Swiss Sound

News and Views from Studer

September 2006 – No 49

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Dear Reader

Bruno Hochstrasser

This issue of Swiss Sound highlights some of the new innovations we have been working on over the last year and we are very proud that we can now share them with you. Our latest product introduction, the Vista 5™, brings the globally acclaimed Vistonics™ user interface to a broader base of potential customers. Not only is the new member of the Vista family extremely cost effective, but it also is very compact, lightweight, transportable and features a new DSP engine with a very high level of processing power, setting a new standard in terms of size versus processing power achieved.

The new DSP engine – the SCore Live – is a new building block in our product line and is used not only in our Vista console family but it is also the new building block for our high performance and modular routing system architecture.

Read in this issue about both the new Vista 5 and the new SCore Live technology. Also included are details of our expanded D21 I/O system and its smart design and how we have advanced the feature set of our OnAir 3000 console range based on your input and our practical experience made with over 2000 Studer digital on air consoles installed worldwide.

The last 12 months at Studer have been extremely exciting and we have seen a continued growing market acceptance of our Vista products and the unique Vistonics user interface. More than 200 large frame digital Vista consoles are in service around the globe and, at the time of writing this editorial, we have started to ship the first Vista 5 consoles against a large number of orders for this new and exciting product. And to keep you in touch with this ever growing customer base of Studer users, we have included an international roundup of new studios and installations adopting Studer to help run their businesses.

So many of you, our renowned customers around the world, have put your trust in Studer equipment and our people. We are proud and very grateful for this and I hope you will enjoy reading about everyone's achievements around the globe.

Bruno Hochstrasser
President

Front cover:
Studer Vista 5 and
Studer SCore Live

Impressum

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Studer booth at NAB 2006 in Las Vegas

Vista

Vista 5™ – A new member of the Vista console family

Stefan Ledergerber

The new Vista 5™ is a highly flexible compact digital mixer, with a well-conceived control surface that is finding favour amongst users in broadcast production and live sound performance venues. The console's particularly small size and simple connectivity make it one of the most portable desks on the market, which will find its place in small to mid-size studios and will easily fit into any OB van. It can be easily moved from one location to another and set up within minutes, needing only two CAT5 cables to be connected between the table-top mounted desk and the DSP rack.

The easiest way to explain the Vista 5 may be to call it the 'little brother of Vista 8'. Many of the key features of Vista 8 can be found in the Vista 5, however, the desk has a fixed configuration of 32 versatile faders and the meter bridge is removed from the top of the console and is integrated next to the faders using tri-coloured LEDs.

A total of up to 240 channels can be accessed from the desk and laid out in any order, with the Vistonics system giving instant control over all related channel functions.

The control bay has become more versatile and now provides almost the same access to channel functions as the fader bays. This means that its 10 channel strips can be equally well used to operate input channels as they also offer the unrivalled output control of the Vista 8: The Vistonics screen of the control bay may show 40 outputs with real time metering and direct access to levels, SOLO and talkback.

By using the 'Follow' button however, this Vistonics screen turns into a regular fader bay

Vista 5 Channel Meters

Vista 5/8 output overview and control

Output view selection with 'follow' function

screen and shows the same parameters as on faders 1-20. In this case the screen will also follow any global view changes of the console, for example switching from auxiliary 1-4 to input filters on all individual channel strips.

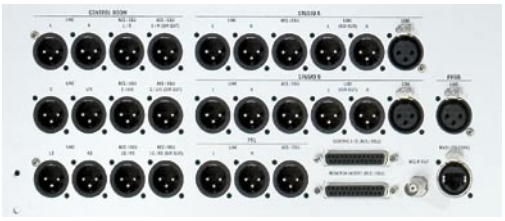
Another special feature of the Vista 5 is the centrally located push buttons used to switch processing such as EQ and dynamics on and off. While the Vistonics screens give full overview on the status of processing on all channels, these switches change the last operated channel strip. In other words, the operator selects a channel first and then activates the EQ – or chooses the shortcut to open up an EQ view on any Vistonics screen and then switch the EQ in or out. It is therefore not really necessary to initially select the channel in order to switch processing in or out. The On/Off keys will immediately follow the last operated channel and therefore allow the best possible speed of operation. On Vista 6, 7 and 8 these buttons are present on all channel strips therefore the step of channel selection is not necessary.

Centrally located switches for channel processing activation and copy/paste

In almost all other aspects the Vista 5 follows the same operational principles and uses the same Vistonics screens as its larger brothers, the Vista 6, 7 and 8. This makes it easy for an operator to move between different members of the Vista family, the Vistonics interface allows the user to work faster and focus on creativity, instead of continually looking up the manual.

Another novelty on the Vista 5 is its compact and powerful monitoring section. It hosts a total of 32 outputs and 16 inputs directly located on the rear of the desk. Loudspeaker outputs are available both as analogue line as well as digital AES/EBU outputs. This makes connection of digital loudspeakers very easy.

The control room is 5.1 surround as a standard with the nearfield speakers doubling up as external PFL speakers. They are also used to monitor the off-air conference while no PFL is active.



Monitoring inputs and outputs on the rear of the desk

The monitoring section hosts its own downmixer for listening to 5.1 mixes in 2 channel stereo. A variety of parameters are available for adjustment and presets such as 'ITU' are selectable. Special care has been taken about having correlated signals in rear and front channels before downmixing. This may be the case e.g. when a channel is panned between rear and front. If such signals are present in the mix together with fully de-correlated signals (e.g. an ambience microphone fully panned to the rear), a straight forward ITU downmix would change the mix and may make the correlated signals stick out in an undesired way. The downmixer of the Vista therefore offers the optional activation of a 90° phase shifter in order to guarantee de-correlation of the rear channels before summing them to the front channels. In that mode the rear channels will also be slightly panned to the center rather than full left/right, in order to avoid over-separation of the sound image and generating 'holes' between left and right channel. This mode is called 'Logic 7 compatible', since it has a lot in common with the way our sister company Lexicon implements the Logic 7 encoding. Finally our downmixer offers matrixing of the rear channels into the front using phase reversion in order to make the downmix a 'Lt/Rt' output (Left Total / Right Total), as it is widely used in the industry. Multiple downmixers may be configured using the Configuration Editor Software in order to deliver separate feeds with either the same or even different downmix settings.

The Vista 5 is primarily targeted for any kind of live sound application. This includes TV and Radio broadcast in mid-size studios and OB vans as well as live PA e.g. in theatres. All live functions have been continued from the Vista 8;

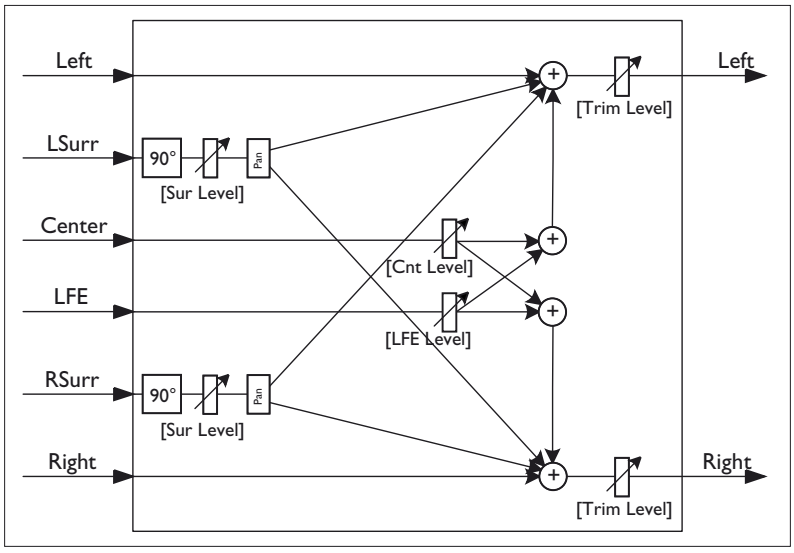
the luxurious static automation (snapshot filtering and editing) as well as the cue list functionality, rounded off by mute groups and matrix busses. Cues may be triggered using MIDI show control commands and may also send and receive any sort of MIDI events to 3rd party. The support of Harman Pro HiQnet provides the ability to control an entire PA system from the console itself.

Typical broadcast facilities are included, such as N-1 outputs, off-air conferencing, GPIO for red-light, fader starts, Audio-follows-Video (faderramps) etc. The console's internal patch may be controlled from a variety of third-party controllers and video routers using the well-known Pro-Bel protocol. This largely removes the requirement for external audio routers in many installations.

DSP power and I/O are specified by the customer. The total I/O capacity, comprising various cards including Mic/Line, ADAT, TDIF, AES/EBU, SDI, Dolby E Decoder and MADI, may exceed 1700 inputs and outputs. By using Studer's Configuration Editor Software, the Vista 5™ can adopt almost any console structure requested by the operator. This optional tool allows the user to specify the number of channels, busses and processing within the channels as well as signal flow within the console.

For peace of mind, extensive diagnostics are available to indicate system health. Besides standard redundancy such as RAID hard-drives, there are several hardware redundancy options available. These include Power Supplies, DSP cards with instant switch over as well as a redundant link to the DSP core and MADI links to D21m remote I/O boxes.

Vista 5 at Korea press center



Vista5 Downmix Diagram

We are convinced that the Vista 5, being a small yet highly powerful digital mixer with no compromises in functionality and ergnomics (only surpassed by its bigger brothers, the Vista 6, 7 and 8) is perfect for today's market.

We are truly proud to have taken the best out of the big Vista consoles and "reduced it to the max". This little brother certainly packs a punch!

Vista 5 at VCF Moulin Rouge studio, Paris

The first installed Vista 5 digital mixing system at Hardstudios OB van in Winterthur, Switzerland

SCore Live

A fail-safe DSP Core for mission-critical audio applications based on the SCore Platform

Adrian Riedo

The SCore Platform is a highly scalable design for high-end DSP clustering in professional audio applications (Swiss Sound No 47).

Studer's new SCore Live DSP Core is built on this proven platform and offers massive parallel DSP processing controlled and monitored by a system host running QNX® Neutrino® RTOS (Real Time Operating System).

Introduction

With the introduction of the SCore Live, Studer boosts the total DSP horsepower while reducing the cost of high-powered console systems. The new DSP Core which is currently available for all Vista series mixing desks comes in a 6U, 19 inch frame and offers 10 DSP slots and can hold up to 12 I/O cards as well as additional GPIO interfaces.

The SCore Live is now supplied with the Vista 5, Vista 6, Vista 7, Vista 8, and Route 6000 products as standard.

Unlike other DSP platforms, the SCore Live is user-configurable to maximise the use of the DSP in different applications. The advantage of this is that the user can specify and purchase the optimum amount of DSP for current needs and yet not compromise future production requirements, whereas fixed configuration DSP platforms as employed by other manufacturers can add extensive cost onto a console system.

Digital Signal Processing

The new SCore DSP PRO card *(Fig. 1)* carries 12 Analog Devices SHARC processors with integrated floating point circuitry and processes audio data at 40 bit resolution. No overloads will ever occur within the system, since floating point architecture is even used in the summing busses, a feature not found in many digital console designs.

A total of 128 MB external memory on each card enables the DSP's to add delays of up to 10 seconds on signals to compensate for video delays through satellite links, etc.

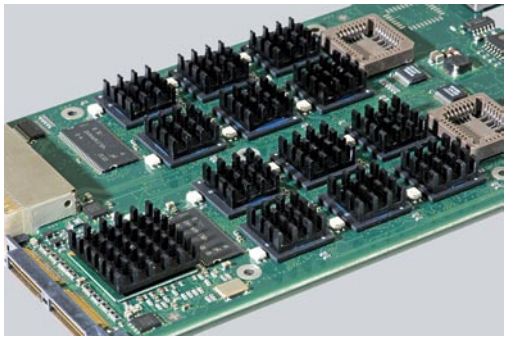


Fig. 1 – SCore DSP PRO card

The more DSP cards that are fitted in the core, the more channels and busses will become available. The SCore Live offers up to 4,000 'timeslots' for freely routing signals within the core. A fully equipped system can easily process hundreds of audio channels and be connected

to more than 1,700 inputs and 1,700 outputs through multiple Studer D21m I/O units. The extensive routing matrix within the DSP Core eliminates the need for an outboard patch bay or front-end router.

Redundant DSP cards immediately take over in the case that another card fails, with hardly any audio interruption and no interaction from the operator.

QNX® System Host

With any live desk, fail-safe operation & redundancy is an essential feature to ensure constant 24/7 operation, and the redundancy features extend to all hardware parts of the DSP Core. Redundant power supplies as well as all internal voltages and temperatures on every DSP card are constantly monitored by the system host Bridge card *(Fig. 2)* which itself can also be equipped in redundant mode.

Fig. 2 - SCore Bridge card

Because the Bridge cards that connect the DSP Core to the mixing desk become the central system hosts, only the best Real Time Operating System (RTOS) is good enough – Studer uses QNX® (QNX Software Systems is also A Harman International Company) Neutrino® which is a true microkernel operating system.

Under QNX, every driver, application, protocol stack, and file system runs outside the kernel, in the safety of memory-protected user space. As a result, virtually any component can fail – and be automatically restarted – without affecting other components or the kernel. No other commercial RTOS provides such protection.

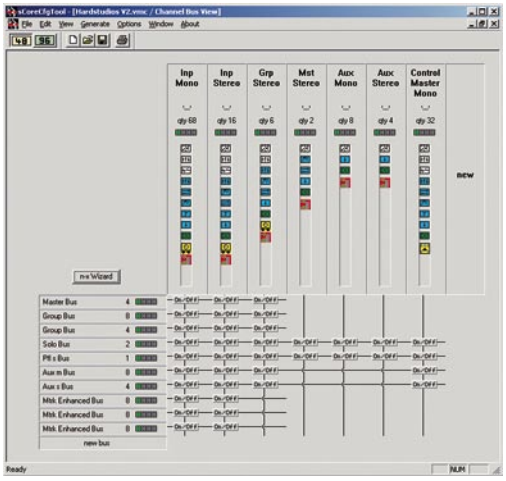
In order to guarantee low latency update rates between mixing desk and DSP core the Bridge card offers Gigabit Ethernet interfaces *(Fig. 3)* and uses standard TCP/IP protocols. The highly efficient Freescale MPC8540 network processor *(Fig. 4)* that houses the QNX Neutrino RTOS runs at 833 MHz and has power enough to update thousands of DSP audio parameters in real-time.

Fig. 3 – Gigabit Ethernet interfaces

Fig. 4 – MPC8540 network processor

The QNX RTOS itself as well as the DSP firmware is stored locally in a flash memory and can be upgraded from the desk over Ethernet. Audio parameters are stored in a fast onboard SRAM which is backed up by a GoldCap capacity offering data retention for weeks without external power.

In the case of a total power loss of the system the SCore Live will boot independently of the mixing desk and pass audio in under 10 seconds – recalling the last audio settings before the power failure.



Studer's System Configuration Editor software, available as an option, allows the client to take the factory-defined settings, and make his own

adjustments on a job-by-job basis, including changing the number of input channels, busses, and outputs. Even the signal flow capabilities within the console may be changed on an application basis, making the Vista console one of the most flexible digital desks on the market.

Together, all these facilities make the SCore Live the DSP platform of choice for Broadcast and Live Production solutions.

Fig. 5 – The Soundcraft Vi6™

SCore technology for Soundcraft

Soundcraft, Studer's sister console manufacturer and also a Harman International Company, well known for its analogue live mixing consoles, built its first large scale digital mixing system on Studer's SCore Live DSP platform this year.

The Soundcraft Vi6™ mixing console *(Fig. 5)* offers 64 input and 35 output channels, 24 inserts and 32 busses in a fixed configuration.

Only two SCore DSP PRO cards are required to process all audio data for the complete system. Control data between the desk and the local rack is carried over a single Ethernet cable. The remote stage boxes can be attached using MADI over standard Cat5 or optical connections.

The Studer Vista 5™ and SCore Live

Studer Router Technology

Since the beginning of the 'digital age' in the audio industry, Studer has successfully supplied audio routers to customers all over the world. A router is typically a very sensitive component in a broadcast system since all incoming and outgoing audio signals pass through it. Reliability and serviceability are therefore key factors when selecting a router.

A typical router can be divided in three major parts:

- Router core
- I/O system
- Control system

For very large routing systems, several cores and I/O systems can be combined as a cluster and controlled from one or more router control systems.

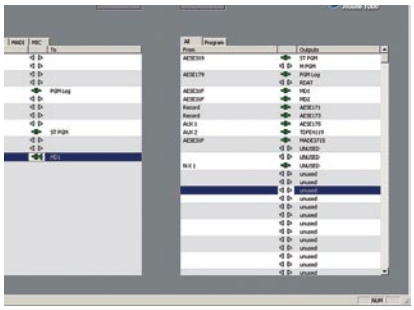
A TDM (Time Division Multiplex) bus as used in the DSP (Digital Signal Processing) cores for Studer Vista and OnAir 3000 digital mixing consoles is a perfect technology for routing systems. The flexibility and reliability of these DSP cores has been proven with hundreds of installations world-wide. With more than 4000 time slots, pretty big routers can be achieved. A big advantage of this technology is the DSP processing capability to maintain noiseless audio switching, to have assignable signal processing algorithms and to handle the required I/O bandwidth. With the introduction of the SCore Live, hot pluggable redundant controller and DSP cards are available providing extra security for the most sensitive applications.

The I/O system of a router must be very flexible and provide all the standard interfaces used in the audio industry. The Studer D21m is such an I/O system which supports analogue signals, AES/EBU, TDIF, ADAT, MADI, SDI and Dolby-E (introduced at IBC 2006). By adding I/O cards for serial and GPIO signals, the D21m system is perfectly suited for router applications. Other interfaces are in development and will be released soon.

The Studer SCore Live and the D21m I/O system are very compact and need only little rack space which is an advantage for systems where space is limited such as in OB vans.

Andreas von Ow

Router control systems must fulfil many different requirements which are sometimes quite different project to project. With the Route 1000 control software, Studer can provide a simple, networked solution for those cases where hardware control panels, salvos or scheduling features are not needed. In other cases, the Studer routers can be controlled by 3rd party control systems (e.g. from Broadcast Solutions, BFE and others) which are either connected through RS-422 or Ethernet. The DSP core supports standard protocols (SW-P02 and SW-P08) for basic cross point switching and label import and export. Therefore the integration with control systems is straight forward. In fixed installed broadcast applications, a dedicated router control system might not be needed. The Studer routers support the I/O sharing of the Studer OnAir 3000Net mixing system and it is therefore possible to access audio signals from the console through the router from either a centralized audio input or from another OnAir 3000Net mixing console.



Although network switching technologies such as ATM and Gigabit Ethernet are available and can be used to route audio signals, the TDM approach is still the most suitable technology for routers due to its predictable behaviour, noiseless switching, low latency and the fact that the technology is owned and cotrolled by the manufacturer.

Vista 8

BBC TC1

Andrew Hills

The British Broadcasting Corporation is the state broadcaster for the United Kingdom and bases its television production in a suite of 11 major production studios at the Television Centre in West London. Additional news and presentation facilities for the 7 domestic TV networks and many international feeds are also on site

This building was constructed in the early 1960s and has been expanded and renewed continuously since then. The latest phase of refurbishments is beginning to provide facilites for HD sound. Television Centre Studio 1 (TC1) is the largest studio in the United Kingdom with a floor area approaching 1000 m^2 and a comprehensive technical suite for sound, vision and lighting.

Many of the BBC's most substantial Light Entertainment programmes are transmitted live or recorded in TC1, and recent productions have included some of the most successful shows such as 'Children in Need' (an 10 hour live fund-raising show), 'Sports Personality of the Year', 'Strictly Come Dancing' (a live celebrity dancing competition), 'Later with Jools' (live band music show) and many others.

During the spring of 2005 the BBC decided to replace the ageing analogue mixer in TC1 and, after a series of demonstrations and technical and operational evaluations, a 72 fader Studer Vista 8 was chosen. The brief given to Studer was to produce a mixer capable of mixing these large and complex productions.

The first requirement was that two man operation of the control surface must be possible; live shows such as 'Strictly Come Dancing' have a live band with some thirty to forty sources, plus a further thirty mics for the presenters and audience and up to 20 stereo sources from playback VT, EVS and so on. All of this must be simultaneously visible to the operators without 'layers' and, significantly, both operators must be able to work on their part of the mix without affecting the other operator. Vistonics uniquely provides this possibility by offering an analogue-style channel strip arrangement without the need for a master assign section.

Further, the sheer quantity of circuits in this studio required a very large amount of I/O; in fact this system has some 194 Mic/Line inputs plus another 392 line level inputs in various analogue and digital formats; a total of 580 inputs to go with the 400 outputs! These I/O frames and a fully filled DSP rack capable of mixing some 120+ channels all fitted in virtually the same amount of rack space as the power supplies from the previous analogue desk!

The BBC chose the Vista 8 desk partly because of the success of other BBC installations at the in Manchester, Maida Vale and Broadcasting House and also Studer's ability to make custom changes according to the needs of this project. The faders are all fitted with 'Overpress PFL';

this is a common provision in British desks and means that if the faders are pressed beyond their normal 'Off' position then that channel may be heard through the prefade listen speaker, a great boon for checking countdowns on that channel for example. In addition it is standard in BBC television that faders operate by making the sound louder as they move towards to operator. Some might argue this is the 'correct' way of working but then in the UK we drive on the left! This change required not only the obvious mechanical reversal of the fader which, due to the mechanical overpress switch, could not be done in software, but also the new hand position required a redesign of the handrest which doubles as a script ledge. A further customisation involved the layout of the desk surface, in order to allow direct control of all 72 faders without moving the operator chair. The TC1 Vista 8 has an 8 corner section fitted between faders 50 and 51: this serves to improve the operational access and, in addition, provides space in the corner section for comms control panels and also the control screens for the BBC's Colledia control system. Lastly, this idea also saved considerable money as the existing control room could be used without significant structural alterations. In addition the surface has traditional BBC dual needle peak programme meters, cleverly mounted in the upstand to be fully in the 'line of sight' but not to occlude the production monitor stack; even in this digital world people still rely on the tried and tested!

Two significant features have been fitted to this Vista 8. Firstly the ability to integrate the digital router within the Vista 8 into the BBC studio control system. This permits outputs from the Vista, such as VT record sources and gallery monitoring, to be controlled from other terminals. This integration significantly reduced the requirements for the studio audio router and also increased the operational flexibility. In fact more than 150,000 cross-points are controlled this way.

A second significant feature is the inclusion of dynamic automation. At first sight this might seem unnecessary in a live desk. However, large TV studios never have 100 % occupancy during set construction and lighting rigging so, from time to time, the sound gallery is left dark. The

ability to use this large investment for sound post production work during these times increases the utilisation of the investment. A further and slightly less obvious use of dynamic automation is during recording of live multi-track music. If the direct outputs of the microphones are recorded onto multi-track and the multi-track returns are routed to the 'input 2s' on the associated channels, then a 'clone' of the band is available though the same channels. The automation is switched on during the recording and all the dynamic moves made will be replayed as recorded. This hugely speeds up the post production process and the basic automated mix will already be available and only minor corrections need be made.

Strictly Come Dancing

One of the biggest shows during the autumn of 2005 was the Saturday night live transmissions of 'Strictly Come Dancing'. This was a dance competition featuring celebrities such as sports stars, TV presenters, and pop stars competing in a ballroom dance competition with a live 20 piece band, audience, presenters and guests. Two live shows were transmitted each Saturday evening, the first show of about sixty minutes consisting of each couple dancing to the band followed an hour later by the second show comprising the phone results and a feature musical set from guest artists such as Cliff Richard, Katie Melua and Tony Christie.

The dance floor occupied the centre of the studio floor with the audience of about 400 sitting in three sides and on two levels. The stage area and band were located on the fourth side, so the programme was virtually shot 'in the round' with ten cable cameras plus a radio-linked Steadicam.

The band comprised three trumpets, four singers and four saxes, doubling as flutes, across the back rows. The bass, guitar, and keyboard filled out the left hand side with full drum kit in the centre plus additional percussion on the right behind the band leaders piano; a total of some 20 mic sources to the Vista. Audience reaction was picked up by 15 mics, some slung over the seating, some hidden in the set. Although the ambient noise level in the studio was quite high, because of all the lighting fans, little noise appeared on the transmission due to very careful mixing and filtering.

Each of the four judges, the 12 dancing couples and the main presenters had at least one and sometimes two radio mics giving a total of 36 mics to the main mix. In addition there were inserts from VT and EVS (hard disc video playout system) plus some 150 audio cues played in through the OnAir 3000 grams mixer.

The main sound supervisor was helped by two assistants in the sound gallery, one operating the left hand 30 Vista faders producing the band mix, the second assistant operating the 12 fader OnAir 3000 fitted behind the Vista and mixing in the various effects and music beds. The main sound supervisor was therefore free (!) to mix the band and FX stems plus the 36 radio mics, audience and VT and EVS on the right hand side of the Vista 8; all done live for more than 10 million viewers!

One key feature of the Vista desk is the sophisticated snapshot cue list and filtering arrangements. The rehearsal for each of the band numbers was recorded to multitrack pre-signal processing. During a break, the band mixer could use the multitrack playback routed one to one instead of the microphone sources to improve the balance and find problems for each of the 10-12 musical numbers. Then all the processing parameters such as gains, EQ, dynamics and fader levels are saved to a snapshot. This and the other 17 or so snapshots are then simply dragged into a cue list to prepare for the evening show according to the final running. A simple drag and drop procedure allows for this list to be re-ordered or updated at the last minute; something all too common in live TV! A further clever feature of this system is the ability to mask snapshot data so that, during recall only, the band elements are reset leaving the rest of the desk, including the presenters and audience, unaffected.

With live shows, there is always an element of danger, however the adrenalin rush of going live to huge audiences made for a compelling show with some excellent performances; the sixty-five year old Cliff Richard singing "do you want to dance" as if he was still a twenty year old being one to savour!

And the winner? For those who were not able to see the 'Strictly Come Dancing' final it was won by Darren Gough, a member of the English cricket team, oh, and the BBC with a fabulous new state of the art studio!

D21m I/O system expansion

The Studer D21m I/O system, used on the Studer Vista and OnAir 3000 ranges of digital consoles, has been further enhanced with new optional I/O cards designed to integrate with the latest embedded data streams used in the Broadcast domain. These upgrades keep Studer at the forefront of Digital Broadcast Integration, and allows our clients to install future-proof systems.

Firstly, a new SDI card enables users to extract audio signals directly from a Serial Digital Video Interface (SDI) stream into the D21m I/O system, allowing those signals to be routed anywhere within the console system.

The SDI Broadcast Transmission standard, as defined by SMPTE, is used to connect video production equipment to transfer SD video at 270, 360, or 540 Mbps and HD video at 1.485 Gbps.

The second new I/O card for the D21m is for Dolby® E encoded signals, Studer being the first console manufacturers to offer such expansion possibilities.

Dolby E is a professional audio coding technology developed to assist the conversion of two-channel broadcast and other facilities to multichannel audio, by providing 8 audio channels in the same space normally used for two. Among other benefits, audio encoded with Dolby E can be decoded and reencoded many times without audible degradation.

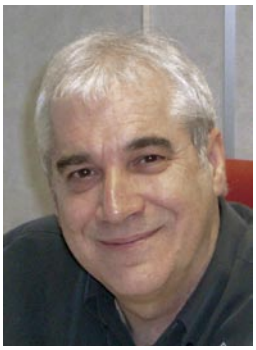
The single card accepts any AES/EBU stream containing Dolby E or Dolby Digital® encoded signals, decodes the stream within the input stage and then provides up to two sets of 8 channels to the console.

One D21m I/O frame can take up to 12 of these cards in a 3U rack space, and each card may contain up to 2 decoders, making it possible to decode up to 24 Dolby® E streams in just 3U of rack space. Dolby encoded signals may be directly connected to the cards front panel or patched via the consoles internal software patch window.

In combination with Studer's D21m SDI de-embedder card it therefore becomes possible to decode Dolby E signals originally contained within an SDI stream.

The Dual Dolby D/E decoder card also features an automatic switch to a second AES/EBU PCM input in case there is no Dolby encoded signal detected on the main input. For example this allows play back of video tapes with or without Dolby E encoded material and the card will automatically switch to the correct tracks.

Dolby is a registered trade mark of Dolby Laboratories, Inc



Dave Neal

OnAir 3000

New software release for the OnAir 3000 digital mixing system

Andreas von Ow

The Studer OnAir 3000™ has set new standards for on-air mixing consoles since its introduction in 2003. Due to the open and flexible concept of the OnAir 3000 system new features can be introduced on a regular basis. After the last update V2.0, which brought the NET option as one of the most innovative steps for digital mixing consoles, a further software release, V2.1 is now available. This new release adds new features turning the OnAir 3000 from a digital mixing console into a digital mixing and routing system.

Router control interface over TCP/IP and RS-422

The signal processing core of the OnAir 3000 is perfectly suitable as an audio router. Two router control interfaces compatible with the de-facto standard Pro-Bel SW-P02 and SW-P08 are supported with the new software release. Most router control systems either support the SW-P02 or the SW-P08 interface. It is therefore possible to control the router of the OnAir 3000 from external control systems. The software and hardware architecture allows using a part of the signal processing capabilities of the core as an OnAir 3000 mixing system, while another part of the same physical core is used as an independent router.

The OnAir 3000 can also control an external router from the touch screen in the centre section. Like this it is possible to assign a signal from an external system to an OnAir 3000 input even if the external router does not support the Studer I/O sharing.

The implemented control interface supports RS-422 (SW-P02 and SW-P08) and TCP/IP (SW-P08). The SW-P08 interface not only allows setting cross points but it also exchanges signal labels with the external system.

Enhanced I/O sharing

The OnAir 3000 V2.1 supports automatic routing of a return path if a telephone hybrid or a codec is routed between consoles or from a central star router using the I/O sharing feature (4-wire routing).

In addition unique resources, in particular microphone inputs, can be handled. If one console takes control of the microphone of another console, the access to the microphone preamplifier parameters (gain, filter, phantom power) can be locked. In order to use the same microphone on other consoles, a CAL function is available, which allows level adjustments of that microphone input in the digital domain, without having access to the preamplifier. In some cases accessing an already locked microphone preamplifier is needed, therefore forced access control, overriding the lock mechanism, is possible.

CMS integration

The Studer Call Management System (CMS) is perfectly integrated with the OnAir 3000. Instead of having a dedicated screen for the GUI of the CMS client application, the TFT channel screen

of the OnAir 3000 can be switched to be used for CMS. For this, a new channels screen with a DVI input and a USB connector on the back and a 'Channel'/'External' switch on the front are available.

By connecting a USB cable between the CMS client PC and the channels screen, the CMS can use the touch matrix of the screen. Like this, the CMS studio client can be operated entirely from the OnAir 3000 desk.

The CMS integration also includes a label transfer (phone number or name of caller) from the CMS application to the channels strip of the OnAir 3000. Status and control signals such as 'HOLD', 'ON', 'PFL' or 'ON-AIR' are exchanged between the systems over TCP/IP.

Talkback

Typically talkback systems are designed to add a return signal to a dedicated bus. The new talkback facility on the OnAir 3000 V2.1 allows defining groups of busses to which the talkback signal is added by a single press of a button. Several groups can be defined and the assignment of a bus to a TB group is so easy that any operator can define such groups.

The talkback system of the OnAir 3000 is very comprehensive and talkback from many sources to the control room or a studio is possible. This addresses the issue in large systems where it can be quite difficult to distinguish who is talking to the control room or studio from where. A new feature was added to indicate on the desk or monitoring units where a talkback signal is coming from.

Ducking

A ducking feature has been added to the OnAir 3000 software which is especially useful for sel-op applications. Threshold, attenuation, attack time, hold time and release time are individually adjustable.

Ducking is either activated by a configurable control signal which is fed into the ducker as a side chain signal, a dedicated control button or a GPI signal. Any input, AUX, N-x or sub group signal can be configured to be the control signal.

User access rights

The system administrator can define policies (profiles) for different types of users of the OnAir 3000. For each policy the access rights to certain features can be granted or declined. Each user of the OnAir 3000 has an assigned policy, via which the user gets the appropriate access rights to the console functions when he/she logs in.

Centralized user and snapshot management

The centralized user and snapshot management are major features to ease the system administration in large Broadcast organizations.

In big organizations with many OnAir 3000 mixing systems it is more efficient to have the user management on a central server instead of defining each user on every console. As the OnAir 3000 is connected to a network, the system can load the user data such as user name, password, user access rights (policy) and department to which the user belongs from a central server. Up to 4096 users and 255 different policies can be defined in a system.

In order to ease the management of snapshots a central server for storing snapshots can be used. The centralized snapshot management supports three different types of snapshots: personal snapshots, department snapshots and global snapshots. While personal snapshots can only be stored and recalled by a single user, department snapshots can be recalled by a group of users belonging to the same department. Global snapshots can be recalled by any user of the console.

Snapshot filter

With V2.1 snapshots can be recalled in three different ways; either for an entire desk, for a part of the desk in split desk configurations or for individual channels. This new feature adds a lot of flexibility to the snapshot function of the OnAir 3000.

Monitoring of logical outputs

Another new feature of software V2.1 is the ability to define any logical output as a source for the monitoring system. Therefore any output of the internal matrix can be defined as a monitoring source which is either selectable by a rotary encoder or a dedicated monitoring selector button.

New hardware for the OnAir 3000

Producer box with timer extension

Version V2.1 of the OnAir 3000 supports the Monitoring Module with Timer Extension. This new monitoring box can be used in the many cases where a studio is shared among two control rooms. Two buttons are available to switch between the studios.

In addition, the new module provides a stop watch which can be synchronized to any fader stop watch of the OnAir 3000 in the control room. A local user stop watch and a time of day display are also provided.

XL box

The XL box is a module that allows pre-listening and talkback of 12 input sources or busses (e.g. N-x). Each of the 12 sources or busses has a display which indicates the assigned signal. Individual contribution levels can be adjusted and master level control is provided.

New Headphone box

The new headphone amplifier box for the OnAir 3000 is very flexible and allows different operation modes. It can provide a talkback input with either a split mode or dim mode function. In dim mode, the main signal (input A) is dimmed while the talkback signal (input B) is activated. In split mode, the main signal is on the left headphone and the talkback signal is on the right headphone.

Another application for this new box is a simple 2 to 1 mixer which can be used in conjunction with edit workstations. The headphone box provides balanced main inputs (input A and B) and an unbalanced input, accessible from the front, as an alternative for input B. In addition to the headphone output, balanced speaker and record outputs are available.

SDI card

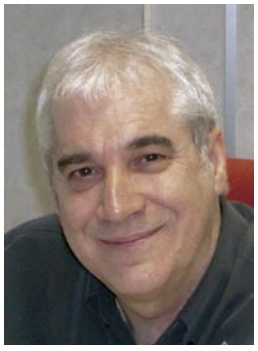
The OnAir 3000 mixing system uses the same D21m I/O system as the Studer Vista series of live and production consoles. Therefore new developments for the I/O cards are immediately available for both series of Studer mixing consoles. The latest member for the D21m I/O cards is the SDI interface. It provides an 8 channel audio embedder and de-embedder. With the SDI card, the OnAir 3000 can be used in TV environments without the need for external embedder/de-embedder devices.

Conclusion

The new V2.1 software adds new, unsurpassed features to the Studer OnAir 3000 mixing system. The system is extremely flexible and can be adapted to almost any application in radio broadcast and TV continuity.

Studer Success Worldwide as Broadcast goes Digital

The ways in which our Vista and OnAir consoles are being used are diversifying all the time. From traditional TV Broadcast and Radio production, for OnAir, for HD TV production, to increasing use in OB trucks, to live Theatre & Opera – Studer consoles are proving to be an important choice in the transition to Digital Broadcasting



Dave Neal

OB & HDTV

- In Ireland, HD1 is Observe's new flagship HDTV OB vehicle, a triple-expander 53-foot (16 metre) artic with full studio facilities for live broadcasting, including 24 HD cameras and a 52-fader Studer Vista 8 digital live audio production console.

Observe's Head of Sound Colm Flynn has recently been recording a 30-piece orchestra, a five-piece band and a string quartet. His Studer Vista 8 digital audio console has capacity for up to 480 inputs, so Flynn has had more than enough capability for this show. "We have 80 mic line inputs built into the truck, plus 40 more in our flightcased stagebox, and I can bring in additional I/O if I need it." Observe's stagebox, on a fibre optic connection, was positioned inside Ardmore's Studio A, some 100 metres away from the Observe OBV.

"When specifying the HD1, after looking at all the leading marques, we decided to go for the Vista 8. We preferred the look of the console and the way it worked, in fact the ergonomics was a key factor as it made the Vista 8 the easiest surface to learn for all the freelance engineers that will use the vehicle".

- In Taiwan, the Videoland Television Network has recently commissioned a new state-of-the-art HD OB van, choosing a Studer Vista 6 digital console to manage the on-board audio production.

Part of the Koo Group of companies, Videoland was founded in 1983 as a production house, and has since become one of Taiwan's main satellite providers, with six channels under its Videoland banner.

It's new HD OB van houses a 30-fader Studer Vista 6 console, supplied and installed by Linfair Engineering, Studer's distributor in Taiwan. The desk was chosen for its fast, flexible and easy operating system, enhanced by the unique Vistonics control surface, which allowed Videoland to control the large number of inputs and outputs they required using a relatively small number of physical faders.

- Tokai Television Broadcasting in Nagoya City, Japan, has installed a Studer Vista 8 digital audio mixing console in an all-new live broadcast studio, equipped to HDTV and 5.1 surround sound specification.

Tokai-TV already uses two Studer digital consoles; a D950M2 is installed in a Tokai-TV outside broadcast vehicle, and a Vista 7 being used in post-production. They have proved so successful with the Tokai operators that the decision was taken to invest in Vista 8.

- A 52-fader Studer Vista 8 digital audio console has been installed into BBC Radio & Music's new flagship outside broadcast vehicle, Sound 4.

Sound 4 is about as large a vehicle as European roads will legally carry. On board, the main control room featuring a Studer Vista 8 digital desk takes up the central space, with an apparatus room at one end, and a 5-person capacity fully sound-proofed studio at the other.

The Sound 4 vehicle is the achievement of coachbuilders W.H. Bence and system integrators dB Broadcast. Designed to meet a very tight acoustic specification, several innovative features have been incorporated into the truck's audio facilities. The Vista 8 itself is mounted on a motorised system capable of sliding forwards or backwards some 600 mm, enabling producers and engineers working in different programming genres to improve their listening position by adjusting the console's distance from the monitors.

Theatre

- The first Studer Vista 8 digital audio front-of-house console to be used in Paris's theatreland has been installed in the 1000-capacity Theatre de la Ville, which has chosen Studer as the digital platform for an extensive refurbishment programme that will take place over two years.

"There are many reasons for choosing the Vista 8," explains Pierre Tamisier, "but the most powerful one is the Extension Remote Panel, which we now use most of the time. With the main console in the sound control room, the remote can be taken down into the auditorium, to set up the show or to mix it. It has a very small footprint and it is easy to move, providing up to 60 fader capability in a 60 cm wide unit which one person can lift."

The sound control booth at the Theatre de la Ville is located high above the last rows of audience seating, with compromised sightlines to the stage. "When we bring in external productions, visiting sound engineers often prefer to work at seat level, and the Studer remote is ideal for this. Our team sets it up, and the ergonomics make it very simple for the visitor to understand and use – we can provide him with back-up because we can monitor his actions on the main Vista 8 in the control room."

This is currently an ideal solution to a problem, but the Theatre de la Ville has a longer-term plan to build a new control studio, close to seat level, which will also enable them to record productions. Fibre optic connections have been placed throughout, all sources are already digital, including a MADI interface from the Vista 8, enabling the sound operators to mix up to 48 mic inputs directly on PC.

TV Broadcast

- Sveriges Television (SVT), Sweden's national broadcaster, has completed the installation of three Studer Vista 8 digital consoles in facilities in Stockholm and Gothenburg. The consoles were delivered by Sennheiser, the local distributor for Studer.

  SVT has seen how the Vista models are growing in popularity with the world's leading broadcasters, and they've been particularly impressed by the operational concepts of the console, such as the Vistonics™ operating interface.

  Two consoles have been installed in SVT's Stockholm facilities, into refurbished studios where they replace analogue desks. A 52-fader Vista 8, with redundant control system, has gone on-air in Studio 3/4, while a 32-fader console has been installed in Studio 5, where it is handling audio for smaller productions. The third console is a 52-fader Vista 8, destined for SVT's regional studios in Gothenburg.

And Radio too …

- RTE Radio, the Irish public service broadcaster, is progressing steadily with its programme of refurbishing its radio studios, installing ten Studer OnAir 3000 digital mixing consoles, with the promise of more to come by year 2007.

  Michael O'Rourke, Head of Technology at RTE's Radio Division, points out that "it is important for broadcasters to standardise their equipment both from a support and operation point of view. We examined the market for a suitable digital console to help us create a template that we could replicate in all our radio studios, and, two years ago, we decided in favour of the OnAir 3000. Studer has obviously listened to what users have been requesting and has designed a superb desk. The practical design, scalability, flexibility, build quality, simplicity of operation and price of this desk made it an easy choice for all our different applications."

- They are the last Studer digital consoles before one reaches the North Pole – three OnAir 3000s have been installed by KNR Radio Greenland in Nuuk, just south of the Arctic Circle.

  KNR has been using Studer analogue consoles for 20 years. "Although we wanted to stay with Studer because we like the intuitive interface of the OnAir 3000, we researched the market thoroughly," explains KNR's Technical Director Kristian Heilmann. "We looked at several alternatives to make sure that we got the best deal, and in fact, we were pleased to discover that the Studer solution of the OnAir 3000 offered us the best value for money."

- In Belgium, the French radio broadcaster RTBF has chosen Studer's OnAir 3000Net digital audio console for its radio centre in Mons. This year, five consoles will be installed at this important site in the Belgian national radio network.

  Studer's visionary approach to I/O sharing, teleconferencing and external modules was a key factor in the choice for RTBF's producers and engineers, as well as the international references for Studer digital products, inspired by their user-friendliness and simplicity of use.

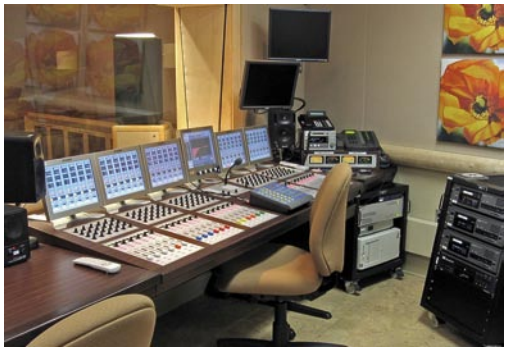
  For RTBF, the decision to buy Studer OnAir 3000Nets represents the first step to a global digital environment, connecting its various sites.

- Radio Notre Dame, the only Catholic radio station in Paris, has upgraded its audio facilities, installing a new Studer OnAir 3000 digital audio broadcast console.

  With the help of long-term equipment supplier Audiopole, RND has replaced an older Studer console with an 18-fader OnAir 3000 digital console, and upgraded ancillary equipment to digital. The decision to go digital was driven by a need for flexibility and enhanced routing facilities.

  The OnAir 3000 has been configured so that six faders are set to one side, reserved for the secondary programming that is disseminated via satellite. RND's primary programme material is prepared using the larger 12-fader console worksurface. Engineers are delighted with the speed and flexibility of control, which has made routing much easier, and offered many more possibilities for monitoring in the adjacent six-person studio.

- CBC Montreal in Canada has put the finishing touches on a physical remodel of its famed Studio 17, which is utilised to provide French language programming for several stations on the Radio-Canada network. Capping off the simultaneous equipment retrofit is a new 30-fader Studer OnAir 3000 Modulo console mounted in a custom desktop and located in the on-air studio's control room.



  According to Gaston Robitaille, CBC Montreal's chief of operations, the decision to go with the OnAir 3000 was an easy one. "Most of our studios are equipped with Studer 963 desks, plus we have a couple of OnAir 2000s, so we are intimately familiar with Studer's outstanding reliability and support," he says. "Also, the OnAir 3000 in many respects shares the operational philosophy of the 2000, which allowed us to smoothly train our techs – and we have nearly 100 of them – on using the console. It's really been a very simple transition for them and they're all impressed with what this new console can do."

Studer's Growing Success in the US

Previously renowned throughout the US for its famous tape machines, US broadcasters have now grown to accept Studer as a major player in the digital console market. Recent notable sales to major networks and independent mobile truck companies over the past year shows the growing popularity of Studer's digital console range in the USA, here are a few …

Major League Baseball (MLB) and American Football (National Football League - NFL) are the two of the most popular sports in the US. The Fox Network, based in Los Angeles has completely upgraded the audio facilities of one of its two primary production stages used for FOX Sports. The first phase of this project has been to install a 62 fader Studer Vista 8 digital live production console into FOX Network Center Stage A, which hosts all of the network's live pre- and post-game coverage for both baseball and football. The project's second phase, planned for next year, will upgrade Stage B with another Vista 8 for FOX Sports' enormously popular talk show 'Best Damn Sports Show Period'.

Important to Fox was not only the high level of redundancy but also the ease of use of the desk seeing that a number of freelance engineers would be manning these high profile shows. Chris Bauer, VP of Network Engineering and Operations commented, "A number of freelance mixers sat in on a few of the meetings where we discussed the Vista 8 and their comments were that they had personally used the desk and really liked it – particularly the Vistonics™ interface, which makes it easy to use. Knowing that this desk was embraced by that community assured us that it would a good choice in helping us smoothly transition from analog to digital."

It is also due to the growing acceptance of the Vista 8 by the freelance community that All Mobile Video decided to install another Vista 8 console in their aptly named 'Titan' mobile HDTV truck earlier this year. A 72 fader Vista 8 is housed lengthways along the truck due to it's size and comprises 96 mic/line inputs, 80 pairs of AES inputs, 56 bi-directional MADI I/Os

(plus 56 more for connection to DASH multitrack machines), 120 analog line outputs, and is accompanied by an extensive outboard DSP rack. An additional 24 analog line and 16 AES inputs on a remote I/O unit at the end of 500 feet of hardened fiber cable further enables the desk to be used with other OB vehicles. The truck caused a buzz at this years NAB show as it was parked in the South Hall on the Sony booth and won Television Broadcast's coveted 'Top Innovation Award'.

AMV's Celebrity HDTV truck continues to attract admirers for it's installed Vista 8 console. Renowned and respected broadcast mixer Ed Greene had his first experience with the Vista 8 in Celebrity in April for a live broadcast of The Juilliard School's centennial anniversary gala performance. Greene comments, "From my first experience, the Studer Vista 8 appears to meet my preferences for a live broadcast console,

Jamie Dunn

Ed Greene at the VISTA 8 desk

which are absolute on-air stability, friendly ergonomics and, of course, good sound,"

Adding to the list of large US mobile HDTV trucks with installed Vista 8 consoles, Studer recently received an order for a large Vista 8 from Los Angeles based Sweetwater Digital Productions who are in the process of building a new truck designed primarily for high profile entertainment and award shows such as the GRAMMY Awards. Aside from the 62 fader, 450 input console, Sweetwater also decided to utilize the Vista's I/O and DSP core as the main audio router (1024 x 816) for the truck.

The benefit of this is the flexibility of the D21m I/O system which allows I/O frames to be distributed throughout the truck at various locations with custom I/O specifications. These signals are then fed back to the main DSP Core with MADI fibre connections thus simplifying and reducing cabling dramatically. The Studer router is controlled from the Thomson 'Jupiter' control system via the Pro-Bel SWP-02 protocol and hence ties in seamlessly with the video control. This will be one of the largest Vista systems that Studer will have manufactured.

The Vista 8 is not only growing in popularity with American broadcasters but also causing a stir on Broadway. The songs of Bob Dylan are to feature in a Broadway musical set in a circus called 'The Times' They Are A-Changin'. Showing at the Brooks Atkinson Theatre, a 32 fader Vista 8 console recently purchased by world renowned entertainment technology company Production Resource Group (PRG) will be used as the main FOH console.

DigiMedia

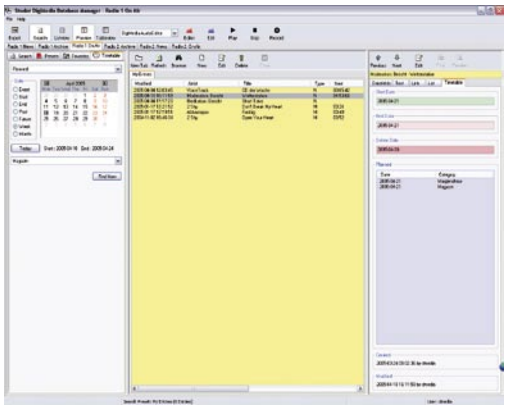
Studer DigiMedia 5 now available

Andreas von Ow

DigiMedia, the successful radio automation system from Studer is now available in version 5.

The main on-air application remains very similar to previous DigiMedia versions and can still be operated from a touch screen. A new tab based interface gives fast access to different applications such as 'Banks' (pre defined collection of e.g. jingles), 'Softphone' (Voice-over-IP), Audiolink (Audio-over-IP) or SMS. The resolution of the on-air screen is optimised for 1280x1024 pixel.

The new SQL equipped DigiMedia 5 is a major extension and makes working with DigiMedia even more efficient. The main tool is the DigiMedia Database Manager. All DigiMedia



modules are seamlessly integrated in the Database Manager. Modules such as the news system (NewsWire), the ISDN and the VoIP phone (Softphone), the planning tool, the audio editor and the audio and video logger are directly accessible.

DigiMedia 5 can access multiple databases including multi-media content besides managing the playlists of various radio programs, news agencies, music and news archives. The new planning tool provides an easy way to create and manage playlists.

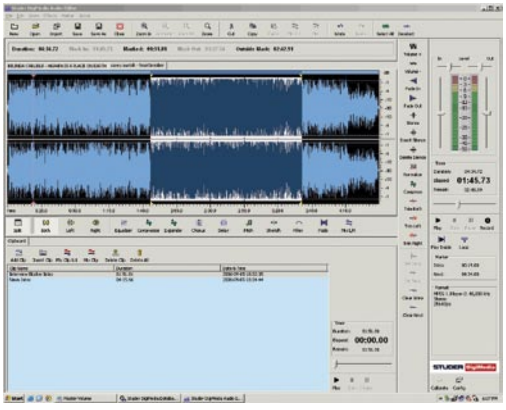
The DigiMedia Softphone allows making calls over ISDN or VoIP (SIP). The calls can be recorded and stored in the DigiMedia database. DigiMedia 5 provides a built-in 2 track editor and optional Digas 2 and multi track editors from D.A.V.I.D. can be integrated.

With DigiMedia 5 not only MPEG1 Layer 2 can be defined as the standard file format in the radio station but also MPEG1 Layer 3 (mp3) is supported.

AutoLogger is a tool to record audio or video streams which can then be accessed from a DigiMedia Database Client over the network.

DigiMedia NewsWire is a very powerful tool that can receive news feeds from different agencies and store them in Microsoft Outlook. The news, including multi media content, can be edited and processed using the DigiMedia 5 tools for further use.

Studer DigiMedia 5 is a major step forward and provides a lot of new functionality. Several live systems have already been successfully upgraded from previous DigiMedia versions. New systems, including systems with very big multi stage archives will also soon be installed.



STUDER

Studer – the evolution goes on

Studer Vista 5™ – Ultimate Control Gets More Compact

The Vista 5 is a highly flexible compact digital mixer, designed for broadcast production, live broadcasts and performance venues. The console's particularly small size and simple connectivity make it one of the most portable desks on the market, ideal for small to midsize studios. The Vista 5 will easily fit into virtually any OB van.

The 32-fader desk consists of 20 channel strips, optimised for input channel operation, and 12 additional versatile strips for operating output and input channels. The Vista 5 uses the same Vistonics™ screens as its larger brothers, the Vista 6, 7 and 8, which allows the user to work faster and focus on creativity.

Studer's new SCore DSP engine includes local I/O and, at just 6U, demands much less space on installation than many other console systems.

Facilities include N-1 outputs, off-air conferencing, GPIO, and extensive monitoring with 5.1-to-stereo downmix functions. The console's internal matrix may be controlled from a variety of third-party router controllers, so can replace an external solutions in many installations.

The luxurious static automation (snapshot filtering and editing) as well as the cue list functionality, rounded off by mute groups and matrix busses, makes Vista 5 equally well-suited to any kind of live sound application.

HiQnet™

Over the last 50 years, Studer's name has become synonymous with reliability. Thousands of users all over the world put their trust and their professional reputation in our hands. Because our technology will not let them down. Because it is a Studer.

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