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Analog, was so simple, with digital..what changed...??

Well, back in analog days audio was audio, video was video, comms was comms and the other control stuff was....the rest. So audio travelled along its cable with very few exceptions: Viscas was one (not heard of it? try Google!) Comms equipment often strangled bandwidth, so naturally, audio stayed away from it. Video people (rightly) ignored audio and comms (what were they?) and would not let them anywhere near the video systems. Control...was left to the apprentice or trainee.

Using audio as an example, it now comes in: Analog (broadcast), Analog (domestic), AES (standalone), AES (Embedded in: SDI-SD, SDI-HD..), AES/IT concoctions (I/P packets along ethernet, ADSL, ...) and any other format/transport system you like to devise!

The cable combinations used for these are numerous: shielded twisted pair, UTP, coax, triax, fibre, SMPTE fibre, cat5/6/?, USB, 1394, etc., etc., etc.

Years ago comms people decided that making analog comms gear with restricted bandwidth was too hard, now they usually make it full bandwidth and only restrict it in digital if needed. So audio can borrow comms paths and comms has been let loose to borrow audio paths as it sees fit, now even the video guys know about audio/comms (its the nuisance bit).

So how do we find faults or draw a "simple" circuit these days? Analog audio/comms is easy until you hit an A/D or D/A where it becomes AES. AES is easy...but add/remove an embedder... now the video is/was part of audio/comms (or vice versa!!).

The answer is easy, forget "Cable Management" and think **"Signal Management"**. This is achieved very simply by replacing the "drawing layers" approach with something much more flexible that we call **"Virtual Signals"**.

Our software allows you define your own Signals and "Virtual Signals", below is how we have done it....

Signal		Notes
Analog Audio		

Virtual Signals included in Analog Audio

Virtual Signal	Description	Type	System	Format/Coding	Modulation	Transport
[AUDIO]	Audio Chanel 1					

Signal		Notes
COMMUNICATIONS		

Virtual Signals included in COMMUNICATIONS

Virtual Signal	Description	Type	System	Format/Coding	Modulation	Transport
[AUDIO]						

Signal		Notes
AES Audio		

Virtual Signals included in AES Audio

Virtual Signal	Description	Type	System	Format/Coding	Modulation	Transport
[AUDIO]	Audio Channel 1					
[AUDIO]	Audio Channel 2					
[DATA]	MetaData					

Signal		Notes
SDI-HD + Emb Audio		Digital HD Video with Audio

Virtual Signals included in SDI-HD + Emb Audio

Virtual Signal	Description	Type	System	Format/Coding	Modulation	Transport
[VIDEO]	Video					
[TIMECODE]	Timecode					
[DATA]	MetaData					
[AUDIO]	Audio Channel 1					
[AUDIO]	Audio Channel 2					
[AUDIO]	Audio Channel 3					
[AUDIO]	Audio Channel 4					
[AUDIO]	Audio Channel 5					
[AUDIO]	Audio Channel 6					
[AUDIO]	Audio Channel 7					
[AUDIO]	Audio Channel 8					

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Welcome to the rest of the SMPTE 2011 PDF!

On display is the latest version of our software: CLSOF2011. Its undergone some major changes features wise and also internally.

What's new!

Signals.
The first page of the PDF covers the main points, so here we will only take a quick look at the main areas that create and maintain Signals and Virtual Signal.

Below is the main area which displays all Signals and their Virtual Signals. In this example the Signal: 422 CONTROL (scrolled out of view) has only one Virtual Signal: 422 CONTROL. This is a common approach if you need to restrict a signal's use. Otherwise a more generic "CONTROL" Virtual Signal could have been created. Many of the Signals (and their Virtual Signals) shown below are created by default, however, new Signals and Virtual Signals may be created by the user at any time. As you can see there are no rules or restrictions making it very simple and flexible to create whatever system you need to solve your problem and thoroughly document it.

One subtle but useful feature of the Virtual Signal area below are the note fields: Description, Type, System, Format/Encoding, Modulation, and Transport. Any text that assists in explaining the Virtual Signal and its use may be entered here. A number of default/preset values are provided also (see later).

Signals	[VIRTUAL SIGNAL] Management	[VIRTUAL SIGNAL] Preset attributes

Signal		Notes
FAX		
Firewire		
HD-SDI		Digital HD Video
HD-SDI + Emb Audio		Digital HD Video with Audio
NETWORK		
PHONE		
POWER		
POWER - 3 PHASE		
POWER - LV		
POWER - SINGLE PHAS		
POWER HIGH		
SD-SDI		Digital SD Video
SD-SDI + Emb Audio		Digital SD Video with Audio
SDI		
SDI-HD		Digital HD Video
SDI-HD + Emb Audio		Digital HD Video with Audio
SDI-SD		Digital SD Video
SDI-SD + Emb Audio		Digital SD Video with Audio
SENSOR		
Serial		

Virtual Signals included in 422 CONTROL

Virtual Signal	Description	Type	System	Format/Coding	Modulation	Transport
[422 CONTROL]						

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What's New: Signals - continued.

Below is the view used to create and modify Virtual Signals. One simple way to quickly identify Virtual Signals is their name and delimiters, ie. Virtual Signals by default are always in capital letters and surrounded by square brackets. This makes it easy to see that: Audio, audio, AUDIO are all Signals, but [AUDIO] is a Virtual Signal. if needed it is possible to edit the name and create other variants that do not follow the above rules but this is not advised. Many of Virtual Signals shown below are created by default, however, Virtual Signals may be created by the user at any time.

Signals	**[VIRTUAL SIGNAL] Management**	[VIRTUAL SIGNAL] Preset attributes

Virtual Signal	Notes
▶ [422 CONTROL]	
[485 CONTROL]	
[ALARM]	
[AUDIO]	
[COMMUNICATIONS]	
[CONTROL]	
[DATA]	
[FAX]	
[METADATA]	
[NETWORK]	
[PHONE]	
[POWER - 3 PHASE]	
[POWER - LOW VOLTA(	
[POWER - SINGLE PHA!	
[POWER HIGH VOLTAG	
[POWER]	
[SENSOR]	
[TELEMETRY]	
[TIMECODE]	
[VIDEO]	
audio	
timecode	
video	

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What's New: Signals - continued.

Earlier reference was made to the additional fields in the Virtual Signal Area. Below are the default or preset data automatically created by the system. As may be seen the inclusion of this additional data improves the documentation level considerably, making the application easier to follow.

Signals | [VIRTUAL SIGNAL] Management | **[VIRTUAL SIGNAL] Preset attributes**

Type	System	Format/Coding	Modulation	Transport
Analog	20Hz-20kHz	Balanced	Baseband	Cable - Copper
Digital	300Hz to 3.3kHz	Unbalanced	AM	Cable - Fibre Optic
	100/75 V	NRZI	FM	Radio Frequency
	DC LV	Binary	PM	Twisted Pair
	AC LV	BiPhase	Vertical Interval	COAX
	DC HV	NRZ	Embedded	Fibre
	AC HV	RS232	Amplitude Modulation	Figure 8
	AES	RS422	Frequency Modulation	RF
	EBU	RS485	Phase Modulation	
	SMPTE	Ethernet	Quadrature Modulation	
	DILBY E	IEEE1394	ODFM	
	AC-3 (DOLBY D)	USB	CODFM	
	MP3	SPDIF	QAFM	
	NTSC	Single Phase	Time Division Multiplex	
	PAL	3 Phase	Frequency Division Multip	
	SECAM		Statistical Multiplex	
	Composite			
	RGB			
	RGBHV			
	YUV			
	VGA			
	XGA			
	SMPTE 259			
	SMPTE 292			
	SMPTE 295			
	MPEG			
	JPEG			
	DVCPRO25			
	DVCPRO50			
	Viscas			
	PCM			
	DATA			

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What's New: Equipment Editor.
In previous versions the only way to enter equipment was via Single or Multiple Cabel Label Views.

In the current version:
>The Equipment Editor is now a stand alone View and like the Single and Multiple Views is available at any time.
>
>Many features and fields have been added to broaden its usefulness:
>
>>Documentation Links which may point to a file (eg PDF), directory or web site may be entered. These links are available throughout the system making it easy to locate documentation rapidly.
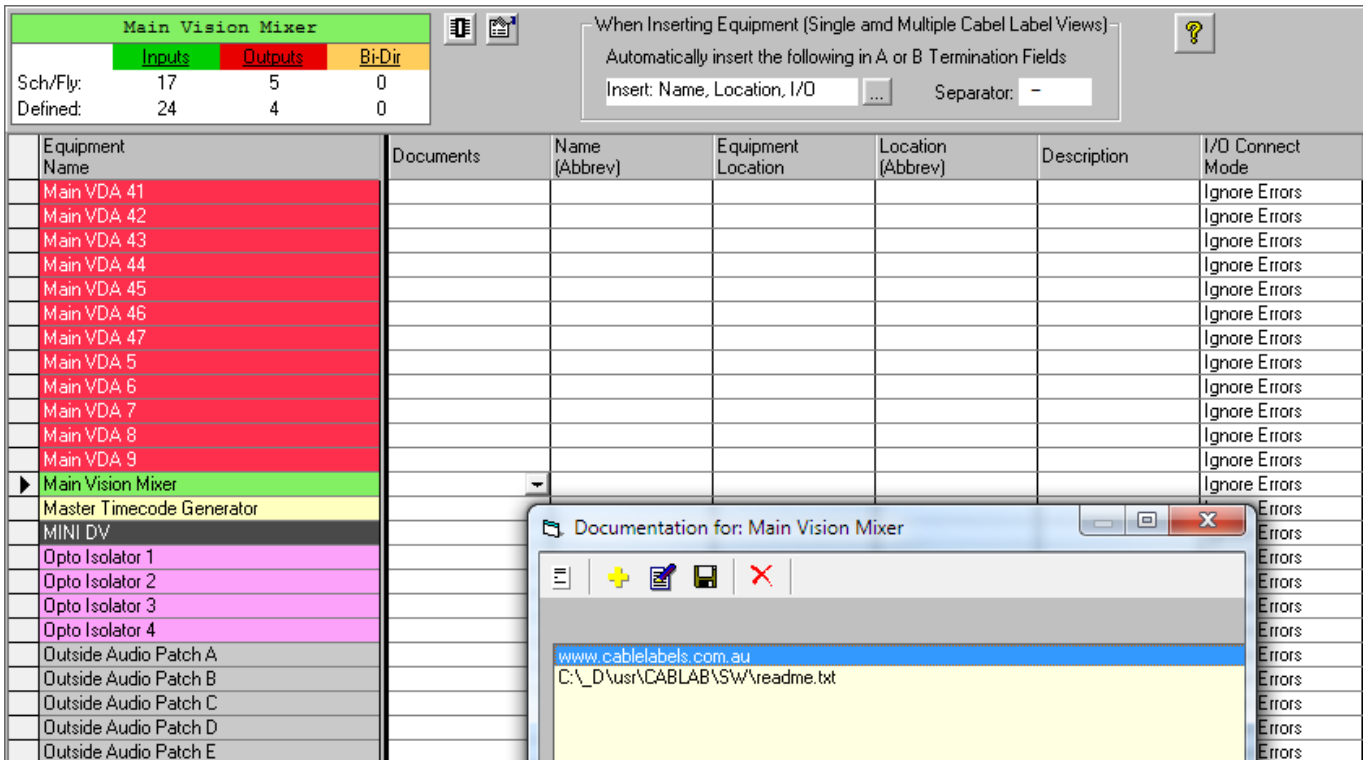>>
>>"Auto Insert" is a neat little time saver! When enabled, whenever equipment is entered into a Cabel Label using Single or Multiple Views, the "Termination Data Field" will be entered also. This avoids the multiple spellings and names for the equipment.
>>
>>I/O counts and status may be configured. Using this feature the system will warn the user if the number of inputs or outputs exceeds the equipments capability.
>>
>>Accounting and asset management data may be stored.
>>
>>If new Equipment is added in Single or Multiple Views it is automatically added into the Equipment Database, this removes the need to swap between the Views.

Below is a typical display. At the top left is the status for inputs, outputs and bi-dir. Note how the quantities are also shown and colours used to flag errors. The "Auto Insert" is at the top middle and will fill in the details defined there.

Main Vision Mixer			
	Inputs	Outputs	Bi-Dir
Sch/Fly:	17	5	0
Defined:	24	4	0

When Inserting Equipment (Single amd Multiple Cabel Label Views)
Automatically insert the following in A or B Termination Fields
Insert: Name, Location, I/O   ...   Separator: –

Equipment Name	Documents	Name (Abbrev)	Equipment Location	Location (Abbrev)	Description	I/O Connect Mode
Main VDA 41						Ignore Errors
Main VDA 42						Ignore Errors
Main VDA 43						Ignore Errors
Main VDA 44						Ignore Errors
Main VDA 45						Ignore Errors
Main VDA 46						Ignore Errors
Main VDA 47						Ignore Errors
Main VDA 5						Ignore Errors
Main VDA 6						Ignore Errors
Main VDA 7						Ignore Errors
Main VDA 8						Ignore Errors
Main VDA 9						Ignore Errors
Main Vision Mixer	▼					Ignore Errors
Master Timecode Generator						Errors
MINI DV						Errors
Opto Isolator 1						Errors
Opto Isolator 2						Errors
Opto Isolator 3						Errors
Opto Isolator 4						Errors
Outside Audio Patch A						Errors
Outside Audio Patch B						Errors
Outside Audio Patch C						Errors
Outside Audio Patch D						Errors
Outside Audio Patch E						Errors

Documentation for: Main Vision Mixer

www.cablelabels.com.au
C:_D\usr\CABLAB\SW\readme.txt

What's New: Fault Find Assistant.

This is used to tailor Schematic on the Fly's contents using a number of constraints. It is possible to use one, two or all of its facilities combined, making very flexible and powerful.

Below is the Mode and Status View. The Display Mode either hides cables or equipment (do not appear in Schematic on the Fly) or are dimmed. The lower section is a summary of the current Fault Find Assistant's operation.

```
Mode / Status    Signal Filter OFF    Equipment Filter OFF    Fault Find Assistant ON

Filer Display Modes for Schematic on the Fly
    ○ Highlight excluded Equipment and Cables in GREY (still visible)
    ● Hide excluded Equipment and Cables (invisible)

Settings:
    * Signal Filter OFF:    ALL Signals included
    * Equipment Filer OFF: ALL Equipment included
    * Path Mode ON:         ONLY RELEVANT Cables and Equipment included

Path Mode Results:
    * Starting from: SDI Routing Switcher and ending at: VTR SDI Video Patch 1
    * 454 Cables REJECTED.
    * 125 items of Equipment REJECTED.

Cable Summary:
    * 441 Cables REJECTED
    * 756 Cables out of 1197 remain

Equipment Summary:
    * 125 Equipment REJECTED
    * 217 out of 342 items of Equipment remain
```
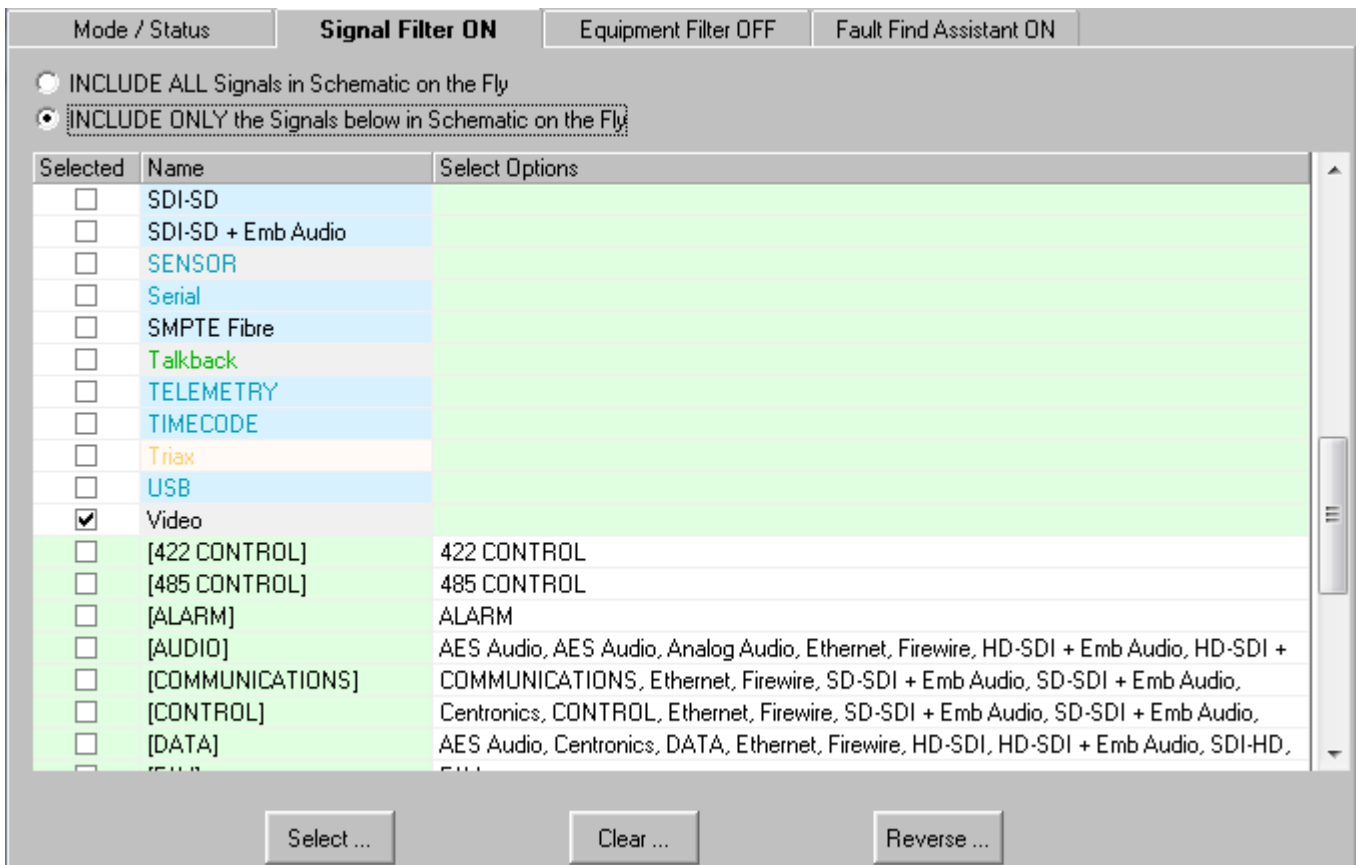
What's New: Fault Find Assistant - continued.

By selecting/de-selecting Signals, Virtual Signals or both, its possible to tailor the resulting SOF display to show only the parts that are relevant.

Below is the Signal Filter View used to perform this task. The top half shows Signals and the lower Virtual Signals. It is possible to select:

A Signal and none of its Virtual Signals.
A Signal and its Virtual Signals.
A Virtual Signal, which by default automatically selects all the Signals it is used by.

Note the buttons at the very bottom, these enable rapid operations on all entries. For example the "Reverse.." button is useful when you need all but one Signal, select the Signal you do not want and then press the "Reverse..." button.

Mode / Status	**Signal Filter ON**	Equipment Filter OFF	Fault Find Assistant ON

○ INCLUDE ALL Signals in Schematic on the Fly
◉ INCLUDE ONLY the Signals below in Schematic on the Fly

Selected	Name	Select Options
☐	SDI-SD	
☐	SDI-SD + Emb Audio	
☐	SENSOR	
☐	Serial	
☐	SMPTE Fibre	
☐	Talkback	
☐	TELEMETRY	
☐	TIMECODE	
☐	Triax	
☐	USB	
☑	Video	
☐	[422 CONTROL]	422 CONTROL
☐	[485 CONTROL]	485 CONTROL
☐	[ALARM]	ALARM
☐	[AUDIO]	AES Audio, AES Audio, Analog Audio, Ethernet, Firewire, HD-SDI + Emb Audio, HD-SDI +
☐	[COMMUNICATIONS]	COMMUNICATIONS, Ethernet, Firewire, SD-SDI + Emb Audio, SD-SDI + Emb Audio,
☐	[CONTROL]	Centronics, CONTROL, Ethernet, Firewire, SD-SDI + Emb Audio, SD-SDI + Emb Audio,
☐	[DATA]	AES Audio, Centronics, DATA, Ethernet, Firewire, HD-SDI, HD-SDI + Emb Audio, SDI-HD,

Select ...   Clear ...   Reverse ...

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What's New: Fault Find Assistant – continued.

By selecting/de-selecting Equipment, its possible to tailor the resulting SOF display to show only the parts that are relevant.

Note the buttons at the very bottom, these enable rapid operations on all entries. For example the "Reverse.." button is useful when you need all but one item of Equipment, select the item of Equipment you do not want and then press the "Reverse..." button.

Mode / Status	Signal Filter ON	**Equipment Filter ON**	Fault Find Assistant ON	

○ INCLUDE ALL Equipment in Schematic on the Fly
● INCLUDE ONLY the equipment below in Schematic on the Fly

Selected	Name	Location	Description	
☑	Cam 7 CCU			
☑	Cam 8 CCU			
☑	Cam 9 CCU			
☑	Camera Talkback Mixer			
☑	CCU 1 SDI WFM			
☑	CCU 4 / Assist TD WFM			
☑	CCU Operator 1 Vision Monitor			
☑	CCU Operator 1 WFM			
☑	CCU Operator 2 Vision Monitor			
☑	CCU Operator 2 WFM			
☑	CCU Operator 3 Vision Monitor			
☑	CCU Operator 3 WFM			
☑	CCU1 Vision Monitor			
☑	Character Gen Operator Monitor			
☑	Character Generator			
☑	Composite Video Routing Switch			
☑	D/A 1 (SDI to Composite)			
☑	D/A 2 (SDI to Composite)			

Clear All   Select All   Reverse

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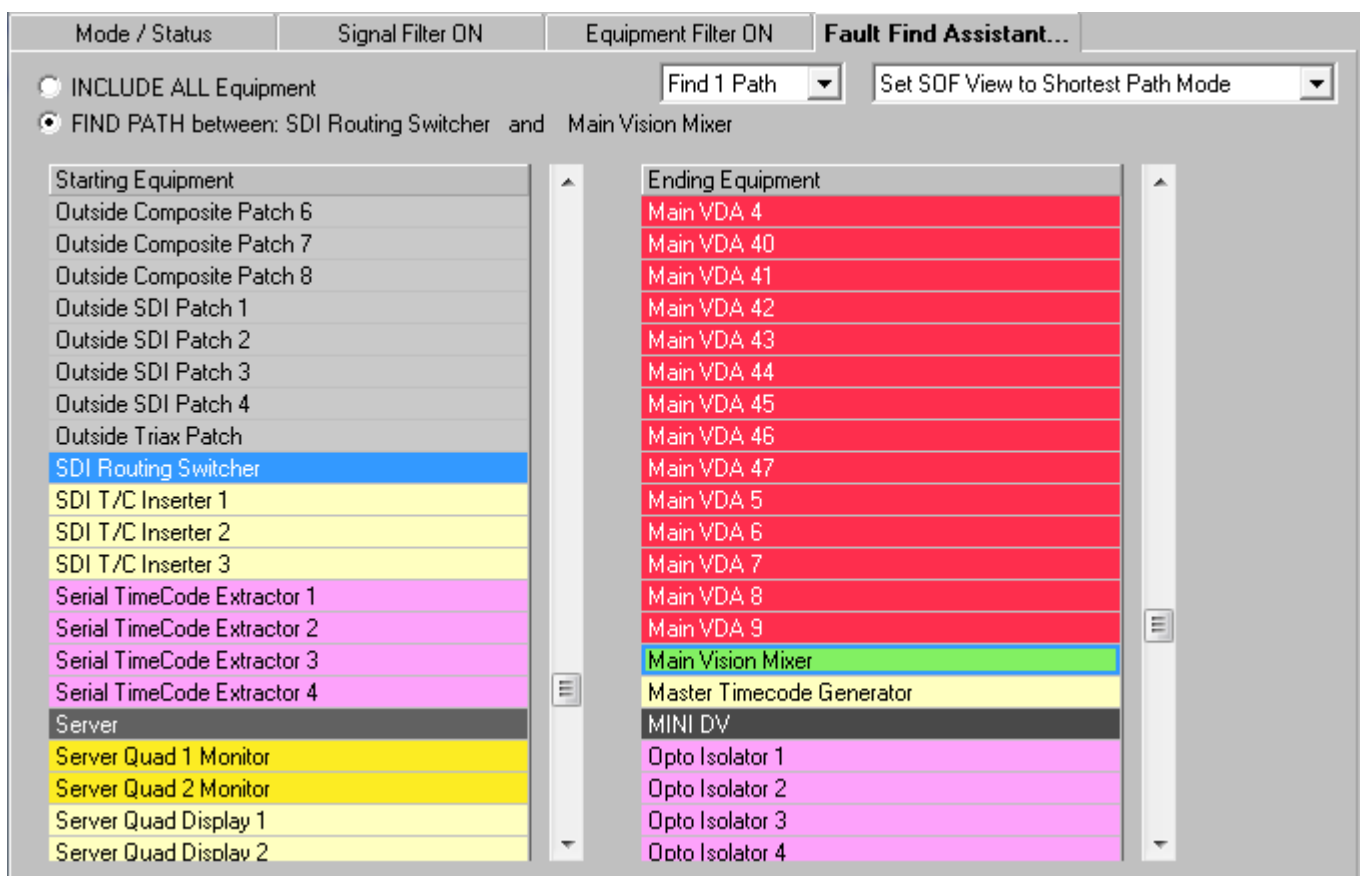AUSTRALIAN MADE

What's New: Fault Find Assistant – continued.

Sometimes it is necessary to quickly find the path a signal travels from one piece of equipment to another. This view allows the user to select the source (FROM) and destination (TO) items of equipment. Once this is complete it analyses the cables and equipment remaining (after Signal and Equipment Filtering if they are enabled) to produce a Schematic on the Fly with only the viable paths shown (or un-viable dimmed if that option is selected).

Having created a Schematic on the Fly, it then creates a path list between the FROM and TO items of equipment. The multiple path option (only single path option shown below "FIND 1 Path") enables the first 10 paths to be found. These are then made available to Schematic on the Fly as a "click and follow" way to traverse the path.

Mode / Status	Signal Filter ON	Equipment Filter ON	**Fault Find Assistant...**

○ INCLUDE ALL Equipment   Find 1 Path ▼   Set SOF View to Shortest Path Mode ▼
◉ FIND PATH between: SDI Routing Switcher   and   Main Vision Mixer

Starting Equipment	▲	Ending Equipment	▲
Outside Composite Patch 6		Main VDA 4	
Outside Composite Patch 7		Main VDA 40	
Outside Composite Patch 8		Main VDA 41	
Outside SDI Patch 1		Main VDA 42	
Outside SDI Patch 2		Main VDA 43	
Outside SDI Patch 3		Main VDA 44	
Outside SDI Patch 4		Main VDA 45	
Outside Triax Patch		Main VDA 46	
SDI Routing Switcher		Main VDA 47	
SDI T/C Inserter 1		Main VDA 5	
SDI T/C Inserter 2		Main VDA 6	
SDI T/C Inserter 3		Main VDA 7	
Serial TimeCode Extractor 1		Main VDA 8	
Serial TimeCode Extractor 2		Main VDA 9	
Serial TimeCode Extractor 3		Main Vision Mixer	
Serial TimeCode Extractor 4	▤	Master Timecode Generator	▤
Server		MINI DV	
Server Quad 1 Monitor		Opto Isolator 1	
Server Quad 2 Monitor		Opto Isolator 2	
Server Quad Display 1		Opto Isolator 3	
Server Quad Display 2	▼	Opto Isolator 4	▼

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What's New: Schematic on the Fly.

This view uses the many sources of information stored in the Database: Equipment, Signals, Virtual Signals, Cable Data to produce a Schematic on the Fly! The local toolbar (top) provides navigation within the Schematic and to all the other views above. It also contains the interface to Fault Find Assistant.

Below is a partial screen snapshot. After only a quick look it is clear what is SDI, what is composite even triax...!!

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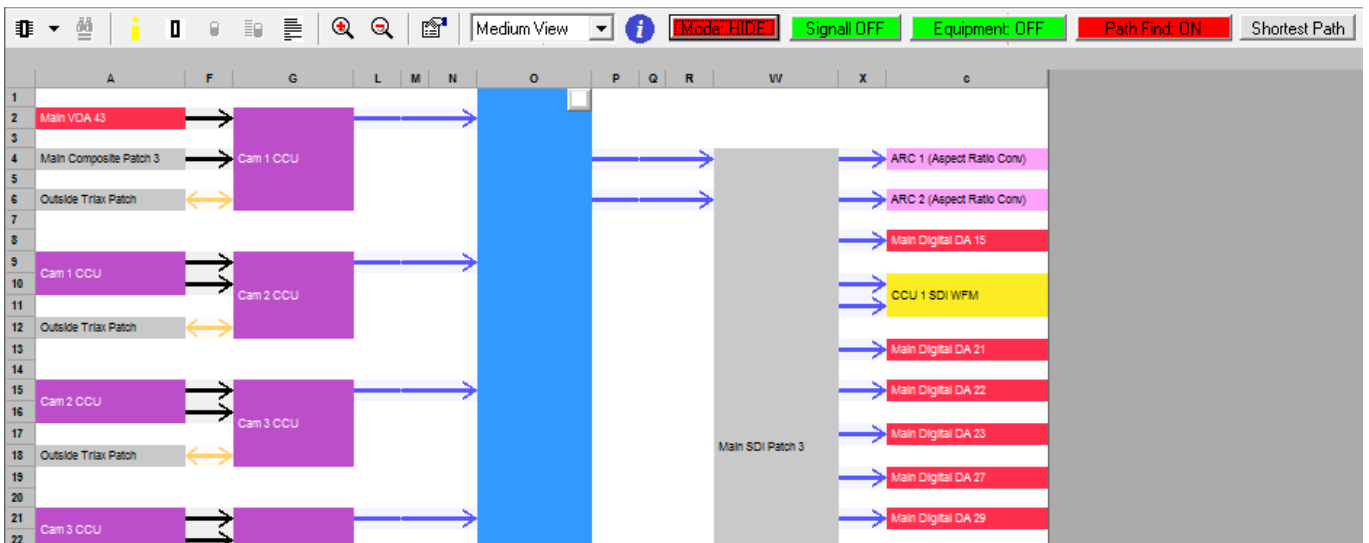
What's New: Schematic on the Fly – continued.

Once Fault Find Assistant has performed its analysis, Schematic on the Fly draws the result. As may be seen below the "Shortest Path 1" list shown to the right, simply click and follow the path from the SDI Routing Switcher to the Main Vision Mixer. If more than 1 path was requested, select it and click to follow it!!
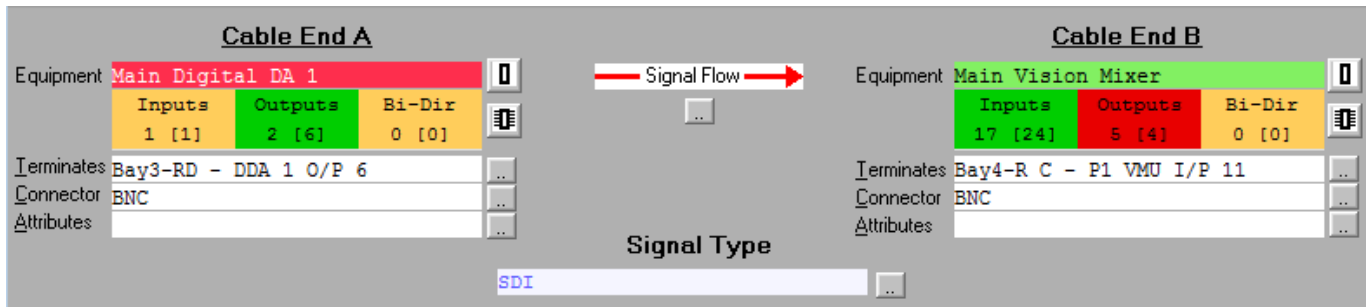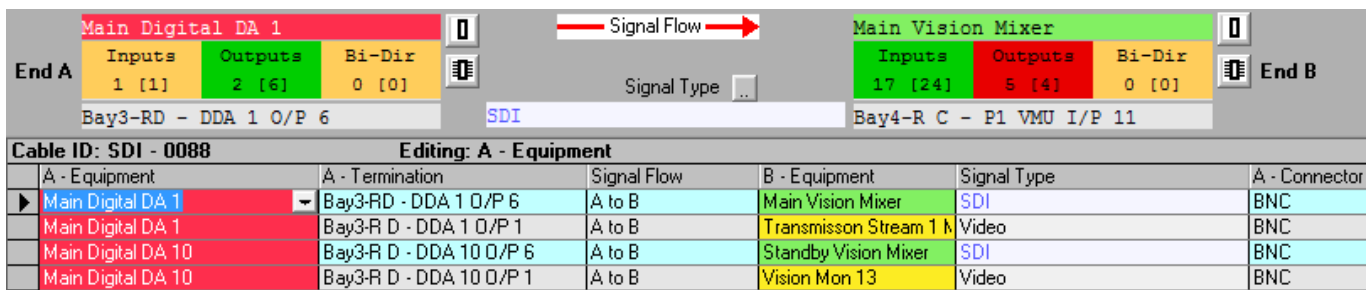
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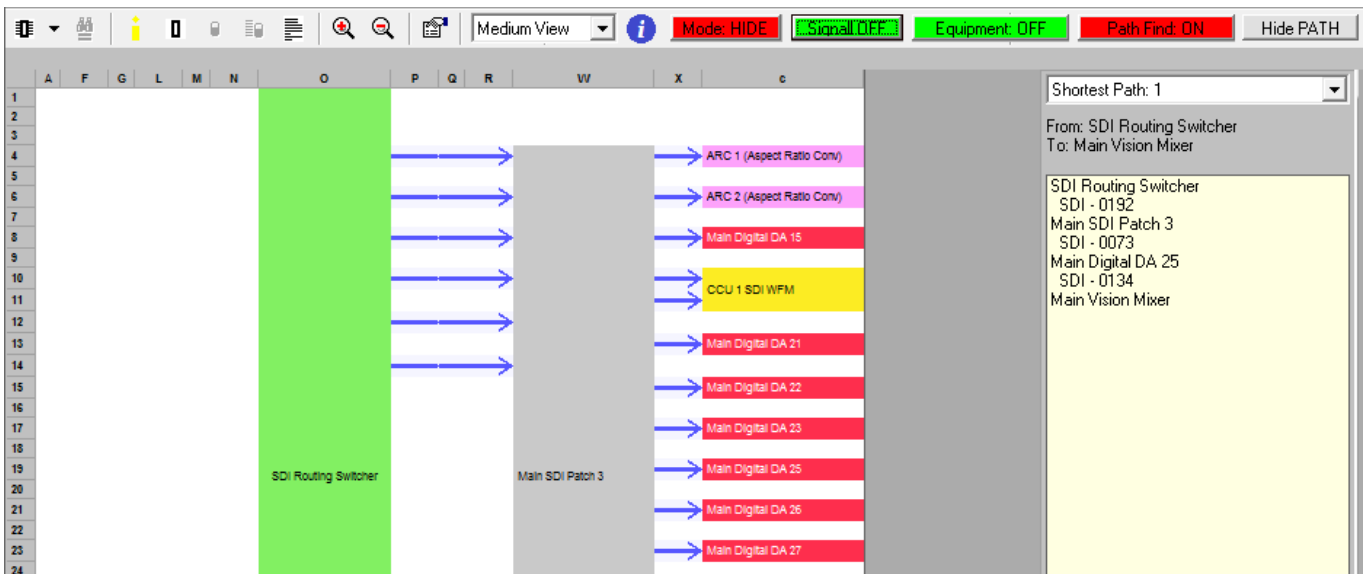
What's New: Single and Multiple Cabel Label Views.

Most of the changes to these views are associated with Signals, Equipment and how these views interact with their own database areas.

Below are the top sections of each View (Single top, Multiple below). All the Equipment, Signal, Signal Flow and connection status is centralised there. Simple navigation (via a dedicated button) to each of these other Views is also provided.

Cable End A

Equipment	Main Digital DA 1

Inputs	Outputs	Bi-Dir
1 [1]	2 [6]	0 [0]

Terminates Bay3-RD - DDA 1 O/P 6
Connector BNC
Attributes

→ Signal Flow →

Cable End B

Equipment	Main Vision Mixer

Inputs	Outputs	Bi-Dir
17 [24]	5 [4]	0 [0]

Terminates Bay4-R C - P1 VMU I/P 11
Connector BNC
Attributes

Signal Type
SDI

	Main Digital DA 1		
End A	Inputs	Outputs	Bi-Dir
	1 [1]	2 [6]	0 [0]
	Bay3-RD - DDA 1 O/P 6		

→ Signal Flow →

Signal Type

	Main Vision Mixer		
	Inputs	Outputs	Bi-Dir
	17 [24]	5 [4]	0 [0]
End B	Bay4-R C - P1 VMU I/P 11		

SDI

Cable ID: SDI - 0088   **Editing: A - Equipment**

A - Equipment	A - Termination	Signal Flow	B - Equipment	Signal Type	A - Connector
Main Digital DA 1	Bay3-RD - DDA 1 O/P 6	A to B	Main Vision Mixer	SDI	BNC
Main Digital DA 1	Bay3-R D - DDA 1 O/P 1	A to B	Transmisson Stream 1 N	Video	BNC
Main Digital DA 10	Bay3-R D - DDA 10 O/P 6	A to B	Standby Vision Mixer	SDI	BNC
Main Digital DA 10	Bay3-R D - DDA 10 O/P 1	A to B	Vision Mon 13	Video	BNC

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What's New: "NoteIts".

At first these seem a bit odd, but, after a while they make sense!

Notes are useful, we put them in all sorts of places to remind us about something. Sometimes the same note must be attached to more than one item, this is where "NoteIts" are different.

Unlike a normal note, the same "Noteit" may be attached to more than one item, and it also provides a method to navigate the database.

Below shows an example. The same "Noteit" refers to may Cables, items of Equipment, Signals, Wring and Layouts. A simple click and follow system moves between the appropriate Views.

Applies to	Subject	Category/Status	Details	Author	Created	Modified
			Faulty	Maint	18/07/2005 8:00:51 PM	22/11/2007 9:48:04 PM
Cable unique test - 0207 Cable unique test - 0207 Cable unique test - 0230 Cable unique test - 0233 Cable unique test - 0233 Cable 0077 Cable 0078 Cable 0079 Cable 0080 Cable 0065 Cable 0066 Cable 0067 Cable 0056 Cable 0054 Cable 0102 Cable 0103 Cable 0094 Cable 0139 Cable 0140 Cable 0141 Cable aaaaaaa - 1123409f Cable Cable ID - 000001 Cable 0014 Cable unique test - 0233 Equipment 16 X 2 SPARE I/P DA O/P 3 Equipment 16 X 2 SPARE I/P DA I/P Equipment 16 X 2 SPARE I/P 13 Equipment 14216657asdasd Signal [AUDIO] Signal [AUDIO] Signal [AUDIO] Signal [AUDIO] Wiring unique test - 0233 Wiring Cable ID - 000001 Wiring unique test - 0230 Wiring unique test - 0236 Layout CLASSIC :25 Layout CLASSIC 2 :40a Layout CLASSIC 2 :48	Faulty Path	Serious - Monitor as a priorit	Intermittent signal and breakup.	BE	18/07/2005 9:47:08 PM	18/07/2005 9:47:08 PM
Layout CLASSIC with flow a b came		hggfghfghfghfgdfghdfghfg	jfh dffgh dfh ddfg	jfh dfh	18/07/2005	22/11/2007

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What's changed or been upgraded!

Reports.

These were a mixed bag in the older versions as there were multiple reporting systems. Most of them are now unified in the one view and may be customised by the user. To illustrate the significance of the changes, very few reports are supplied at all, instead a report creation tool is provided.

Importing

In older versions multiple importing systems were used. The main Importing View has been kept but another "pre-processing" stage has been added for ASCII imports. Ultimately they all use the same import code which results in a much simpler Import process.

Layouts

A few tweeks to the user interface to make things a little easier.

What's gone!

Unfortunately nothing much that can be seen by a user!

But a lot of work has gone into reducing the footprint and increasing code efficiency.

Many left overs from NT/2000 have gone and it probably wont run under 95/98 any more, we can't test this as we've misplaced all our 95/98 floppy disks!!