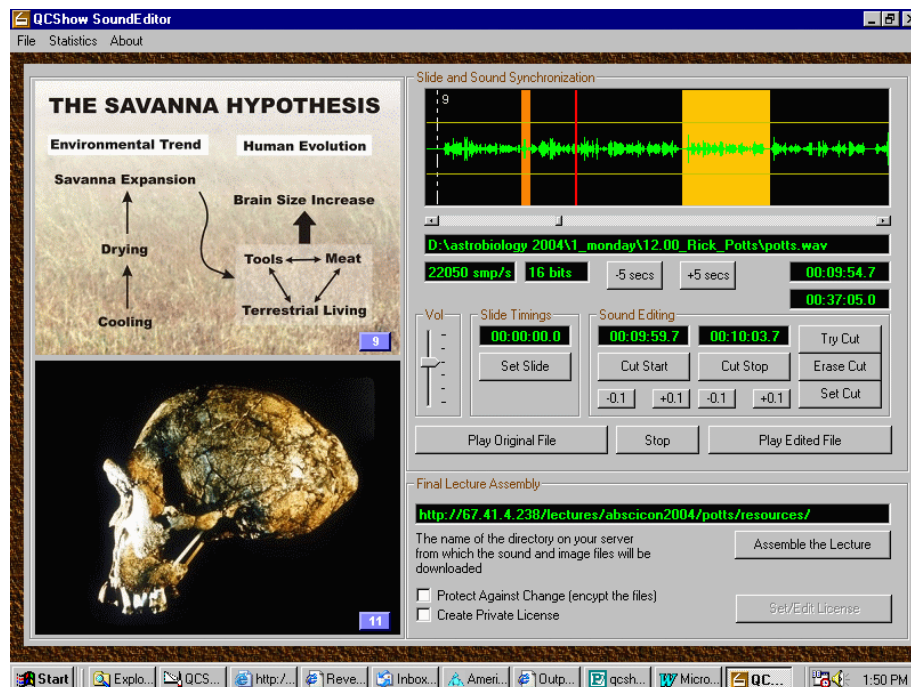


Fig 4.1. *The SoundEditor* program.

The *SoundEditor* is composed of four primary panels. They are:

The **Current Slide Panel**: The slide shown is always the current slide. The slide number, which will always agree with the slide number shown in the sound editing panel, is indicated in a blue box in the bottom-right of the slide.

The **Next Slide Panel**: Although the image in this panel will most normally be the next slide in the series, *you can use the keyboard arrow keys to advance or retard the slides in order to seek out the slide appropriate to the current narration.*

The **Sound Editing Panel**: It's here that you will insert slide change points and edit out extraneous comments, um's and ah's.

The **Final Assembly Panel**: After the slide transition points have been synchronized to the narration and the sound has been edited, this is the panel that will automatically convert the lecture into *QCShow* format, making it ready for upload onto a web server.

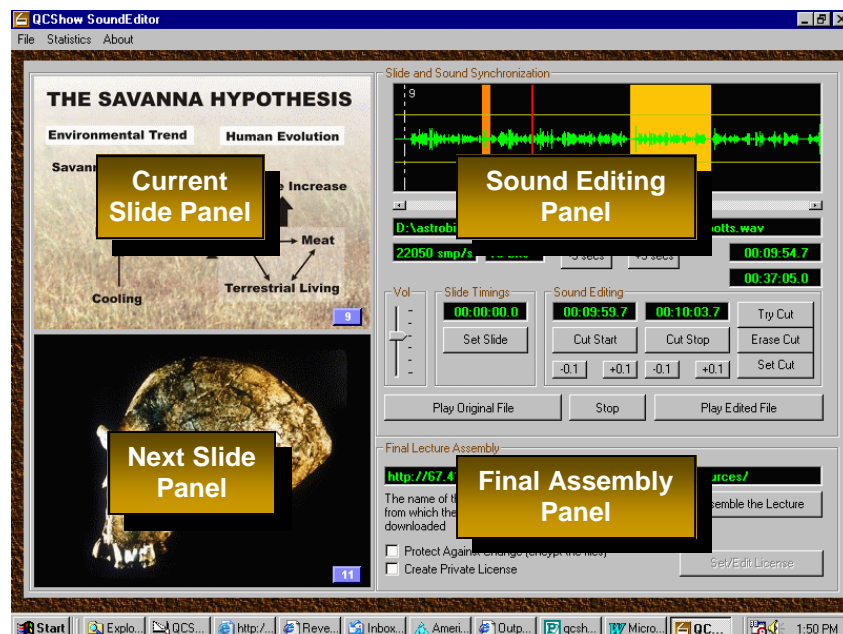


Fig 4.2. The parts of the *SoundEditor* program.

4.1 SoundEditor's Design

The most important thing to know when using *SoundEditor* is that it never destroys information. All of its editing marks, either for the audio file or for the images, are only that: they're marks, and they can be removed just as easily as they were written. The original data remains untouched.

The operation of *SoundEditor* is quite simple. It merges the two sources that you've previously created, the sound and images, into a *QCShow* formatted folder, as shown here in Fig. 4.3:

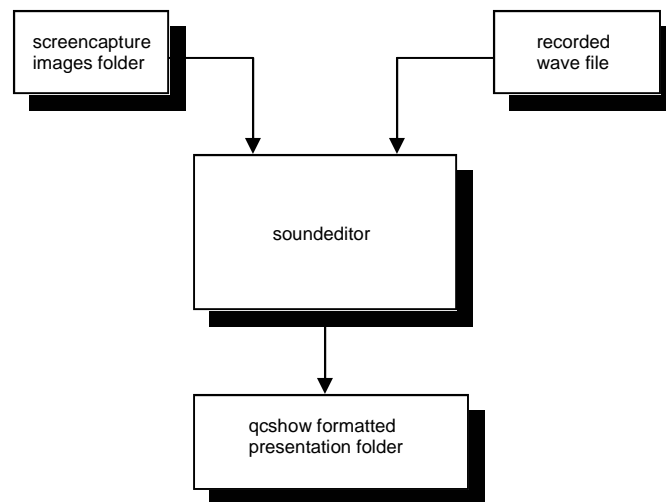


Fig 4.3. *The outline of the SoundEditor's operation.*

It may surprise you to find that there is no **SAVE** function in *SoundEditor*. The editing marks that you make on the sound and image files are immediately written into several auxiliary files, as you specify each mark, thus you're editing commands are always up-to-date on the hard drive.

The only mark that you can make for the images is to possibly hide a slide. You may find some slides to be redundant and do not need to be transmitted in the assembled presentation. These hiding marks will be written into a file in the images folder named:

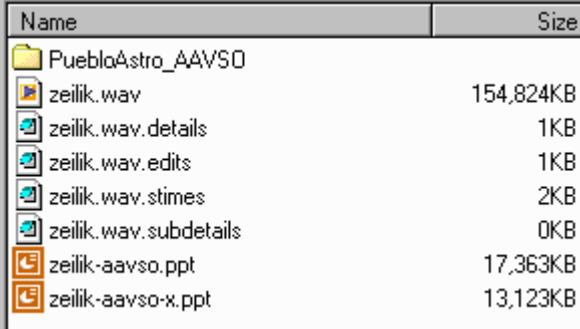
hiddenslides.txt

The content of this file, like all of the files that *SoundEditor* generates, was designed to be as simple and as human-readable as possible. In this case, the *hiddenslides.txt* file only contains the slide numbers that you have marked as being hidden. If you haven't marked any slides as hidden, the file won't exist.

Quite similarly, a series of audio marking files will be built next to the sound file you specify. If the original recorded file is named *zeilik.wav*, the auxiliary editing files will be named:

zeilik.wav.details
zeilik.wav.edits
zeilik.wav.stimes
zeilik.wav.subdetails

These auxiliary files are written into the same folder as the original WAV file and will appear immediately adjacent to the file when you show a listing.



Name	Size
PuebloAstro_AAVSO	
zeilik.wav	154,824KB
zeilik.wav.details	1KB
zeilik.wav.edits	1KB
zeilik.wav.stimes	2KB
zeilik.wav.subdetails	0KB
zeilik-aavso.ppt	17,363KB
zeilik-aavso-x.ppt	13,123KB

Fig 4.4. *The auxiliary editing files created by SoundEditor.*

The *details* file contains information about the author, his organization and the presentation that you may optionally enter during the final assembly phase.

The *edits* file contains the start and stop times, in milliseconds, of your marked cuts in the audio file.

The *stimes* file contains the slide transition times, in milliseconds, for each slide.

The *subdetails* file is unused at the moment.

4.2 Editing and Synchronizing a Presentation

The first step in preparing a presentation is to load your sound and image files into the *SoundEditor*. To do this, go to the FILE pulldown menu at the top of the screen and **open sound file** and **open slides folder**, one after the other.

The slides folder will always be in the “captures” folder of the *QCShow Author* folder. If you installed *QCShow Author* at its default location, the “captures” folder will be at:

c:\Program Files\AICS Research\qcshow author\captures

The *PowerPoint* or *Adobe PDF* images that you captured using *ScreenCapture* will be found in a subfolder that you gave a name to during the capture process. This subfolder will reside in the “captures” folder, as seen in this diagram:

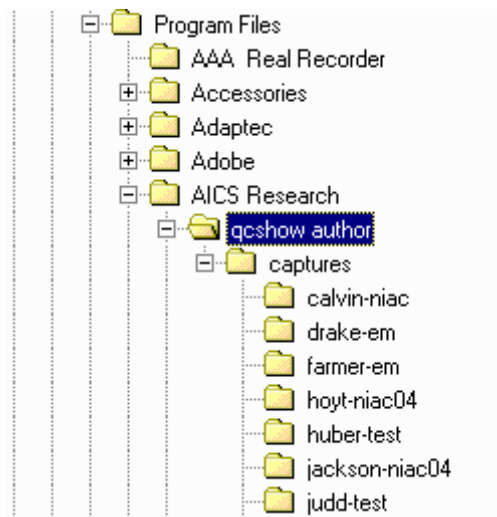


Fig 4.5. The file tree for the “captures” subfolder.

The sound file will be wherever you saved it when using *SoundRecorder*.

Once the sound and image source files are open, you’re ready to start synchronizing your slides to the sound track.

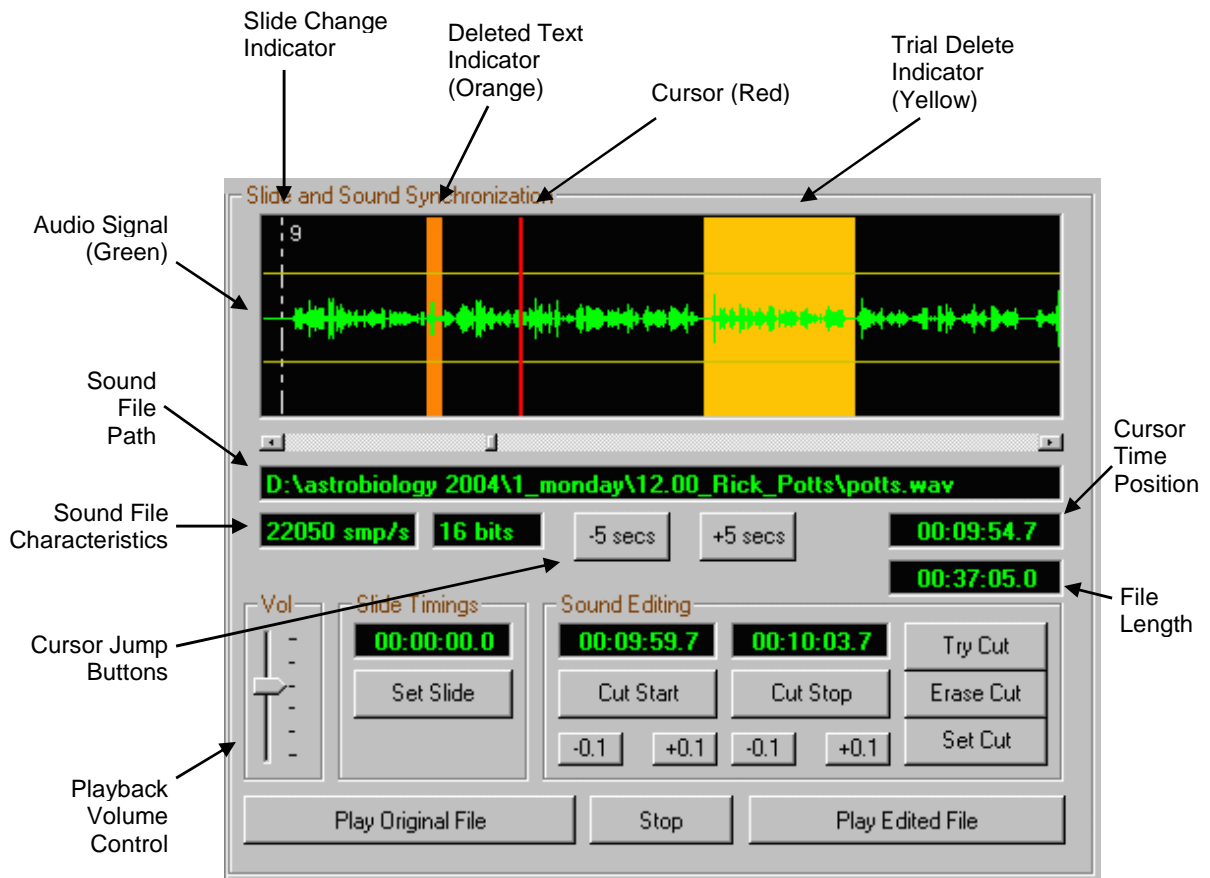


Fig 4.6. *The buttons of the sound editing panel.*

4.2.1 Setting a Slide Change Marker

Press the PLAY EDITED FILE button to begin playing the audio track. When the cursor reaches a point where you would like set a slide transition, the easiest thing to do when you're first beginning to use *SoundEditor* is to **press** the STOP button and **drag** the cursor to the point where the slide transition is to be. Once there, **press** the SET SLIDE button.

Speakers almost invariably pause when they change slides and you will want to place the slide change indicator somewhere in that pause, most likely near the middle, but use your judgment as to what seems most natural.

A white dotted line will appear underneath the cursor indicating the slide transition. The current slide number will appear adjacent to the line.

If you wish to later move or delete the slide marker, **right-click** on the dotted line and then **left-click** on the “delete slide” option. If you wish to move the slide marker, set it again elsewhere.

4.2.2 Editing the Audio Track

Every talk contains extraneous material in its audio track, items such “*These aren’t my slides,*” “*Can we have the room lights down?*”, etc., along with the coughs, um’s and ah’s. You’ll want to delete all of this material, as well as the leader and trailer material that was inevitably recorded before and after the actual lecture. This material is not only unnecessary, it’s tiring to listen to, and you will be surprised at how much more professional your recording will sound once it’s been deleted.

Two marks must be established in order to define a cut, a START CUT and a STOP CUT mark. If both are defined, a trial delete yellow marker will appear on the audio track.

You may listen to your trial cut by **pressing** the TRY CUT button. Doing this will set the cursor to five seconds back before the beginning of the trial delete and begin play in the “play edited file” mode.

If the cut sounds good, **press** the SET CUT button, which will make the cut “permanent.” The marked cut will turn orange.

On the other hand, if the cut doesn’t sound natural, you can iteratively advance or retard the CUT START and CUT STOP edges by **pressing** either the -0.1 or $+0.1$ seconds buttons associated with the start and stop points.

Occasionally, the start and stop cut points will land on the audio signal in such a manner that a pop or a click is injected into the result by the cut. If you move one or the other edges of the two cut points, you should be able to get rid of the click. At the very worst, if the click seems unsuppressible, move the stop edge to the beginning of the next spoken word. Even if the click remains, it will disappear acoustically into the beginning of the next word.

If the trial cut just doesn’t seem to work, or you don’t care for its effects, **press** ERASE CUT.

To delete or edit a permanent (orange) cut, **right-click** anywhere in the orange area and select either the “delete cut” or “edit cut” option. If you select the “edit cut” option, the permanent cut reverts back to a trial cut and you may modify its settings using the CUT START and CUT STOP buttons. If you select the “delete cut” option, the cut disappears.

When the PLAY EDITED FILE button is pressed, the sound you hear obeys all of the indicated cuts, both trial and permanent, but when the PLAY ORIGINAL FILE button is pressed, the cuts are ignored. The original sound file is played as it was recorded, allowing you to hear the audio you marked as deleted, in case you wish to change your mind.

4.2.3 Hiding Slides

The bandwidth of a *QCShow* presentation is determined primarily by the average number of slides that are shown per minute. If one slide per minute is shown, the bandwidth tends to be about 30 to 35 kbps, well within telephone modem speeds. Two slides per minute generally result in an average encoding rate of 45 to 50 kbps; three slides per minute are in the range 50 to 60 kbps.

Quite often, people who give *PowerPoint* lectures often have a slide series that build a sequence of bullet points that progress down the image with each new slide. These sequences are expensive to transmit in terms of bandwidth. If the speaker lingers on each bulleted point for just a second, it’s far better to hide all of the intermediate slides and transmit only the last complete slide. The viewer will never know the difference, but it can make a significant difference in the resultant bandwidth requirements of the presentation.

However, if the speaker lingers on each bulleted point for 30 seconds or longer, there is much less reason to suppress the intermediate slides. The average bit rate is not affected all that much if the time-on-slide is long enough. You can use your judgment as to when you should suppress the intermediate slides. Generally, those situations where you should hide a slide will often be quite clear.

To hide a slide, **right-click** on the NEXT SLIDE image, which appears in the bottom image panel. When you right-click, a “hide” option will appear. **Left-clicking** the button will cause the slide to go gray and lose its slide number.

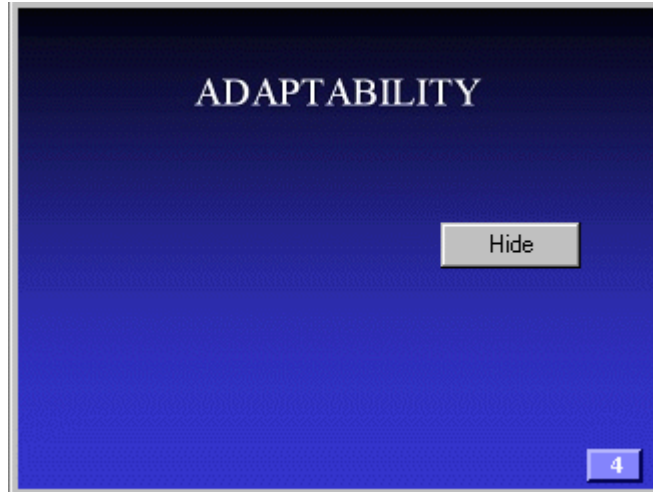


Fig 4.7. *The hide button on an incomplete, mostly empty intermediate slide.*

To unhide a slide, perform the **right-click** action again and **left-click** the “unhide” button.

4.2.4 Statistics

SoundEditor can provide you with an estimate of the encoded bit rate that will result from your edited file, as it currently stands. As you approach the end of your editing process, the estimate will grow increasingly more accurate.

You can display the current presentation statistics by clicking on the STATISTICS pulldown menu option at the top of the screen. When you do, the form on the following page will be displayed.

Each slide that is hidden is one less slide that needs to be transmitted to the viewer, thus the average bandwidth of the transmission is reduced.

Quite similarly, but with opposite results, with each deletion of material from the audio track, the average bandwidth of the transmission is concomitantly increased, simply because less time is now available to transmit the necessary slides.



Fig 4.8. *The current statistics form, listing the original file length, the currently edited runtime, the number of slides used in the presentation, the number of slides that have been hidden, and the estimated encoding bit rate that will result from these editing decisions.*

Keeping the encoded bit rate of a presentation to 40 kbps or lower is considered excellent, but don't become obsessive about it. Creating a quality presentation should always be your first concern, but a quality presentation at low bandwidth is the ideal result.

4.2.5 Magnifying an Image

If you **left-click** on either of the two image panels, you will cause the image to expand to full-screen, allowing you to see the image as the viewer will. Doing this for the NEXT SLIDE image is often helpful, letting you read the fine text on the slide and insuring that you are synchronizing your audio to the correct slide.

The upper CURRENT SLIDE image will always be synchronized to the slide transition marks on the audio track, but the NEXT SLIDE image can be advanced or retarded by using the keyboard's arrow keys.

4.2.6. Player Mode

SoundEditor can emulate the *QCShow Player* when the CURRENT SLIDE is expanded to full-screen mode, although you may find it more satisfying to fully assemble your presentation and view it using the *Player*.

To watch your presentation in this mode, **set** the audio slider bar to the beginning of the sound file, **press** the PLAY EDITED FILE button and then **left-click** the upper CURRENT SLIDE image to expand the current slide to full-screen.

In this mode, **pressing** the SPACE BAR will temporarily pause the play. **Pressing** the SPACE BAR a second time will cause the play to resume.

Pressing the ESC key or **left-clicking** the screen will return *SoundEditor* to its standard display mode.

5

Distributing the Lecture

Final Assembly

5.0 Final Lecture Assembly

Once you've edited and synchronized the sound file to your slides, the only step that remains is to assemble the lecture so that the compressed and synchronized presentation may be uploaded to your web server.

This is done using the Final Lecture Assembly panel of *SoundEditor*.

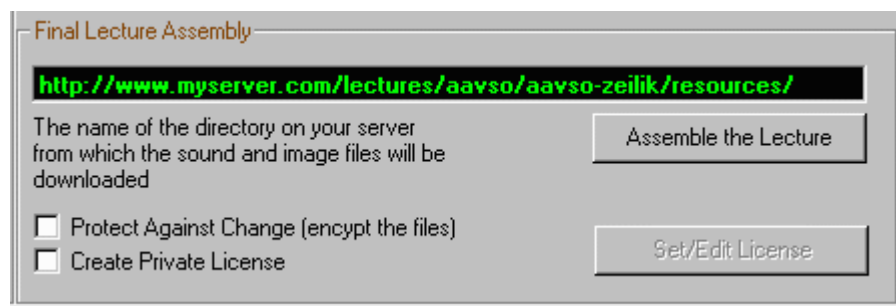


Fig 5.1. *The final lecture assembly panel.*

A *QCShow* presentation is built as a series of independent frames, called “slides.” At their simplest, a slide consists of one image and one sound file, choreographed by a governing script file. When you press the ASSEMBLE THE LECTURE button, each of these individual files is automatically built by *SoundEditor*.

The slide transition times that you specified during the editing process will be used as guides to cut the sound file into individual pieces, one for each “slide.” Surprisingly, a slide is defined not by its image files but by its sound slice. While there may be multiple image files associated with a slide, there will be only one sound file.

The final assembly process not only cuts the original sound file into slide segments, it also compresses the sound files to approximately 5% of their original sizes.

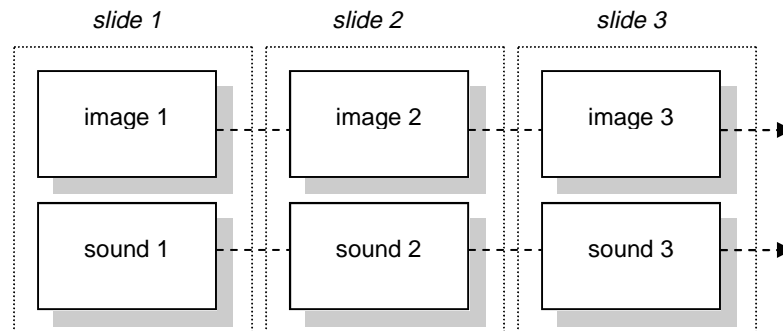


Fig 5.2. A schematic of the *QCShow* process. A “slide” consists of one sound file and at least one image file, downloaded as pairs. Once a sufficient number of the individual slide segments have been downloaded, play begins on the remote computer, with the remainder of the slide segments downloaded in the background while the presentation plays.

The advantages of constructing the *QCShow* presentation in this manner are:

- The sound files can never become desynchronized from the image slides in the player. They are a tightly-linked pair.
- This construct allows for the very high speed search mechanism in *QCShow Player*, allowing the viewer to very rapidly flip between slides.
- Downloading the lecture in segments allows the presentation to begin before the entire file is downloaded. The process is called *streaming*.

5.1 Specifying the Assembly Target Directory

The most likely way that you will distribute your presentations will be via the web, but the assembly process is identical if you plan to distribute your material by CD. The only difference will lie in the necessity of properly specifying an internet address for the web-distributed lectures.

If you are going to distribute your material over the web, quite likely you will have a duplicate copy of your web pages on your local PC. Whether you do or

not, if this is your first presentation assembled in *SoundEditor*, you will want to create a general folder somewhere on your PC, perhaps named something like:

lectures,
presentations, or
qcshow

Inside this folder, you might want to create a subfolder with a general subject area of the presentation (e.g., *aavso*), especially if there is likely to be more than one *QCShow* presentation in the general subject area.

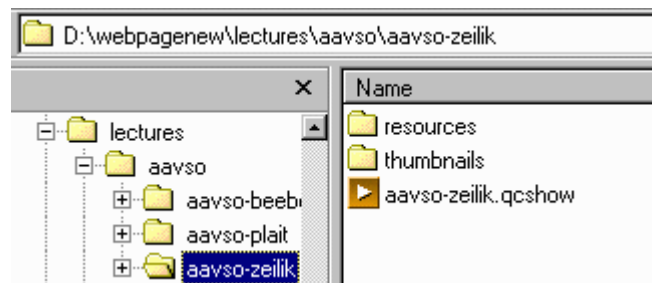


Fig 5.3. A duplicate image of your webpage on your PC.

In the case shown in these illustrations, the general subject name is *aavso*, a conference that we recorded. It's inside that this folder that we will create the specific presentation's name, *aaavso-zeilik*.

The contents of a *QCShow* presentation folder will always have these three components (Fig. 5.3):

- a script file (e.g., *aaavso-zeilik.qcshow*)
- a *resources* folder
- a *thumbnails* folder

The *resources* folder will come to be filled with the tens or hundreds of sound and image files that will comprise the presentation, while the *thumbnails* folder will contain small previews of each slide.

5.2. Assembling the Lecture

Step 1.

If you intend to distribute your lecture via the web, it's critical to the *QCShow* process that you specify the address from where the sound and image files associated with the lecture will be downloaded. This is done in the text box of the Final Lecture Assembly panel (Fig. 5.1).

The address you specify must always end with a folder named *resources* (in lower case). A typical address will look like this:

`http://www.myserver.com/lectures/aavso/aavso-zeilik/resources/`

The diagram shows the URL `http://www.myserver.com/lectures/aavso/aavso-zeilik/resources/` with five arrows pointing to different parts of the address. Below each arrow is a description of that part:

- domain name or ip address of your server
- your qcshow presentations folder name
- the general subject area (conference name, class name, vacation site, etc.)
- the specific presentation's name
- the resources folder

Fig 5.4. A typical web address. The first and last sections of the address are non-optional. A domain name or an ip address of your server must be specified, just as the address must end non-optional with a folder named “resources.” The intermediate folders (directories) are present only to help you keep your presentations organized.

If this is the first presentation you've created, it's worth your time to think about the form that your internet address should take on your server. While you may use virtually any addressing scheme that you like, you'll probably find something like that shown above to be most useful.

On the other hand, if you never intend on distributing your material over the internet, but are planning only on using only CD distributions, the address is irrelevant. The *QCShow Player* looks first to see if it can find all of its sound and image files in a *resources* folder directly adjacent to the script on the CD. If it can, the *Player* never seeks to find its missing resources from the internet.

Step 2.

Once the server address has been entered, **press** the ASSEMBLE THE LECTURE button. This will begin the assembly process.

Step 3.

Two entry forms will appear before the lecture begins to assemble itself. The first asks where you would like to save your presentation and what name you would wish for the presentation folder:

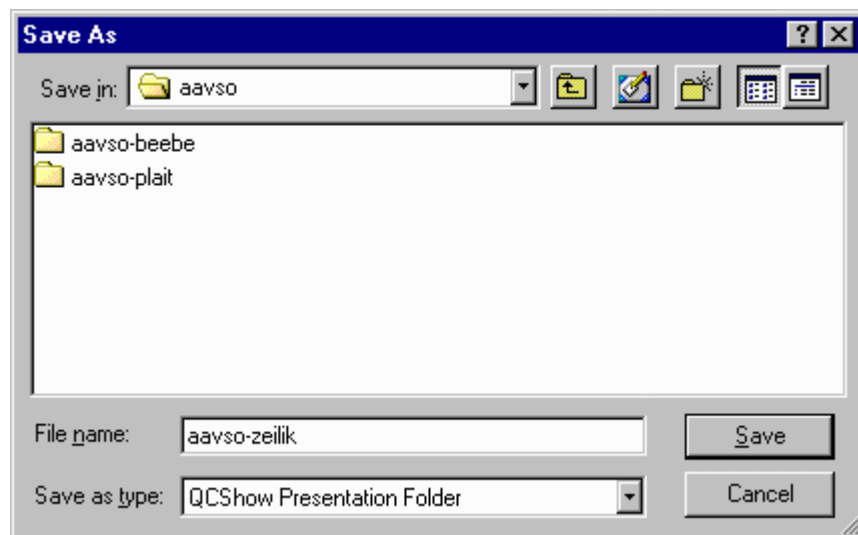


Fig 5.5. *Specifying the name of the QCShow Presentation Folder.*

It's important to note that you're specifying the name of a folder, not that of a file.

The name you choose for the presentation folder does not need to be the same name as the web address you specified in *Step 1*, but it's easier if it is.

We also recommend that you make your presentation folder's name as unique as possible, something like a combination of a conference's name (*aavso*) and the speaker's (*zeilik*). There won't be any confusion at your end if you use simple names, but if everyone names their presentations "*smith*," viewers' players will likely become confused as they cache these folders.

In general, we recommend that the file structure you maintain on your PC be a duplicate of your server's structure, thus that the resulting local path might look like this:

```
c:\webpage\lectures\aavso\aavso-zeilik\
```

Doing this will make FTP'ing your presentation folders to your web server a very simple process. Simplicity is a quality that proves its worth time and time again.

Step 4.

The second form that will appear is optional, but we recommend that you fill it out. The information entered in each section will populate the information display that appears when a viewer presses the "I" key on his keyboard.

Presentation Details

Title:
Pueblo Indian Skywatching

Author:
Michael Zeilik

Organization:
Physics and Astronomy Department
University of New Mexico

Comments:
The 94th Spring Meeting of the AAUSO
Las Cruces, New Mexico
March 31, 2005

OK Cancel

Fig 5.6. *The lecture information entry form.*

Any or all of the sections may be skipped, but the information that you do en-

ter should match the subject of each of the text boxes in order for the viewer's display to make sense.

Although *QCShow Author* will cut the text into individual line segments if you just continue typing, we recommend that you press the ENTER (carriage return) at the end of each line and not let the text box wrap the text for you. If you do this, you will control how the information will appear on the viewer's display.

Step 5.

At this stage, once you press the OK button, the lecture assembly process becomes automatic.

If the recorded WAV sound file is recorded at any rate other than 16,000 samples/sec, at 16 bits/sample, *SoundEditor* will automatically convert the file to those characteristics. 16 kilosamples/sec, 16 bits/sample, monoaural is the standard encoding rate for *QCShow* presentations delivered over the internet. If this conversion is necessary, you will see a bar outlining its progress.

A second progress bar will then appear indicating the progress associated with the cutting of the original sound file into each slide's piece and the compression of each segment. This part of the process may take some time, especially on a slow computer.

Once the splitting/compressing process is complete, a third progress bar will show the progress of the construction of the accompanying thumbnail images.

Finally, if you checked either the "Protect Against Change" or "Create Private License" check boxes, a fourth progress bar will outline the process of encrypting the entire presentation.

As soon as all of these processes are completed, your lecture is ready for internet or CD distribution. To view your completed lecture, go to the folder where you saved the presentation and **double-click** on the ".qcshow" file.

To see an example of the architecture of a completed presentation, see Fig. 5.3.

5.3. Web Distribution

If you intend on distributing your presentations via the web, the final step is to upload your presentation to your web server via FTP and create a hyperlink referring it on one of your web pages. You will do this in two steps:

Step 1.

FTP the entire *QCShow* presentation folder, containing the *resources* and *thumbnails* folders and script file, to your server, using your favorite FTP tool.

Step 2.

Create a web page with an appropriate hyperlink on it to your presentation's script file. The following example is taken directly from one of our own web pages:

```
http://aics-research.com/lectures/public-lectures.html
```

The link on the completed web page appears as:

[Pueblo Indian Skywatching](#)
Michael Zeilik
University of New Mexico

and was constructed using the following very simple HTML code:

```
<blockquote>  
<a href="aavso/aavso-zeilik/aavso-zeilik.qcshow">  
Pueblo Indian Skywatching</a><br>  
<b>Michael Zeilik</b><br>  
University of New Mexico<br>  
</blockquote>
```

If you're familiar with HTML, the process of linking to your new presentation will be obvious in this snippet of code. If you're not, ask whoever put up your web pages for help.

This is all that there is to distributing your presentations via the web — with one small exception: the one-time definition of a MIME type.

5.3.1 Specifying a MIME Type

When a user installs *QCShow Player* on his PC, the file extension “.qcshow” is registered so that the *Player* becomes the default program for that file extension. If any file that ends in “.qcshow” is then double-clicked, the *Player* is automatically launched. The *Player* then in turn reads and acts on the content of the *QCShow* script file.

This behavior is also retained in Microsoft’s *Internet Explorer*. If a web-based hyperlink ending in “.qcshow” is clicked, the script file is downloaded, the *Player* is launched, and the contents of the downloaded script are acted upon.

The other, more “standards”-based browsers (*Netscape*, *Firefox*, etc.) are unfortunately not as simple. They first require the exchange of a MIME type (Multipurpose Internet Mail Extensions) before these browsers launch the default program specified in the registry.

If your web server does not supply the proper MIME information, 30% of your viewers’ browsers will not properly launch the *Player*. The simplest way to add this feature is to add what’s called a *directive* to an access file named “.htaccess”.

This file may already be on your web server. If it is, it’s likely to be resident at your account’s root. If it is, download the *.htaccess* file to your PC and add this “directive” using *Notepad* to whatever other directives may already exist in the file:

```
AddType application/x-qcshow .qcshow
```

Once done, FTP the modified file back to your account’s root.

If the file is not present, it’s simple to create. Use *Notepad* on your PC and type the single line shown above. Save the file as “.htaccess” and FTP the file to your account’s root.

Test your server settings using *Netscape* or *Firefox* for proper behavior. The presence or absence of the MIME type will not affect *Internet Explorer*.

5.4 Distribution by CD

At the moment, CD distribution is extremely simple. You merely burn a CD with an image of the *QCShow* presentation folders you want on the CD. The presentations are launched manually by **double-clicking** on the various script files.

Because everything necessary for play of the presentations is expected to be on the CD, no connection to the internet is necessary when your presentations are launched from a CD, thus they will work well in mobile situations, such as on airplanes, in hotel rooms, etc.

However, a more elaborate CD distribution mechanism will be available in the near future so that when a more elaborately formatted CD is inserted into a PC, it will:

- Autolaunch a program to determine if the PC already has a copy of *QCShow Player* on the machine.
- If it doesn't, it will automatically and silently install the *Player* at its default location, and then
- Autolaunch the user's default web browser using a home page that you've specified to be resident on the CD. It's this home page that will contain hyperlinks to the various *QCShow* presentations resident on the CD, as well as to perhaps other informational web pages on the CD.

The intent is to provide a rich and attractive educational experience without any requirement that the PC ever be connected to the internet. This behavior will undoubtedly prove valuable for users in remote locations or without much prior technical experience.

Look for this feature in the Fall of 2005.



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