LOCAL ORIGINATION STUDIO
BALANCE BETWEEN COST AND FUNCTION

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VIDEO IMAGES

Almost every cable T.V. franchise carries the responsibility of supplying the hardware and space needed for a Local Origination (LO) Studio. As a showpiece of your system, the LO Studio is characterized by its more sophisticated productions of newscasts, talkshows and commercial spots. Preconstruction planning of this facility is usually initiated by asking the following two questions:

1) What site preparation should we consider before deciding on the studios physical layout and,
2) Compare the production equipment's performance with its price and usefulness.

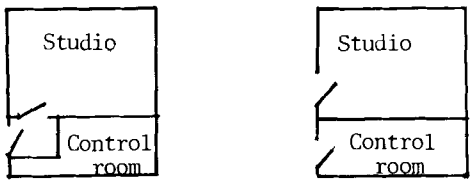
Focusing on a multi-camera studio with special effects and editing, this paper will outline areas of special interest in site preparation and equipment choice.

SITE PREPARATION

A. Floor Plan Generally regarded as an area reserved for architects and their ideas of space conservation, the intelligent video designer will approach a studio floor plan with a critical eye. Traffic flow must be contained within specific boundries in order to assure the least amount of interruption and the maximum use of the space available.

Since the studio is usually designed to have access to the control room and rest of the building, some ideas of door placements are in order.

For low traffic patterns, use one corner of the control room to locate an entrance from a hallway and mount your studio door on the adjoining wall. Higher traffic patterns dictate a seperate entrance to the studio. (Figure A)



LOW TRAFFIC HIGH TRAFFIC

This free flowing traffic pattern will assure the least amount of temptation to those individuals who might otherwise pass close enough to "tweak" on knobs and buttons.

Any engineering or production function that a window serves is better off left to a low cost black and white security camera mounted in the studio. Locating racks, consoles, and other hardware along the windowed wall often becomes an aesthetic dilemma, with the rear of the equipment being exposed to the studio.

A good comprimise is a three by three foot window located as close to the control room/studio door as possible.

B. Production Personnel Locate all equipment controls with thought to the number of production personnel available. Common sense dictates smaller more compact control areas for those of you with smaller staffs.

Group the video, audio, and editing controls within a three bay area if only one or two people are available. With a larger crew, control areas are separated into engineering, audio, editing, graphics and video switching.

C. Acoustics Whether your studio was built from the ground up or carved from existing office or warehouse space, pay special attention to acoustics.

Use your architect's input to arrive at a sound insulation factor of 60 or better. However, once insulated from the outside world, avoid the "hollow" or "echoing" sounds by using a cyc curtain ceiling panels and wall coverings.

D. HVAC "High volume, low velocity, low noise" is the key phrase when specifying HVAC requirements.

Cooling loads are largely determined by the number of studio lights in use at any one time. Leave this estimation to the experts but remember: studio ceilings and HVAC ductwork do not have to look pretty, they just have to be quiet and efficient.

E. AC Power Plan now for your ultimate power needs. This can generally be estimated from two areas: Lighting and Equipment.

Varying the intensity of the studio lights

has more than just aesthetic appeal. Local codes usually require more feeder capacity for a box full of 20 amp circuit breakers than for a lighting dimmer capable of handling the same number of lights.

Expect that your equipment power needs will double and possibly triple within the next ten years. This is not an overestimate, but a time proven reality in our industry.

Be adament about two variables. One, insist that all AC power to the equipment racks and to any other devices that are connected to these racks (headends, modulators) are on the same AC phase. This will prevent the all to often occurance of AC ground loops or "hum".

Two, a good, solid ground connection to a reliable source is essential to prevent disturbances generated by the dimmer panel or outside sources such as motors, copiers, etc.

PRODUCTION EQUIPMENT

The following catagories will outline the price and performance range of the products available for you to use in your Local Origination Studio.

A. Cameras Generally, three types of color cameras are available in today's market: a) single tube convertible cameras, b) multi-tube convertible cameras and, c) multi-tube studio cameras.

The convertible camera addresses both studio and portable applications. Affixed with a 1.5" viewfinder and battery, the convertible camera connects easily to a portable recorder for location taping. For studio operation, a 5" viewfinder, remote operation panel and rear lens controls are used.

The studio camera usually offers larger 7" viewfinders, larger pick-up tubes (for better resolution), larger yokes (for better registration) multiple intercom circuits and a camera head that handles the larger zoom lenses.

Figure B compares studio and convertible cameras with 10:1 lenses, engineering remote controls and studio viewfinders.

Figure B

Class	Specs.	Price
Convertible single tube	300 lines/48db	$6,000.00-$7,000.00
Convertible multi-tube	550 lines/53db	$8,000.00-$18,000.00
Studio multi-tube	600 lines/54db	$25,000.00-$35,000.00

B. Special Effects Generators Special effects generators (more commonly referred to as "Switchers or SEG's) represent a large product group to choose from.

Features to consider are:

A. Number of special effect patterns
B. Number of mix-effect amplifiers
C. Colorizing options
D. Key options
E. Number of inputs
F. Syncronization to the total system

Figure C compares single mix/effect SEG's:

Figure C

Features	Price
6-inputs, internal sync and color bar generator, 6 effects	$2,100.00
10-inputs, internal sync and color bar generator, 10 effects, positioner	$4,000.00-6,000.00
10-inputs, external sync, colorizer, positioner, 10 effects	$3,900.00-4,600.00

Figure D compares dual mix/effect SEG's:

Figure D

Features	Price
9-inputs, external sync, colorizer, positioner, 12 effects, pattern modulators, chroma keying, shared mix/effects bus	$8,000.00-9,500.00
10-inputs, external sync, colorizer, positioner, 16 effects, pattern modulator, chroma keying, seperate mix/effects bus	$17,000.00-20,000.00

C. Tape Machines The most common video tape recorders that are used in the LO studio are of the 3/4" U-Matic variety. When properly maintained these VTR's will produce acceptable results to third generation tapes.

For comparison, we have listed editing systems which consist of one source VTR, one editing VTR and one controller (Figure E).

Figure E

VTR Format	Price
1/2" VHS or Beta	$ 8,750.00
3/4" U-Matic	15,000.00 - 17,500.00
3/4" Broadcast U-Matic	25,000.00 - 30,000.00
1" Type "C"	132,000.00 - 150,000.00

Video tape recorders may be treated as syncronous inputs to the special effects generator with the addition of a vertically locked time base corrector. This will allow special effects and dissolves, as if the prerecorded material was "live in the studio".

Figure F illustrates TBC's and their approximate costs:

Figure F

Specifications	Price
V-locked only 1/2"-3/4" VTR's	$ 5,000.00- 10,000.00
V-locked with image enhancement and noise reduction 1/2"-3/4" VTR's	8,000.00- 12,000.00
V-locked for use with 1" VTR's	22,000.00- 26,000.00

D. Audio Basic components of the audio system are:

a. mixer board for mics and VTR's/ATR's
b. Turntable w/cartridge and preamplifier
c. cartridge recorder
d. reel to reel recorder
e. processing devices such as equalizers, limiters, reverbs, etc.

Generally, we keep the LO Studio wiring in a two wire shielded unbalanced mode. This is general ly dictated by the expense of an all balanced in and out mixing board (usually $10 - $15,000.00 more for the same features). If the area surrounding the control room is not exposed to RFI or EMI, the unbalanced audio mixer provides a convenient and in-expensive means of combining your audio signals.

Audio processing or "sweetning" is viewed on a one by one basis. The production personnel may desire more fullness, shaping, reverberation, etc. A multi-point patch panel is usually installed to accomodate the insertion of these devices into the audio flow.

Figure G is representative of audio components and their costs:

Figure G

Features	Price
Mixing boards- 6 inputs - unbalanced	$250.00 - 600.00
Mixing boards 10-16 inputs - unbalanced	2,000.00 - 5,500.00
Turntable	250.00 - 500.00
Cartridge recorder	2,000.00 - 2,500.00
Reel to Reel recorder	700.00 - 1,800.00
Processing equipment	1-2,000.00 per item

E. Lighting The success of your production is largely dependent on lighting. Even the most expensive camera cannot substitute for the mood or feeling that a well lit set can create.

Figure H lists portable lighting systems that are transported in a knocked down configuration:

Figure H

Features	Price
3 light kit	$ 600.00 - 900.00
4 light kit	1,000.00 - 1,300.00
5 light kit	1,100.00 - 1,500.00

To enhance productions in the LO Studio, larger ceiling supported lighting instruments can be used:

"Backlighting" will seperate the subject from the background and give an illusion of greater studio depth. Smaller four to six inch fresnels are used here so as to concentrate on specific objects rather than general areas.

Focusable fresnels, eight to twelve inches, allow individual subjects to be highlighted. This "key lighting" creates the subtle suggestion to the viewer that this is an area of main interest.

Twelve to sixteen inch scoops provide broad illumination for the entire set. These "fill" lights increase the average illumination level without calling attention to any one specific area.

Complete lighting systems are shown in Figure I. Included are an adequate number of instruments, plug strips, the dimmer panel and patch panel to match the studio size shown to the left.

Figure I

Size of Studio	Price
10' x 15' (non dimmed)	$4,000.00
15' x 20'	16,500.00
18' x 25'	24,000.00
20' x 30'	33,000.00

SUMMARY

Outfitting a local origination studio can be a real learning experience!

Make the decision process a lot easier by visiting expositions like the NCTA, talking with your fellow members and, most importantly, listening close to the person who has done it before!