

# Video Production Guide

## Conceptualizing The Edited Program

- What are your objectives?
  - To introduce a subject to a new audience
  - To demonstrate a process, technique, or equipment
  - To provide the historical background of a research initiative
  - Just for fun
- How will this video be used?
  - Informational
  - Grant application or documentation
  - Conference presentation
  - Training new employees
  - Distance education
  - Pure entertainment
- What is your budget?
  - Client time available for pre-production
  - Number of new scenes/minutes need to be videotaped
  - Number of rough edits required
  - Deadline for completion
  - Length of final tape(s)
- What source material will be used?
  - Scenes videotaped by you
  - 35mm slides
  - Black & White or color photographs
  - Animation (does it need to be transferred to video?)
  - Graphic stills (TIFF with LZW compression preferred)
  - Narration/script
  - Music (are performance rights cleared?)
  - Printed materials
  - Previously existing video
  - Scenes videotaped by MIT Video Productions (MVP) or other outsourcing
- How will you distribute this video?
  - [MIT TechTV](#) - Web (Quicktime (H.264, MPEG4, etc.), Flash Video (.flv), mobile video, other)
  - Blu-Ray, Video DVD, DVD-ROM, CD-ROM, Data DVD
  - Videotape (NTSC VHS in US and Japan, PAL overseas)
- What is the target audience?
  - Level of interest
  - General-interest audience
  - Technical audience
  - Level of education
  - Faculty/Staff/Students
- What is the title of your project?
- What will the project look like? (Storyboard)

- Do you have performance copyrights and location releases?

### **Structure: Determining Genre**

Here are several samples of MVP projects, which represent the genres of research videos produced in 1997 and 1998.

- Live lab demonstration
  - Cog, the Humanoid Robot [T2067]
    - Client: News Office/AI Lab (no client present for post-production)
    - Length: 3 min 8 sec (cue: 0m0s)
    - Resources: high (2 days shooting, 8 hours editing)
    - Parallel narration by Rodney Brooks, Brian Scasellati
    - Post-production: Non-linear
  - Toco: Grounded Language Learning [T2320]
    - Client: Deb Roy/Media Lab
    - Length: 5 min 3 sec (cue: 0m0s)
    - Resources: medium (1 day shooting, 6 hours editing)
    - Post-narration improvised by client
    - Post-production: Non-linear
- Abstract Research demo (VHS, SVHS, Hi-8)
  - The Fermentation Process [T1840]
    - Client: Jean-Francios Hamel/Chemical Engineering
    - Length: 5 min 10 sec (Cue: 0m0s)
    - Resources: Low
    - Video: shot by client (VHS with scale)
    - Audio: Silent or live narration
    - Post-production: MVP linear
  - Hago B-50 Nozzle Air Jet Visualization [T1844]
    - Client: Shireen Eletribi/Mechanical Engineering
    - Length: 16 min (cue: 7m10s, 1m43s)
    - Video: shot by client (VHS) using high contrast lighting
    - Audio: silent or live narration
    - Post-production: MVP linear

### **Developing a Visual Style: Consistency Across Media**

- Are there existing treatments in video or print?
  - Fonts (serif and sans serif)
  - Color palettes
- What visual language will be used?
  - Minimize intrusion of techniques on content
  - Plan to cut between shots just as the eye blinks when looking around
  - Use dissolves to represent change to new place or time
- Can you tell a story about your project?

- Plan a beginning, middle and end
  - For a piece longer than 5 minutes, capture interest with an open sequence
  - Develop sequences or scenes to illustrate the story
    - Capture actions and reactions
    - Shoot discreet shots
  - Vary the visual scale
    - Use wide shots to establish the location
    - Use tight shots that show the action
  - Vary the pace of the action
    - Alternate between long and short shots as appropriate (3 – 10 seconds)
  - Shoot only as much material as you need to cover your outline
- Will you use narration?
    - Pre-interview talent, record narration, write script, re-record narration audio
    - Prepare script for on-camera talent
      - Print cue-cards in large type on letter-sized paper
    - Consider shooting primary themes on camera and reading remainder of script
  - Will you conduct interviews?
    - Prepare a full range of questions covering the topic
    - Interview several participants with the same questions
    - Be sure to shoot multiple “cutaway” shots illustrating the themes/questions

### **Videography: Shooting to Edit**

- Use the best camcorder available. There are three major video categories:
  - Digital transfer (advanced digital television)
    - HD Cameras (XDCam, HDV, AVCHD, 1080p, 1080i, 720p, etc.)
    - DVCam, DVCPro
    - Digital-S-video
    - Digital Betacam
  - Component analog (broadcast quality)
    - MiniDV
    - Betacam-SP
    - S-video (prosumer)
    - Hi8
    - S-VHS
  - Composite/standard video (consumer)
    - MiniDV
    - 8mm
    - Digital 8mm
    - VHS
- Choose a camera that records timecode
  - Prosumer, professional and digital cameras record a number with every video frame
  - Usually in the format HH:MM:SS:FF or hours:minutes:seconds:frames
  - Timecode is required for non-linear editing
  - Types of timecode
    - SMPTE VITC/LTC (on professional cameras)
    - Sony LANC (on prosumer cameras)

- VHS and 8mm do not record timecode
- Tips for prosumer camcorders
  - Record continuously. Never leave blank spaces which break the timecode
  - Record for 5-10 seconds before and after every shot
  - Always use the fastest tape speed (SP) for higher quality
  - Use automatic focus, white balance and exposure controls are automatic, unless you have the knowledge and expertise to always adjust them
  - Don't add titles with camcorder onto original tape. **Turn off date stamp**
- Camera placement
  - Change the point of view between shots – shoot from different angles
  - Change your shooting height: higher or lower angles add interest
  - Be aware of the background and try not to shoot with items that will distract/detract from your subject/scene
- Composition suggestions
  - Avoid motion while you are shooting; plan to change shots in editing
  - When you do move, do so as slowly and smoothly as possible
  - Don't zoom while recording. Change vantage points with a new shot and edit
  - Keep action within the “safe area” in the middle 75% of the screen
  - Place the eyes of the subject on a line about one-third down from the top of the screen
  - Add some space in front of people
- Lighting suggestions
  - Low levels can reduce detail and quality, so shoot in strong light
    - Shoot near windows
    - Turn on all the lights
    - Consider setting up your own soft lights. A strong single light source creates deep shadows. A secondary, diffused light or a reflector fills the shadows. Reflect light off walls or a sheet of foam-core
- Graphics acquisition
  - Place all graphics within safe area
  - Don't use 1-pixel lines or objects in graphics. They will flicker when translated into video
  - Keep all elements below 70% of total white
- Audio hints
  - Use an external microphone or wireless mic
  - Place a lavalier mic (clip-on mic) at chest height
  - Direct a shotgun mic (directional mic) at the primary source of sound
  - Record natural, or ambient, sound (sometimes called “room noise”) at the end of each scene. This helps the editor create clean audio edits

### **Logging: Evaluating your footage**

- Screen the footage with an eye to the phrases and shots that best illustrate your strategy. While screening, create a log listing all the shots on each tape that may be used in the final project
- Screening usually takes about 2 hours of screening for each hour of original footage

- Use the following logging format with your word processor, spreadsheet or database program
  - Reel number [followed by a tab]. Use three digit numbers starting with 101
  - In-point formatted as hour:minute:second, such as 01:10:12. The in and out can be within a couple of seconds, so you can ignore frame numbers on the windows dub [tab]
  - 2-3 word name for clip/shot [tab]
  - Description of up to 10 words including the first and last few words of the segment [tab]
  - Priority. Place an asterisk next to clips you like, two \*s next to clips you like even better, etc. No limit to number of \*s you can use [tab]
  - Carriage return at end of line
- Here is a sample screening log:

REEL	IN-POINT	OUT-POINT	CLIP NAME	IN-CUE AND OUT-CUE	PRIORITY
101	09:02:13	09:02:34	Porter	One of great... Rudolph, Jewett	**
101	08:29:55	08:30:11	Pierce	There was Andy... only one building	*
102	10:00:29	10:00:44	Lincoln	House to woods... from above	*****

### **Edit Scripts and Outlines: The “Paper” Edit**

An edit script or outline communicates a general idea about how the video might flow. This step, although optional, can make sure the structure of the first rough edit matches your vision.

To prepare an edit script, simply copy and paste the complete information for each clip (the full line of text) into a new document in the order you wish.

- Prepare visual elements
  - Provide existing print or other graphic designs
  - Create a list of participants and other titles
  - Write text for full-frame graphic screens
  - Prepare a full list of credits including all participants
- Music preparation
  - You can choose music from several libraries for a reasonable fee
  - Remember that commercially-recorded music is protected by copyright
  - Use a rights-clearing house to purchase rights
  - Use local musician’s recordings for a small fee or in exchange for credit ([Creative Commons](#))
  - More information and links to some free online music resources - <http://scripts.mit.edu/~techtv/blog/?p=21>

### **The Edit Session: Putting It All Together**

- Non-linear (film style) editing
  - Non-linear editing is best for highly structured, short-format projects. When professionally done, tightly edited tapes of highlights usually take about one hour to edit 1 minute of the final segment. The more time you spend editing, the better your video can be, but don't over do it
  - Non-linear editing is like writing an essay with a computer
  - Video segments called "clips" are digitized to a hard disk
  - Any shot can be accessed instantly and at random and can be shortened, lengthened, juxtaposed, moved or removed
  - Video and audio changes can easily be cut and pasted
  - Rough Edit
    - On this first pass, edit the original material by choosing the best clips. No transitions or audio mixing are added yet; the story structure is simply assembled in order to make sure the intended story comes through clearly
  - Tight Edit
    - Make a second pass adding transitions between scenes and a third pass cleaning up the sound and adding music, if any
    - Before final mastering, add titles to identify people, places, and things; to help tell the story, or to give credit. Titles are rendered. Bars and tone can be added to the beginning for future reference
  - Final Mastering
    - The final step is to playback the program on the computer and record it onto your preferred medium (hard drive, Blu-Ray, DVD, MiniDV)
  
- Linear (traditional) editing
  - Traditional, or linear, editing involves copying video and audio from tape to tape
  - This process is like writing an essay with a typewriter: changes are difficult to make once edited
  - It is necessary to move back and forth through hundreds of feet of tape to reach a shot
  - It is necessary to make a copy of a shot in order to make a dissolve
  - You must have a very clear idea of the exact order of shots and narration before the session begins to minimize the time required to complete the edit
  - This process is best for longer format projects (over 30 minutes) which have little restructuring
  - Basic assembly takes one hour per 1-3 minutes of final program, including graphics
  
- Labels
  - Labeling is important in that it determines information that will be printed on media for future informational purposes
    - Title
    - Subtitle
    - Department
    - Producer/client
    - Editor
    - Length
    - Audio instructions

### **Distribution: Getting The Word Out**

- Compressed video for the web
  - Compress segments of your videotape into digital files that can be installed by you or your webmaster and placed on your website or [MIT TechTV](#)

- We recommend three file formats which cover the broadest spectrum of video formats available for personal computers (Flash, QuickTime, WindowsMedia)
  - The highest quality format is QuickTime H.264. This format will play on most computers these days with QuickTime 7 or higher.
  - When a sufficient amount of a QuickTime file has downloaded, it will start playing automatically (progressive download). With faster connections (DSL, Cable Modems), this should be within 10 seconds
  - FlashVideo is a streaming format that can be optimized for smaller bandwidths (modems)
- Still images
    - Although video images are not nearly as crisp as film, re-sampling them in Photoshop will yield a small image that can be used in print.