

Considerations for DI Suite Design

Equipment List

- Projector and screen
- Color Management System (CMS)
- Broadcast Monitor
- Scopes
- Audio Monitoring
- DI system
- Storage
- I/O
- Router
- Miscellaneous
- Software Suggestions
- Support and Training

Projector and screen

The choice of projector depends on budget and room size. If the projector is not bright enough, whites appear gray, contrast is poor and blacks are muddy. Poor brightness can also limit the accuracy of the CMS. Many facilities go for a projector that is slightly too much for the room, and use a gray screen. The gray screens give better blacks and overall contrast but require a more powerful projector.

Suggested projector and screen

- Christie is popular with DI cinema installations
- Barco is popular with cinema and broadcast facilities
- Stewart Filmscreen Solutions for the screen

Color Management System (CMS)

It is imperative that the projector is calibrated and managed to match the final output viewing experience, including film projection, DCI and broadcast. These might not all be relevant today, but given the expense and time involved it is worth planning for them all at the purchase stage.

CMS requires

- A probe for the projector and any monitors
- Custom target profiles for all outputs (standard LUTs are rarely accurate enough)
- Software or hardware to apply the LUTs

The first choice is between hardware and software. Most facilities with Film Master use software because it is integrated, cheaper and it can be installed on other workstations with

a site license. This is ideal for companies that are working on animations because it enables the artists to preview log images as their final (linear) appearance. The top software choices are Kodak and Cinespace by Rising Sun Research. Almost everyone chooses Rising SunResearch because they offer a good profiling service.

Those that choose hardware select from Truelight (by Film Light) or Luther (by Thomson). The main reason for doing so seems to be to leverage an existing investment.

Suggested CMS

- Rising Sun Research Cinespace software
- FilmLight TrueLight hardware

Both companies offer a target profile service

Broadcast Monitor

Even if all the planned projects are for cinema it is essential to have a calibrated broadcast monitor, since there will inevitably be video deliverables and it is very damaging to send out poor quality video from a DI master. Sadly the reference CRTs are no longer available and LCD equivalents must be used. The requirements are stability, contrast, accuracy, and in the case of LCD screens a good viewing angle. The decision is often based on cost, so if little broadcast work is anticipated it makes sense to go with a cheaper solution

Suggested Broadcast quality monitors

- Cinetal (who now own Rising Sun Research)
- Barco (who also make projectors)
- Sony (who had a near monopoly on the CRT market)

Scopes

Although traditional vector scopes and waveforms are not strictly valid on cinema projects most colorists still prefer to use them. An external set of scopes are usually displayed on a computer monitor in DI suites and have the advantage of being able to see both before and after the LUT. In my opinion external scopes are essential to check the validity of a workflow and although it can be tempting to make do with internal monitoring that is likely to lead to expensive mistakes.

Suggested scopes

- Omnitek
- Tektronix

Audio Monitoring

The DI theatre will inevitably get used for viewings and good sound will be required. This should be at least stereo, but most companies go for 5.1 installations. A home theatre type

package complete with DVD player is a popular way to go. The main considerations are the size of the theatre. In a cinema environment people expect good quality speakers, a clean sub woofer and plenty of volume

DI system

Film Master! This will take care of conforming and compositing, grading, dirt, dust and grain control, and output formats. As the company grows it will likely benefit from an assist station (Data Conform) for quality control and project preparation

Suggested DI system

- Digital Vision Film Master with DVO Enhance

Storage

The theatre and Film Master will require high performance storage capable of at least real time 2k playback and if working 4k that must be specified in the specification for storage. Storage is divided into online, internal and nearline systems. Source files for Film Master need to be on online storage. Source clips with variations and effects for 100 minutes of 2K need at least 3 but often 8 Tb. Film Master caches take up a minimum of 3 times the finished feature time (4.5 Tb) but it is best to allow for twice that. The final output (1.5Tb) can be exported to online storage for speed and to allow final playback checks in the theatre, but it is often also transferred directly to nearline storage.

I recommend a DVS san is recommended for its data management utilities and support program

Suggested Storage for 2k projects

- DVS 16 Tb san
- Film Master running on dual quad core PC with 16Tb storage (internal or online)
- Nearline access with 8 Tb of backup space for DI suite use.

Alternatively the Film Master PC can use a separate SAN volume for caches

- DVS 24 Tb san in at least 2 Volumes
- Nearline access with 8 Tb of backup space for DI suite use.

I/O

The installation should have a means of capturing video as data, and recording data as video. Film Master can achieve this with a suitable video card fitted. Since the video card is also required for the broadcast monitor this should be included in the configuration.

Film Master also requires a graphics card, and that should also be fitted with an SDI output as well as the standard DVI connections

Router

I recommend that the suite is setup to monitor both the graphics and the video output of film master as well as other workstations in the facility. This can be done to a limited degree with multiple input scopes and monitors, or better a patch panel. However, a small router makes all the difference. With a router the suite becomes easy to use and a flexible asset to the facility. More complicated work-arounds often mean that only one person can actually get the required images on the screen!

Miscellaneous

Some other equipment to remember

- Wacom pen and tablet
- Powered USB hub(s)
- KVM extensions for PC to suite (the PC is too noisy to have in the DI theatre. Ideally it would be situated in the projection room with the projector and not too far from the control panels. It also helps if the SAN is in the same place)

Software Suggestions

The Film Master pc should be loaded with a graphics preview software, a data browser and an anti virus program.

- XN View
- DVS Spycer
- Norton Anti=Virus
- Adobe Photoshop (optional)

Support and Training

Once the suite is up and running it should require little support. However, the benefit of software-based systems is that they are quickly improved and it is sensible to benefit from the regular updates. Further the art of DI finishing is no longer a new cutting edge industry and new operators and owners should take advantage of the excellent support and training programs offered by manufacturers such as Digital Vision.

In addition I offer my own services through Finalcolor Ltd. I am an active colorist with over 25 years experience, and I have been teaching for more than 15 of those years. As a colorist consultant some of the services I can provide are

- Advice on suite design
- Courses on site (Colorist theory and practice)
- Freelance Colorist either for complete projects or part projects
- Project consultant

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