

# Basics of Non-Linear Video *From Planning to Finished Video*



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<http://www.abc-grr.org>

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## **Why Video?**

- Video “grabs” people; Well done Video “keeps” people.
- 80% of People are predominantly visual in orientation
- 500% boost in return rate when video is incorporated into a web site
- Video is highly adaptable for media of choice
- Production and Transmission of Video is no longer cost prohibitive

## **Where to Use Video?**

- Augment Powerpoints
- Embed Video in non-PowerPoint based projected reports (in Spreadsheets, database reports, etc)
- Produce CD and DVD Media: Both Video and Data Disks
- Incorporate video into email
- Incorporate video into web sites

## Process of Producing Video

As you “get your feet wet” you will be confronted by terminology / vocabulary that is not clear to you. [Click here for a glossary](#) of terms used in this field.

### 1. Plan

Before you “shoot,” draw up a plan.

### 2. Create Clips, Pics, and Audio

Use analog or digital picture and video cameras

### 3. Capture Clips Pics, and Audio

Transfer your pictures, clips, and audio to the computer

### 4. Edit

Assemble the parts, trim, add transitions and titles

### 5. Render

Make the video in a format you can use

### 6. Record

Back up the finished file(s), then make your video disk

### 7. Share

Distribute the video on disk or upload it to the web page

## Planning Production

“The best software often makes a creative genius mediocre at best”

Use NLE (\*Non-Linear Editing) as a communication tool, not as your master.

### What You Need:

- Paper
- Pen/Pencil
- Answers to the following:
  - In one sentence, describe the story you want to tell. What are you attempting to accomplish?
  - In one phrase: Describe the audience (Do a demographics study for general traits)
  - List qualities needing to be in the video to establish rapport with your intended audience (e.g. Pace, Tempo (music), People/Objects, Transitions)
  - Will you need to insert a background for any interview shots? (Make plans for such “green screen process” now. This “[keying](#)” procedure will not be possible to do well unless you plan now to have the screen in the background ahead of time.)

### What to Do:

- Outline the video: What’s first, second, third, etc ([Storyboarding](#) helps.)
- Refine the [planning](#) of shooting by answering the questions above.
- List the equipment needed for filming
- Assemble this equipment.

\*NLE vs Linear Editing: NLE is done with a computer; not in the linear way that re-recording and/or cutting and pasting film/analog tape has been done.

## Create Clips and Pics

### What You Need:

- Camera (Still film or digital; video; analog or digital; scanner for film pics/slides)
- Microphone (on camera or external)
- Lighting (Best video is adequately lighted)
- [Permission Document\(s\)](#): Sample of [Adult](#) and [Minor](#)

### What to Do:

- Use your storyboard from your first planning step to generate a list of needed clips and stills.
- Use your storyboard planning to choose audio tracks and pursue license to use these.
- Record at least 5 seconds of video before the action/speaking or other material starts. This is needed to accommodate transitions in the editing process.
- Record at least 5 seconds of video after the action/speaking or other material ends. This is needed to accommodate transitions in the editing process.
- Label and [catalogue](#) tapes as you go:
  - Description
  - Date
- Get written permission from people who are in the video. Verbal is OK with “implied consent” that may come with one’s job description if it includes public appearances. Be sure: Get it in writing.

## Capture Clips and Pics

### What You Need:

- Computer with Capture Card (or disk from another who has captured video)

Types of Capture Cards	<p>Capture Analog (like a vcr tape)</p> <p>Digital ("Firewire" IEEE 1394) Analog and Digital</p>
Types of Input ports on Cards	<p>Best: Component Video &amp; Stereo often found with all the following, also</p> <p>Better: Svideo and Stereo</p> <p>Good: Composite</p>
Capture Output Formats: (What type of file ends up on HD)	<p>AVI – Most-used editing format</p> <p>MPEG 1 (Best mpeg 1 used for LP DVD)</p> <p>MPEG 2 (for DVD high resolution)</p>
Encoding Considerations:	<p>Software Driven (higher end computers)</p> <p>Hardware Driven (cpu on capture card, less strain on computer's cpu)</p> <p>The following can be purchased either from the company's store or from BestBuy, WalMart, CircuitCity, Amazon, or other online vendors.</p>
Manufacturers of Capture Cards:	<p>These manufacturers produce low to high end capture cards. Some have only analog (svideo, composite) inputs. The high end ones have these and digital input.</p> <p>Make sure the card you are about to purchase is compatible with the software video editor you have or are about to acquire.</p>
ATI	<a href="http://www.ati.com">http://www.ati.com</a>
Aurora	<a href="http://www.auroravideosys.com/products/ignFam.php">http://www.auroravideosys.com/products/ignFam.php</a>

Canopus	<a href="http://www.canopus.us/Index_US.asp">http://www.canopus.us/Index_US.asp</a>
Dazzle	<a href="http://www.pinnaclesys.com/videoediting.asp?Family=24">http://www.pinnaclesys.com/videoediting.asp?Family=24</a>
Hauppauge	<a href="http://www.hauppauge.com/">http://www.hauppauge.com/</a>
Matrox	<a href="http://www.matrox.com">http://www.matrox.com</a>
Pinnacle	<a href="http://www.pinnaclesys.com/">http://www.pinnaclesys.com/</a>
ViewCast	<a href="http://www.viewcast.com/products/osprey.html">http://www.viewcast.com/products/osprey.html</a>

Manufacturers of Firewire Cards for capturing from digital cams Many of these 1394 cards for desktops and notebooks (PCMCAI) come with “bundled” software.

Adaptec [http://www.adaptec.com/worldwide/product/prodt echindex.html?cat=/Technology/FireWire-1394&source=home\\_menu](http://www.adaptec.com/worldwide/product/prodt echindex.html?cat=/Technology/FireWire-1394&source=home_menu)

Belkin <http://web.belkin.com/config/Search/SearchResults.asp?search=1394&catID=1>

Manufacturers of External “break out boxes” to convert analog to digital <http://www.dazzle.com>  
<http://www.adaptec.com>  
<http://www.belkin.com>  
<http://www.hp.com>  
<http://www.matrox.com>  
<http://www.ati.com>

- Cables compatible with both computer’s capture card and video output device (e.g. camera/vcr deck).
- Capture Card’s bundled software installed and running after connecting cables to the capture card and turning on the camera/vcr deck (not playing video, though)
- Memory Card reader or dock to transfer digital pics onto the computer’s hard drive.

### **What to Do:**

1. Make sure the following steps are followed in order for the software and hardware to communicate.
2. Connect camera (or vcr) to computer’s capture card with required cable(s)

3. Turn on camera or vcr (but do not play).
4. Open capture card's software program, or, open your video editing program if it has video capture ability and it is compatible with the capture card you are using.
5. Start the camera or vcr playing. When capturing from analog sources you will need to manually start the camera or vcr. When using a digital camera check in your video editing software program to see if you can control the deck or camera from within that program. Most software now does this, but only with digital cameras/feeds. Digital cameras and decks can "talk" to each other.
6. Click on record icon in the software capture program.
7. When clip is recorded, save with file name that designates its description and that it is raw (vs. edited) video.

## Edit

### What You Need:

- Storyboard from Step 1
- [Software](#) and a Computer that will run it. (Before buying a program, look at the minimum requirements. You will need all, and better, more than is stated.) I would also recommend Power Director from Cyberlink - <http://www.gocyberlink.com/english/cyberstore/cyberstore.jsp>

Before purchasing a software package, check to make sure you don't already have one that you didn't know you had. The following contain video editors that are ready, or with a free download and installation will be ready for you to start.

- Windows XP Operating System (Home and Pro) – [Windows Movie Maker](#) (Also purchase the [Digital Plus Package](#) for more options)
  - OS X and forward for the Mac – [iMovie](#) from Apple computer
  - [Roxio CD Creator](#) – Bundled with this software is a video editor
  - Ahead Software's [Nero CD Burning Software](#) – Bundled video editor
  - [My DVD](#) from Sonic – Bundles a movie editor
  - Hardware: Have a [DVD Writer](#)? You may have a video editor with it
- Time
  - Patience
  - Software for editing digital stills to the parameters needed by your video editing software project. (Different projects require different parameters (i.e. size measured in pixels), resolution)

Adobe <http://www.adobe.com/products/photoshopel/main.html>  
 PhotoShop  
 Elements  
 (Consumer)

Adobe <http://www.adobe.com/products/photoshop/main.html>  
 PhotoShop  
 (Prosumer)

Corel <http://www.corel.com/>  
 (Prosumer)

Jasc <http://www.jasc.com/products/>

(Consumer)

**What to Do:**

- Open Video Editing Software (if not already open for capturing video)
  - When using a digital camera, some software has the ability to copy low quality video onto the hard drive with the digital “markers” to later recover the full quality plus/minus edits performed. This saves disk space. Pinnacle software, for one, has this option.
- Start New Project and save with project name immediately.
- Import, per software’s directions, your video clips into a library or bin.
- Place video clips on an edit line (timeline or storyline).
- Edit
  - Trim
  - Insert Titles
  - Insert Pictures or more video
  - Insert Transitions
  - Add/Remove audio tracks; dub in voice over

## Render the Video

### What You Need:

- [Software](#)
- Discernment for Picking Needed output
- Much time and patience (Unless you have very-high end equipment, rendering your video into final form will not be accomplished in real time (real time = 15 minute video renders in 15 minutes); but the more edits, transitions and such you put into the video the more time it will take (15 minutes could take several hours)).

### What to Do:

- Look at your planning from Step 1
- Ask yourself again, “***How am I going to distribute/share the finished video?***”
- A Hint: First render a good quality video that will be able to be rendered again in a smaller file size for the web or other use. You will still have a good quality product for uses when you are not limited to the web connections (i.e. embedded in PowerPoint or Excel, etc.)
- \*Choose the appropriate output for **movie discs**.

Sharing Medium	Final Size of File	Rendering Output
CD/DVD Data disk	Large (>50 MB)	MPG 1 or 2 (1 if slower computer)
VCD (Video CD)	Up to 700 MB	MPEG 1 (defined by VCD)
SVCD (Super Video CD)	Up to 700 MB	MPEG 2 (defined by SVCD)
DVD (playable on DVD Players connected to tv)	Up to 4.7 GigB	MPEG 2 for high resolution MPEG 1 for LP resolution

\*Recent advances in editing software and wider use of DVD authoring programs (standalones and bundled with other software and/or hardware), have resulted in these programs having the ability to render your video directly to DVD format ready for DVD video production. In other words you would choose the output (first column above) and the software

would choose the Rendering Output. You can still choose for maximum versatility.

### Rendering for the Web:

There are 3 widely used formats, with a 4<sup>th</sup> one – [MPEG 4](#) - coming on strong as of this writing. These four together will reach 95% of those who download video on the web. Study the table below for help in understanding these, more properly referred to as, CODECS (**C**ompression/**D**ecompression).

All digital video is compressed (The DVD standard of MPEG 2 is itself a compression format). Uncompressed video at the usual 30 framers per second rate for optimal quality would use up 30 Megabytes *per second!*

Name	Extension	Compatibility	Company
<a href="#">Windows Media</a>	*.wmv (*.wma for audio)	Windows not Macintosh	Microsoft
<a href="#">QuickTime</a>	*.mov	Windows AND Macintosh	Apple Computer
<a href="#">Real Media</a>	*.rm	Windows AND McIntosh	RealNetworks

Each of the above has free players available for the download. **Make sure you have the most recent version.** While these players are backward compatible, they are not forward compatible (i.e. the older players will not play video that has been produced in the newer versions).

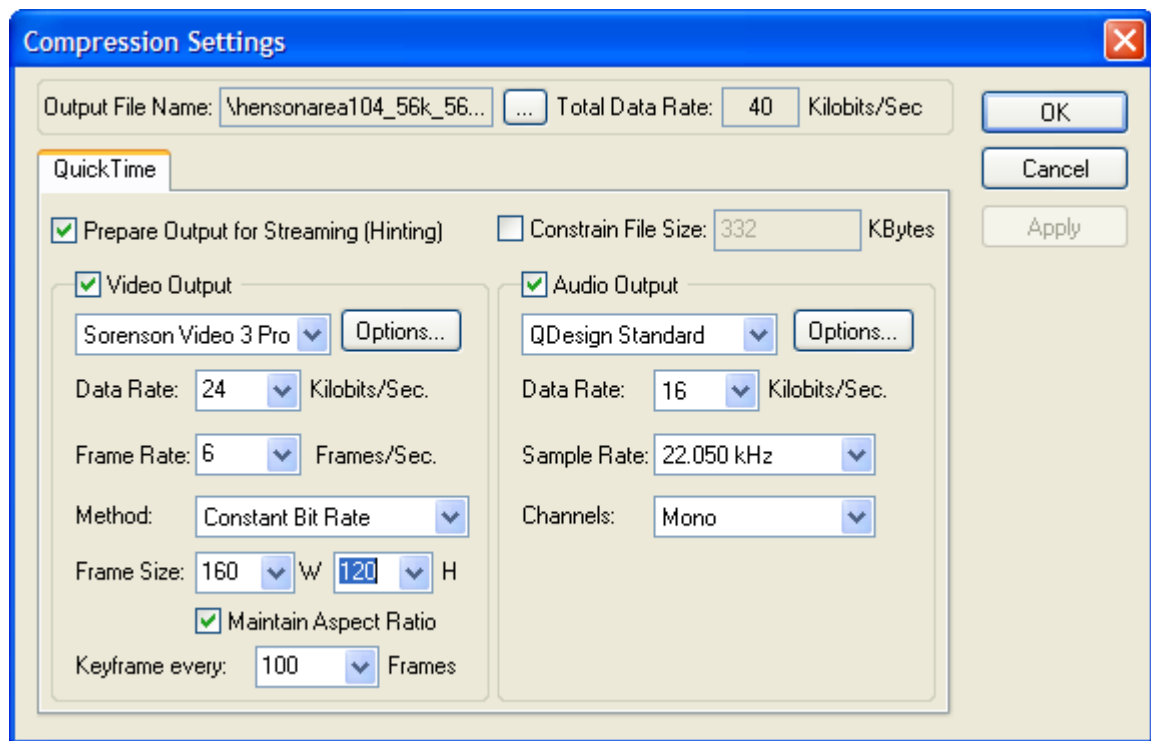
Each of the above formats also has a basic editor to use primarily with their own formats. These editor editions are not free.

- One more choice: Streaming or Progressive
  - [Streaming](#): Starts to play without writing to the hard drive when the buffer has enough of the start of the video. Not all web hosting companies provide this ability without additional, sometimes significantly more, expense.
  - Progressive: Downloads to the hard drive, but starts to play when buffer has enough information. It does not wait for the entire video file to download. This is chosen by you as you prepare to render. Not all software video editing accomplishes this.

- Variables to Manage when putting Video on the Web; File size depends upon the following.
  - **Connection Speed** (visitors to your webpage and your own; assume 28 Kbit dialup)
  - **Quality of Video** (absence of “artifacts”; sharp or soft)
  - **Quantity of Video** (How long is it?)
  - **Frame Size of Video** (160 x 120; 240 x 180; 320 x 240; 480 x 360; 640 x 480)
  
- Examples of Managing the above for optimum (smallest possible) file size assuming dial-up connection by users of your web page:
  - Short Video: quality or frame size can increase, or some of both
  - Long Video (> three minutes): frame size and/or quality must decrease
  
- Example of Managing the above for optimum file size assuming broadband connection by users of your web page:
  - Short or Long Video: Frame size best no larger than 320 x 240 and Quality at 70%
  
- Remember, **do not** have a video play when someone first logs onto your site! Total download of your site’s first page should max out at 12 seconds on 56K modem, best if under 10. A link on the first page to the video, can be helpful.
  
- Choice of formats:
  - Use Apple’s Quicktime (\*.mov) if posting clip(s) in only one format
  - Use Apple’s Quicktime (\*.mov) and Microsoft’s Windows Media (\*.wmv) if posting only two formats.
  
- A Word on Editing Software and Additional Rendering abilities:
  - Some software allows the user to pick the target connection speed. Then the software selects default settings for frame size and quality that will achieve an acceptable file size.
  - Some software also renders several files. For example, when the Quicktime format is chosen, some software will produce several files, one for 28K, one for 36K, and one for 56K dialups and allow you also to

choose a broadband connection speed. Using Metafile information installed by the program on your web page, the file will observe your webpage user's connection speed and open the most appropriate one for the user when the user clicks on your video's play link.

- [Sorensen Squeeze](#) (see screen shot below) is able to produce the best results. (This is not an editing, but a rendering program.) After you render a good quality Windows Media or Quicktime file from your video editing program, close the editing program and open the file in Sorensen Squeeze. You have default choices, but you also have a great number of choices for all output parameters. This program is used by major online newspapers and cable networks on the web. This author uses this program for the GRR web page and other editing. 12 Gigabyte video files become 500 MB Quicktime files with excellent quality at 480 x 360 for nearly an hour's worth. This would not be used for the web. It would be rendered to no more than a 160 x 120 frame and reduced to no more than 1 Megabyte. Further, it would be saved in parts, further reducing any single download time.



The alternative to editing/rendering is to do all these steps in real time. At least a 2.4 Ghrz computer is needed, but [SeriousMagic's Visual Communicator](#) is an excellent and award winning, user friendly video producer. It can be purchased for web or general production. It works by setting a script (all components) ahead of recording.

## Recording the Finished Video

### What You Need:

- CD and/or DVD Writer (aka “Burner”; [Review and Shop](#))
- Recording (aka “burning” software)
- CD and/or DVD Media (Disks)
- Optional: External Fast Hard Drive connected with USB 2.0 and/or Firewire
- Optional: DVD Authoring Software  
What is making this optional is the leading CD/DVD Burning Software and the same type of software that now comes bundled with OS X for the Mac and XP for Windows have abilities to author DVDs.

Adobe  
Encore (Pro-  
sumer; Pro  
level)      <http://www.adobe.com/products/encore/main.html>

Ahead Nero  
(Consumer)      <http://www.nero.com/us/suite.html>

Cyberlink  
(Consumer)      <http://www.gocyberlink.com/english/cyberstore/cyberstore.jsp>

My DVD by  
Sonic  
(Consumer)      <http://www.sonic.com>

Pinnacle  
(Consumer)      [http://www.pinnaclesys.com/Category.asp?Category\\_ID=4&Language\\_ID=7](http://www.pinnaclesys.com/Category.asp?Category_ID=4&Language_ID=7)

Roxio  
(Consumer)      <http://www.roxio.com/en/products/ecdc/index.jhtml>

Toast for  
Macs      <http://www.roxio.com/en/products/toast/index.jhtml>

**What to Do:**

- First, backup your finished rendered file. Do not wait to burn a VCD, SVCD, or DVD. You are only backing up the file so that if something catastrophic happens during the production of a video disk that makes the file you had worked so hard on unreadable, you still have the backup file. If you are having to use the backup file, copy it, DON'T USE IT, to your hard drive where you will work on the copy to produce a video disk.
- Second, Open the program you want to use to produce a VCD, SVCD, or DVD. Follow the wizards and/or instructions. Put a blank cd or dvd in the burner and click on burn (or other logo/word depending upon the software).
- Third, label the finished VCD, SVCD, or DVD. DO NOT USE stick-on labels. They will warp the cd or dvd within a couple of years. Instead either use the low cost method of a permanent ink marker or the expensive option of a cd/dvd printer to put the title, date, contents, and - if not a regular dvd – the digital format of the file on the disk.

## Share Your Video

### What You Need:

- Many CD and/or DVD media
- Sleeves (Plastic, Paper)
- Padded Mailers
- Stiff Cardboard to prevent breakage
- Web page Composition Software (See also: [Appendix A](#) – Web Resources)

Adobe's Go Live      <http://www.adobe.com/products/golive/main.html>

Macromedia's  
Dreamweaver      [http://www.macromedia.com/software/dreamweaver/?promoid=home\\_prod\\_dw\\_082403](http://www.macromedia.com/software/dreamweaver/?promoid=home_prod_dw_082403)

Contribute      [http://www.macromedia.com/software/contribute/?promoid=home\\_prod\\_contribute\\_082403](http://www.macromedia.com/software/contribute/?promoid=home_prod_contribute_082403)

Microsoft's Front  
Page      <http://office.microsoft.com/home/office.aspx?assetid=FX01085802&CTT=6&Origin=ES790020011033>

NetObjext's  
Fusion      <http://www.softwarestation.com/600123.htm>

Netscape's  
Composer (Free  
for download)      <http://channels.netscape.com/ns/browsers/default.jsp>

Optional: FTP Transfer ("client") software for uploading video to web

Ipswitch's  
ws\_ftp pro  
(recommended)      <http://www.ipswitch.com>

Bullet Proof      <http://www.bpftp.com>

Cute FTP      <http://www.globalscape.com/store/cuteftpdeal.asp?CMP=AFC-CJ30FTP&AID=10299028&PID=1400314>

FTP Voyager      <http://www.ftpvoyager.com>

**What to Do:**

- If Sharing a CD or DVD:
  - When authoring your CD or DVD, instruct the program to make multiple copies.
  - Or, acquire a program that copies CDs and DVDs. These give you the option of making many copies more speedily than the DVD authoring programs. You will first convert the DVD contents to an image file. Then that image file (a digital picture of the DVD disk) is recorded on the blank media.)
  
- If Sharing Video on the Web:
  - Open your web page composition software.
  - Open page where you want the link to the video to appear. Insert link. Preview to test.
  - Save web page with the link to the video.
  - Open the ftp upload function of the web page composition software or a standalone ftp client software and transfer the video file(s) and the edited web page to your web host.

## Appendix A – Web Resources

### **General Information about Websites:**

- [“Best Practices for Church Web Sites”](#)
- [“Effective Church Web Sites”](#)
- [Review of “Creating Effective Church Web Sites”](#) – an outstanding book with excellent step-by-step explanation and worksheets. This review is a powerpoint with full bibliographic data.

### **Demo-ware, Shareware, Trial-ware on disc:**

**Adobe Acrobat Reader:** Click on the following link that matches your operating system. Microsoft [Windows 98, 98 SE](#); Microsoft [Windows 2000, XP](#) You will need the Adobe Acrobat Reader to view PDF files on this resource disc.

**Powerpoint Viewer:** (If Microsoft’s PowerPoint is not already installed on your computer, click on the link at left to install this viewer. You will need this or the full version of PowerPoint to view some of the resources listed below.)

**Winzip 8.1** (Click on link at left to install this program, if it is not already installed on your computer to allow you to use any of the following programs that is compressed in a \*.ZIP format)

### **Web Site Composition Demonstration Software:**

- **Composer** (go to [www.netscape.com](http://www.netscape.com) and download the most recent edition of Netscape. This is a suite of programs including “Composer” a basic web page composition software program.)
- **Contribute** (Click on link at left to start the installation of this trial software. Contribute is a basic web page composition program by [Macromedia](#) that contains its own browser, editor, and ftp client)
- **Dreamweaver** (Click on link at left to start the installation of this trial software by [Macromedia](#). This is the program of choice for many professional webmasters. It contains many “bells and whistles” that the beginner does not need, but that add great functionality to a site as the beginner becomes a more confident webmaster.)
- **FrontPage** (Click on the following link to preview this web page composition software produced by Microsoft:  
<http://www.runaware.com/microsoft/frontpage2003/> ) Though this software is

one of the more popular among consumers, it is not as good as Dreamweaver and Go Live.

- [Go Live](#) (Click on link at left to start the installation of this trial software by [Adobe](#). This is Adobe's program that competes with Macromedia's Dreamweaver and Microsoft's FrontPage.)
- Notepad – For those who know HTML – the code behind web pages, this text editor that comes with most if not all versions of Microsoft's Windows Operating System is a good choice. Use this program to compose. Use Internet Explorer to preview what is composed.

### **Miscellaneous Web Software:**

- **HTML Calendar Maker Pro** ([Click here](#) to start installation of this program that creates interactive calendars for your web page; [website of publisher on pdf](#))
- [Click here](#) to start install of **PM View**, digital image editing software that will allow the user to quickly prepare digital photographs for web use.

### **Other Resources:**

- [Sorenson Squeeze](#) (Click on link at left to install the trial version of this rendering program that produces output files for web, lan, and disc media. [Website on PDF](#))
- [Video](#) Demonstrating "Upload" of web files to Remote Server (Your web hosting company)

### **Web Sites:**

- Area III's Resources:  
[http://www.iii-grr-abc.org/computercomm/how\\_do\\_churches\\_get\\_their\\_own\\_we.htm](http://www.iii-grr-abc.org/computercomm/how_do_churches_get_their_own_we.htm)
- Great Rivers Region Resource:  
<http://www.abc-grr.org/tech/columns/webpage.htm>

## Appendix B – Worship Multi-Media

[“Multimedia Worship – A Practical Approach”](#) by Kent Wilson (PDF)

[“Where do We Plug In?”](#) – An introductory Powerpoint by Dwight Stinnett

<http://www.abc-grr.org/tech/index.htm> - Many articles on different aspects of this.

[I Worship](#): (Click on the link at left to open a pdf version of the web page that describes this well-respected worship resource.)

### **Presentation Software:**

In addition to PowerPoint by Microsoft, Presentations by Corel, and other electronic slide show software there are programs that are specifically written to use all multimedia resources. Basically, these are shell programs that integrate video players, powerpoint players, CCLI libraries, Bible Translations, and more to provide a seamless presentation from the start of the worship time to the conclusion. User intervention is also supported if last second edits and/or non-linear use (i.e. “skipping around”) is needed.

The following are the trial versions of two of these packages. Also included are parts of the web sites on pdf with all primary links active for going online if your computer is connected to the internet as you view this page.

[MediaShout](#) (Click on the link at left to install the trial version; [PDF of web site](#))

[SundayPlus](#) (Click on the link at left to install the trial version; [PDF of web site](#); [help file](#) in ZIP File; [field guide](#) in ZIP file)

### **Video of How One Church Does Multimedia in Worship.**

Choose your format of choice: [Quicktime](#) - [RealMedia](#) - [WindowsMedia](#)