Video URE Book 4
Video Formats

For as long as video bas been around, there has been many different ways to transmit it. With the advent of the digital age and digital video, this has only grown and the number of video formats that now exist can cause a lot of confusion and potentially lead to systems not working.

This is why its important to keep tabs on what kind of signal is where and what each piece of equipment is configured to work with.

SDI

SDI stands for serial digital interface and is the standard Video interface formats of Film and TV, as well as being used a lot in Live events for camera capture. There is also an HD variant of SDI known as HD-SDI along with varying other version that support things like dual link and 3D applications. SDI is also usually only found in high end equipment as the use of unencrypted digital interfaces on consumer equipment is limited to protect end users.

SDI is the preferred choice for camera capture and for film as it allows fast and uncompressed data transfer from source to output. SDI is fairly strong and can take a bit of damage or interference before there is notable degradation.

SDI is usually used with BNC cable of a high grade to facilitate the high data transfer. SDI can usually transmit about 300m over standard copper cable, but can also be boosted with fibre.

SDI can also carry up to 16 Channels of audio as well as it's full uncompressed video, over the single BNC line.


> Connector: BNC
> Uses: HD Camera Capture
> Max Length: 300m

DVI

DVI is the preferred choice of signal transmission from source to projector for most video systems, which is why almost all media servers output on dual link DVI. DVI is a sole digital signal and will provide resolutions up to 1920 x 1200.

DVI comes in 3 flavours, DVI-A, DVI-D and DVI-I. DVI-A is the analog variant and will only out put an analog signal, not allowing its maximum resolution. DVI-D is the digital variant and will allow the maximum resolution but will not allow connections with any analog devices. DVI-I is the best of both world as it interlaces both he analog and digital components allowing you to use whatever system you wish depending on how you want to configure the source.
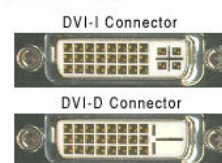
DVI is a great protocol for running high pixel counts
as it can cope with very high resolutions and still transmit with no degradation. However the

tradeoff is DVI running at max resolution can only go roughly 15m before it becomes noticeable degraded. This is not very useful for even small systems and therefore it is often necessary to jump DVI lines to fibre before jumping back at the projector end.

However despite its shortcomings, DVI is still the industry standard and provides a quality of video that is unparalleled.

Connector: DVI
Uses: Server Output/Monitor Output
Max Length: 15/50m

HDMI

HDMI is in fact a bit of a trick format in that it is actually exactly the same as DVI-D, except carries the ability to include audio. It is for this reason that DVI to HDMI adaptor or visa versa will always work fine. However if you go from HDMI to DVI, you will lose the audio that was in you HDMI signal.

The Same restrictions apply in terms of length and size of cable, and the same degradation can occur when used at long lengths. Once again the options are to jump to fibre, or ethernet.

Connector: HDMI
Uses: Server Output/Monitor Output
Max Length: 15/50m

COMPOSITE

Composite video is a now archaic format for sending video down a cable, as it only supports resolutions up to 576i, which compared to SDI, DVI and even VGA is not great at all. However this is sometime the only format you have if you are using an older piece of equipment.

Composite will usually pin out on a yellow RCA connector. Most people remember it from plugging it into SCART adaptors along with the Red and White audio cables to watch Videos on a TV. However the RCS adaptor is not necessary to the format and it can in theory be sent down any cable with 2 or more cores. This is useful as it can allow you through a series of jumps to use sends on an XLR multicore to get a camera feed from one room to the next.

Composite does not exactly have a maximum length as due to the fact it's an analog signal, the strength of the source directly affects how far the signal will be able to reach.

Composite is also sometimes found on a BNC connector, using BNC cable to plug up cameras. This is fine on its own but can be dangerous with confusion arrises with SDI. This confusion is very similar to the issue of mixing XLR3 and DMX 3pin cable. Both look exactly the same but can work very differently, so be careful you don't end up with SDI crossing Composite.

Connector: RCA/BNC

Uses: Old Camera Capture
Max Length: Varies Depending on Source Strength

VGA

VGA was the old industry standard back when all our video transmission was not HD. VGA is a very robust analog format and can deal with resolutions up to 1280 x 1024 and sometime higher of the source can output it.

However, VGA is not a good long terms solution as it is no longer used in large scale events due to DVI being a far superior format both for reliability and for quality.

That's not to say there is no place for VGA. If you are using kit that will never support HD and never intend to upgrade the system, then VGA will do you fine. Truth be told for most systems you can probably get away with using VGA as your main format. The important thing to remember though is if you want maximum quality, you should aim for DVI or SDI.

Connector: D-SUB
Uses: SD Computer Monitors/Server Output
Max Length: 50m