

Swiss Sound

News and Views from Studer

October 2007 - No 50
Special AES Edition



Studer On Tour!

**Studer Enters the Tour Market with the
Exciting New Vista 5 SR**



Also in this edition: Studer applications around the world, Vista's new 5.1 channels, OnAir 3000, Integrated Radio solutions and much more...

Protect your future with the Integrated Radio Solution from Studer

The acclaimed OnAir 3000 Digital Production/Continuity Console is now available with 5.1 inputs, and can be totally integrated with Studer's Call Management System for phone-ins and voting together with integral 1728x1728 audio routing capability.



New features for the OnAir 3000 console also include Conference Multiplexing, direct outputs and limiters on both the AUX and N-X (cleanfeed) busses. Sophisticated downmixing facilities are included to allow simultaneous surround and stereo mix generation.

Multiple I/O formats including Dolby® E, SDI, AES/EBU and MAD1 make source management simple.

Together, all this results in a totally integrated On Air system that's ready for the future.



5.1 panning screen

Find out more at www.studer.ch/TotalSolution

Dear Reader

Quality, reliability, great sound and user friendliness are among the most important values our products offer. Reliability in Broadcast mission critical applications have made Studer products especially popular in Radio and TV live installs. In this issue, read how Studer brings its many years of experience in broadcast to the road – with the new VISTA 5 SR touring and live console.

There has been a huge surge of interest in High Definition Television and in many countries it has become a wonderful reality offering a great new experience for the viewers in their homes. Sound – for many years a neglected element in Television – has now become a very important ingredient of the overall experience of HDTV and with the arrival of Surround Sound, audio engineers are being presented with new challenges in obtaining the maximum sound experience possible in the production process. Read in this issue of Swiss Sound how Studer engineers have pioneered new and innovative methods to process and model surround sound signals in digital Vista mixing consoles using the acclaimed Vistonics™ operating system. Handling Surround Sound signals illustrates in a very impressive fashion what Vistonics can do and how visionary the Vistonics user interface is.

Read also about our new Surround Sound option for the OnAir 3000 consoles proving that the product was designed with future requirements in mind, protecting the investment of our many customers around the globe.

Systems and Systems Integration has always been a major focus of Studer's business strategy. Learn about Danish Broadcasting Corporation's ambitious project, now completed, and how Studer was a close partner in this high tech programme and read about our new routing products and how we expanded the D21 interface range – always having the requirements of systems in mind.

Many of the new products and ideas described in this issue of Swiss Sound are a result of the close collaboration with you – our customers. May I extend my sincere thanks to you for supporting us with your ideas and visions, and here's hoping for a mutually successful and prosperous future.

Sincerely



Bruno Hochstrasser
President



Bruno Hochstrasser

Impressum

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Reprint permitted with reference to
Swiss Sound (please send a copy to
the editor)

10.26.5940 (Ed. 102007)

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News

From some of Studer's customers around the world.

STUDER ONAIR 3000 DIGITAL CONSOLES TRAIN A NEW BBC GENERATION

Studer has supplied four new OnAir 3000 digital broadcast audio consoles for use at BBC Scotland's Queen Margaret Drive studios in Glasgow. Because of the design of the Studer OnAir 3000, BBC engineers at the studios are able to run two modular mix surfaces off a single SCore DSP engine.

According to Studer's Andrew Hills, our large-format Vista 8 consoles are being used by BBC Scotland for drama, music and general production. When it is fully operational, the Pacific Quay broadcast HQ will house more than 25 OnAir 3000 desks, because of their reliability, flexibility and cost-effectiveness."



STUDER VISTA DIGITAL CONSOLES PREPARE TO HIT THE ROAD FOR 2008 OLYMPICS

STUDER REPEATS SUCCESS WITH WRAPAROUND VISTA 8 CONSOLE

Pictured, the BBC and Studer commissioning team around the 72-fader Vista 8 destined for Studio Four/TC4 at the BBC Television Centre in West London. The desk will be configured identically to the 72-fader Vista 8 supplied to Studio One/TC1 in 2005.



The new 72-fader Vista 8 Installed in BBC TC6



Guangdong TV, Beijing TV and the Shanghai Media Group are installing large-format Vista 8 audio consoles into new OB vehicles which are being prepared for live broadcast and production duties at the 2008 Olympics. The vehicles for Beijing TV and Guangdong TV are both High-Definition vans, following closely in the footsteps of CCTV in Central China, the country's biggest broadcaster, which chose Vista 8 for its latest flagship HDTV vehicle.



SOUNDCRAFT STUDER GROUP STRENGTHENS DIGITAL CONSOLE AND SYSTEMS TEAM

The Soundcraft Studer Group has made a loud-and-clear statement of its intentions to aggressively grow its digital console and systems business ahead of all market predictions by making senior sales management appointments under the leadership of the experienced Bruno Hochstrasser, who now assumes the position of Executive Vice President of Sales for Soundcraft & Studer as well as continuing as Studer's President.

Heading up the sales channels will be two industry stalwarts: Adrian Curtis – VP Sales, Soundcraft and newly promoted Ian Staddon – VP Sales, Studer. According to Bruno Hochstrasser, “Previously the two brands targeted entirely different market sectors, now, with the advent of new, shared technologies we are in a position to offer a more complete range of digital mixing consoles and systems. This is going to be a very exciting period indeed!”



STUDER DELIVERING THE NEWS IN DIGITAL CHINA

In China, radio broadcasters are turning increasingly to Studer's OnAir Series of digital broadcast consoles for their reliability and ease of use. New Studer OnAir consoles have been delivered to Sichuan Radio, FoShan Radio, Shunde Radio and BaoAn Radio.

According to Rico Fung of Studer importer ACE International, “One of our best clients is Beijing Radio, they have a long history with Studer, using all the OnAir Series consoles and Vista 7. Currently they are building new television studios, and these will be equipped with two Vista 5 digital consoles for live broadcast and programme production.”



G4 GETS ITS GAME ON WITH STUDER VISTA 8

LOS ANGELES-- As the burgeoning console and computer gaming community found its online voice, Comcast, the cable giant behind E! Entertainment, responded to this need by building a brand new production control room at its Los Angeles facility on Wilshire Boulevard for G4 (ranked in 2006 as the fastest growing network on TV), the centrepiece of which will be a Studer Vista 8 live production and broadcast console.

The facility's existing control room also boasts a Studer digital production console – in this case, a D950. “We almost went with another D950 for the new audio/video control room,” David Gaudino, Director of Engineering recalls. “But as soon as we saw the Vista 8 with its Vistonics™ interface at last year's NAB Convention, we were sold. By the time we finally struck our deal with Studer USA, we had no doubts that the Vista 8 was the best choice for us.”



FIRST STUDER VISTA 5 GOES ON THE ROAD IN IRELAND

Ireland's leading outside broadcasting facilities/service provider, Television Mobiles Ltd (TVM) has chosen the new Studer Vista 5 digital console to spruce up the audio section of its popular OB3 production truck, becoming the first customer in Ireland to adopt the Vista 5 for a mobile broadcast application.



STUDER ONAIR 3000 MAKES THE NEWS AT KVBC-TV LAS VEGAS

LAS VEGAS, Nevada - At KVBC-TV Channel 3, an NBC affiliate station serving the greater Las Vegas metro area, the decision was recently made to replace the analog console in its news production studio with a Studer OnAir 3000 digital broadcast desk. The new desk was selected as part of a full audio and video facilities update now that the station is transitioning from standard definition to an all-digital future of high-definition broadcasting that will begin before the end of the year.

"Since our HD build-out project will be expensive," explains KVBC-TV Chief Engineer Mark Guranik, "we needed to provide a cost-effective solution for the upgraded audio control room. The new Studer OnAir 3000 console precisely fulfills our requirements – it is cost-effective, simple to operate and offers enhanced flexibility."



METROVISION MAKES IT SEVEN WITH VISTA 5

Manhattan-based Metrovision Production Group has now wrapped up work on Metro Seven, its latest vehicle in a growing fleet of mobile production units. Recently making its official debut at Gerling & Associates' outdoor booth at NAB 2007, this new high-definition OB vehicle boasts ten HD cameras with an HD switcher, ten VTRs, and at the helm of its audio suite, the Studer Vista 5 digital console.



Metro Seven, a 40-foot straight box truck primarily designed for city use, has a unique 33-foot sidewall that can expand out to either 40 or 60 inches. Another impressive feature is that the vehicle can provide seating for a practically unheard of 18 people.

The Vista 5 marks the first Studer console for Metrovision, and, according to Engineer-in-Charge Paul Wolf, it was chosen for good reason. "We need to be able to do AES digital audio transport, analog and 5.1 surround, and the Studer best combines those facilities in a light, compact desk that packs a powerful punch," says Wolf, who has been with the company since the inception of its truck division in 2000.

MAIDSTONE STUDIOS, UK

Since 2002, Maidstone Studios has invested heavily in new technology, resources and staff, including the construction of Studio 5, the purpose-built 12,000 sq ft studio which holds an audience of 1,000.

The audio facilities for this impressive HD-ready studio floor is now fully digital, with the installation of a 52-fader Studer Vista 8, the first in the UK to feature Studer's new SCore Live DSP platform.



STUDER CENTRAL TO NRK BROADCAST OF NOBEL PEACE PRIZE CONCERT

Not only is this one of the proudest moments in the Norwegian calendar, it is also one of the most widely broadcast events in the world. Staged in Oslo's Spektrum Arena, the huge concert which celebrates the award of the annual Nobel Peace Prize is recorded by NRK for broadcast to more than 100 countries, and watched by more than 500 million viewers.



Norway's national broadcaster NRK brought three of its highest-specification OB vans into the Spektrum to handle the TV production. All three trucks were equipped with Studer digital audio consoles, including the flagship of the NRK fleet, the HD-1 which has a 52-fader Vista 8.

STUDER AT HEART OF NEW RADIO BROADCASTING CENTRE FOR SWITZERLAND'S PARLIAMENT

The prestigious Mediabundeshaus, part of the Swiss Broadcasting Corporation that reports exclusively on the activities of the country's Parliament, has commissioned six new Studer OnAir 3000 consoles, transforming the operational practices of the unit's journalists.



PRAYERS ARE ANSWERED BY STUDER VISTA 8

One of Japan's major broadcasting companies, the Nippon Television Network Corporation (NTV), known locally as Channel 4, has commissioned its new OB207 outside broadcast vehicle equipped with a Studer Vista 8 digital audio console.

Supplying and installing the digital audio equipment, Studer Japan also provided the acoustic design of the control room and full system integration of audio services on the truck. OB207 is an audio-only vehicle, mainly used for sports and general programme duties, in conjunction with NTV's HD video truck OB105.

On the day appointed for delivery of the completed vehicle OB207, engineers from Studer Japan all went to Hie-Jinja, the famous temple in the centre of Tokyo, to perform the important traditional ceremony of 'Oharai', a prayer for "no trouble".



MBC CHOOSE STUDER VISTA FOR NEW M CITY PRODUCTION CENTRE

Munhwa Broadcasting Corporation (MBC), one of the largest Television and Radio networks in South Korea, is investing in a brand new building in Sangam Seoul to house the "Ilsan Production Centre". The new centre will use Studer consoles to provide their viewers with the highest quality digital broadcasting from the full HDTV studios.



MBC has selected seven Studer Vista's as the console of choice for these production facilities. Five of the consoles are Vista 8's specified with 72 faders and redundant control systems. The largest, with over 200 inputs, will be installed into a custom designed OB Audio production vehicle with 52 faders in the main frame additional 10-fader remote bays.

Additionally within the new Ilsan Production Centre will be two Drama Production Studios 1 & 3, where two 32 fader Vista 5 consoles will be used for the shows. All consoles are supplied through Studer's Distributor, DYC.

Now Ready For Full 5.1 Support

Release V2.2 for the OnAir 3000 Series adds a large number of great features to broaden the functionality of this successful production and on-air console. With the transition to HD imminent, users are now able to easily handle 5.1 channels



Axel Kern

The 5.1 Features in Detail

The new 5.1 surround functionality is available as an option for the OnAir 3000 and features up to twelve simultaneously usable 5.1 channels (depending on DSP configuration), two 5.1 master buses and two independent 5.1 monitoring sections (CR and ST1) per core.

The 5.1 master buses, which can either be allocated to one control room/studio or split to an A/B desk configuration, are equipped with limiters and all well-known OnAir features.

Any input channel (mono/stereo/5.1) can be assigned to any stereo or 5.1 master bus (incl. sub groups), while the OnAir 3000 automatically down mixes from 5.1 to stereo according to the format of the assigned bus. The internal down mix parameters are set according to ITU-R recommendation, but can be adjusted by the system administrator in the configuration GUI.

The 5.1 input channel has its own input routing setup accessible from the user GUI. Here, any

available physical input can be routed to any of the 5.1 channels. Each channel has its own +/- 18dB CAL setting, which is again controlled by a 'Master' CAL rotary. The same STUDER high quality processing (EQ/Dynamics/HP/LP) as used on the mono and

stereo input channels is also available for a 5.1 channel and is handled by one parameter set.

A single fader totally controls the 5.1 signals, whilst the individual levels of the 6 inputs can be controlled via desk screen rotaries to balance those discrete signals.

Dolby®E Card Support

As a perfect add-on to the 5.1 option, version 2.2 supports the new Dolby®E Decoder Card as well. This feature allows the extraction of all 8 mono audio channels

A new 5.1 surround panning page in the GUI lets you place mono and stereo sources within the surround field in a very easy and intuitive way. All other parameters can also be edited with the desk screen rotaries or the desk rotary modules. Users can choose from 4 different surround panning modes and can also directly assign to the centre or LFE channel.

All mono and stereo channels still have their dedicated PAN/BAL controls for mixing to buses other than the surround buses.

The new Surround Control Module is an extension of the existing Monitoring and TB Module. Using this module, operators can easily switch between internal stereo down mix and external stereo encoder (e.g. DOLBY®) while monitoring. Furthermore, it is possible to mute individual speakers or switch to an alternative stereo near field speaker set with its own dedicated volume control rotary.

However 5.1 takes place in radio broadcasting in the future – the OnAir 3000 is all ready for your surround application.



5.1 panning screen

Other New Features in V2.2

Dolby®E Card Support

As a perfect add-on to the 5.1 option, version 2.2 supports the new Dolby®E Decoder Card as well. This feature allows the extraction of all 8 mono audio channels from a Dolby®E AES/EBU stream. Users can freely route them within the OnAir3000 environment. The module can host one or two Dolby®E decoder modules (2 x 8 mono channels) and is equipped with a Video Clock Sync Input. A 9-Pin D-Sub connector can be used for metadata readout.

SCore Live platform support

It is now possible to run the OnAir3000 on the highly scalable SCore Live DSP core. While giving you the opportunity to tailor DSP size and I/O capacity to your specifications, it also offers enough resources to easily expand at a later date. The comprehensive D21m I/O system can accommodate up to 1728x1728 inputs and outputs arranged in a maximum of 18 D21m Hubs or up to 30 MADI stage boxes. In addition, the SCore Live offers additional redundancy options for failsafe operation, including DSP cards and power supplies.

Since the SCore Live is the same size as the Compact SCore (6U rack space) and can use the existing I/O Cards and D21m hubs as well, upgrading a core is an easy process.

Conference MPX (Optional)

The monitoring section of the control room and studio 1 is extended by the conference function including its own MPX-Listen bus with adjustable volume. Members of a conference can easily be added or removed anytime by selecting or de-selecting using the Channel Select buttons on the desk or from within the Main Screen desk. Remote control using the Windows XP® remote console application is also provided like all console functions.

Direct Outputs

With version 2.2, channel signals are available for output routing. By assigning a logical input to an output, this new feature enables operators to choose whether the signal shall be taken directly from the source of the Input, pre or post

processing, or from the channel output (post fader). Needless to say, all direct output signals are also available as routable sources when controlling the OnAir3000's output routing using the ProBel protocol.

Limiter on AUX and N-X Buses

In addition to the program master buses, all AUX- and N-X buses are now equipped with a brick wall limiter. Parameters are similar to those from the Master Buses and can be preset in the Config GUI.

Reverse Contribution Overview

A new 'Routing' page is added to the main screen which enables operators to route channels to buses in a matrix style manner. It differs from the conventional bus assignment within the fader channel strips but does exactly the same.

The main advantage of displaying the channel routing in a matrix is to give the user a great overview of the current Bus assignment while the N-X Buses have an indication of the 'N-X Mode' they are set in.



The surround control module

OnAir 3000 Release V2.2 at a glance

- 5.1 Support (optional)
- Conference MPX (optional)
- Configurable Output Routing Preset Keys (e.g. for Monitoring Source Selectors, Transmission Control, Studio Sharing)
- Direct Outputs (Channel's Source-, Pre Processing-, Post Processing- and Post Fader Signal to Output)
- Limiter on AUX and N-X
- N-1 Mode and Full Return Function for Clean Feeds
- Reverse Contribution Overview
- Tie Lines between Cores (Direct Connection to OnAir 3000, Route 6000 and Vista Cores)
- Dolby E Card Support
- SCore Live Platform Support (Up to 1728 In/Out / DSP Redundancy)
- New Management Tools (Advanced Central Error Logger, System Viewer)

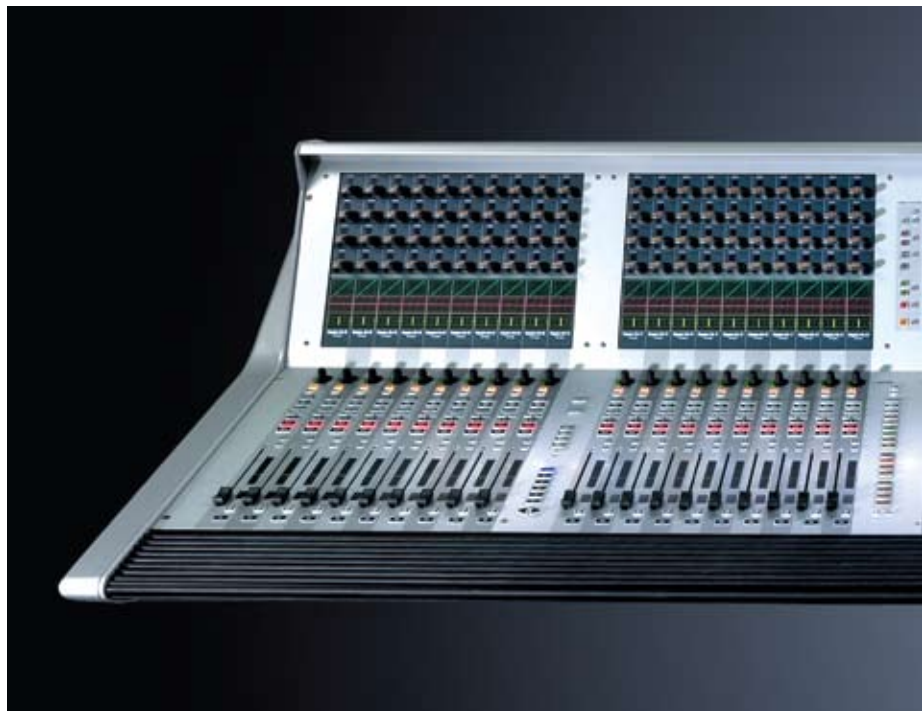
Studer goes on Tour with the new Vista 5 SR!

After a defining fifty years in Recording and Broadcast, Studer takes to the road with its latest offspring and it's ready to Rock!



Peter Weber

Long famed for its range of digital consoles in the Broadcast sector, Studer is now mixing with the top-end, Toursound elite with the Vista 5 SR, a ruggedised and road-ready version of the highly successful Vista 5 console already in use in prestigious theatres, studios and performing arts centres as well as broadcast applications around the world. Studer's reputation is built upon exceptional sound quality, reliability and probably the best user interface (Vistonics™) to be found on any digital desk, and this all transfers onto the Vista 5 SR, a compact, portable and easy to setup console.



Page at Clair Brothers, Bob Goldstein at Maryland Sound International (MSI), and the Celine Dion team (Denis Savager, Frankie Desjardins and Charles Ethier), and everybody was so impressed with the control surface they suggested we make a road version. So we've re-engineered the mechanics of the console for touring use, including new frames and racks, and we have incorporated many other suggestions from these and other tour sound specialists," reports Peter Weber, Studer's Product Manager for the Vista Series.

The Vista 5 SR, is very much a response to suggestions from leading international toursound companies and engineers who saw the Vista 5 and realised its potential as a true live sound desk.

"We showed the Vista 5 to people such as Howard

The first pre-launch orders include two Vista 5 SR's destined for Celine Dion's World Tour in 2008, and two consoles for Maryland Sound International (MSI), with whom Studer will be



promoting the new desk at the AES in New York. Interest is already growing from other high-profile companies and engineers.

'That Studer Sound' and the Vistonics user interface is largely responsible for the reaction of these users. Vistonics is the Studer patented technology that Broadcasters are already familiar with, a version of which has proved so popular on Soundcraft's Vi Series of Digital Live Sound Consoles. Vistonics uses an array of encoders

expandable I/O system – where the whole range of available Studer D21m series I/O cards (including Cobranet and Aviom A-Net) can be added to the system. The MADIs standard is used as an optical snake link from stagebox to FOH rack – with the option to add a redundant snake for increased security.

The renowned Studer sound comes from the design of high quality mic preamps, ultra-precise AD/DA converters and 40-bit summing busses.

IIR type EQ's also contribute to the amazing performance of the Vista 5 SR.

The Vista 5 SR also comes with numerous facilities to aid production, including Studer's proprietary VSP panning system, which can be used to great effect to control panning without level shifts.



mounted directly into TFT screens to give immediate viewing and access of channel and output parameters providing, 'where you look is where you control' operation. Freelance engineers will be able to use the console in minutes, while experienced users will become more creative thanks to the speed of operation..

The Vista 5 SR comes with preset configurations for Front-of-House and Monitor use. A standalone Config Editor tool allows the channel/bus structure to be customised, all of which can be saved for each particular show setup and instantly recalled from memory or a USB stick at a later date.

Also a key feature of the Vista5 SR is it's

Peter Weber (left) and Rene Wussler with the Vista 5 SR



Further Expansion of the D21m I/O System

With over 2000 units sold, the D21m I/O system is now used in all current Studer and Soundcraft Vi Series consoles. Consequently there is much motivation to constantly increase the number of interfaces for it and maintain and expand the module and accessories portfolio.

The audio network interfaces: the Dolby D/E Decoder and SDI Embedder/Deembedder cards, have been developed in partnerships with third parties or the developers of the networking technology itself. This allows us to reduce the time to market as well as the learning and debugging phase which often occurs when producing such complicated tools.



Attila Karamustafaoglu

CobraNet® and Ethersound®

In more and more applications, Ethernet based audio networks are being used. This is mainly due to the fact that cabling and distribution of these signals is dramatically more cost-effective than with any other networking technology. Both CobraNet and Ethersound run on layer 2 Ethernet and are established in many markets. To fulfil the needs to connect to and utilize such networks, two D21m I/O cards providing the corresponding interfaces have been developed.

Aviom A-Net®

The Aviom A-Net Pro-16 System allows a set of up to 16 mono or 8 stereo channels to be sent along a daisy chain of personal monitor mixers. This allows the implementation of a sophisticated monitoring solution without the need for a monitor console or engineers to operate it.

The personal mixers are small mixers which can be located next to each musician or performer and have an A-Net in and an A-Net out connector as well as connectors for headphones out and power supply. The user can select the panning and volume of each of the 16 signals and use this setting again at every performance.

D-Type Break-out-Boxes

The D-Type connectors on the D21m Analogue I/O and AES/EBU cards provide a space efficient solution for implementing I/O interfaces. In many cases, XLR connector fields are still required to connect single audio devices. To satisfy this request in a very cost-effective way, a

modular set of space saving break-out boxes has been developed. They each take just 1U in a 19" frame and are only 2"/50mm deep without the connectors. The XLR Break-out box can be configured in two halves. Each half can have all female, all male or four male and four female XLR connectors. There are also standard shielded D-Type cables available for the connection between the D21m rack and the break-out boxes. As AES/EBU signals are often transported over 75 Ohm BNC cables, a break-out box has been created to the same size as the XLR box providing a total of 16 inputs and 16 outputs on 75 Ohm BNC connectors. Lastly, GPIO wiring is also eased dramatically with the third box in the series, the GPIO break-out box. Often, general purpose inputs and outputs are wired to single devices such as lamps, switches, etc. This is easy with the GPIO Break-out box which connects to a GPIO card with standard cables. Each GPI and each GPO pin is available galvanically isolated on a 4-pin Combicon® connector. The two additional pins provide 5V and GND for eventual supply of the signalling. Furthermore, the first four GPO ports provide high-power contacts with a rating of 24-240V AC and a total current of 5A maximum allowing very cost effective GPIO implementations without additional customized circuitry.



D21m CobraNet
Ethersound and A-Net
Cards



D21m Break-out Boxes

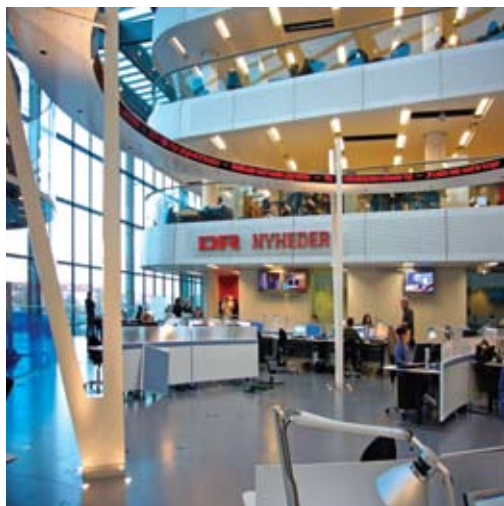
Danish Broadcasting Corporation

DR - A Future Oriented Multimedia Corporation

Background and Strategy

Danish Broadcasting Corporation (DR) was set up in 1925 and is an independent, purely licence-financed public institution. It has a public service obligation to present a wide choice of programmes for all age and social groups. Accordingly, DR provides radio, TV and multimedia with both narrow and broad programmes for the few and the many.

Today, DR's programmes are organised in the following way: DR Radio comprises four FM stations, P1, P2, P3 and P4, and nine regional stations broadcasting on P4. DR Radio is also responsible for a growing number of satellite, cable and Internet channels as well as digital radio (DAB) comprising DR Classical, SKUM, etc. DR TV comprises two channels: DR 1 and DR 2. DR Online (www.dr.dk) is Denmark's largest Internet news service. DR Multimedia produces merchandise related to DR's programme activities on TV, radio and the Internet. Altogether, DR has about 3,500 employees, nearly 3,000 of these work in the Copenhagen area.



On 1 June 1999, DR's board decided to bring together and move DR's activities to a new building in Ørestad called DR BYEN. The aim of moving DR's activities to the Copenhagen area, to one building in DR BYEN, is to create an optimum environment for future multimedia productions. These involve new production and work methods based on digital technology, and integration of radio, TV and the Internet into a new multimedia-based organisational framework. This involved:

- Physical movement of activities to one location.
- Editorial and technical integration between radio, TV and Internet ranging from research, and programme production to presentation of the various products in the three media.
- Developing a highly efficient, digital multimedia house offering maximum flexibility in terms of arrangement, new forms of production and room for organisational restructuring of editorial offices and groups, all concurrently with changes in product.
- Flexible studio facilities that offer both virtual and traditional TV studio production and radio transmission. Finally, the facilities must include a number of studio for use in connection with all three media.

DR required a solution that would provide the users with a common user interface, regardless of the facility they worked in. They should be able to interchange presets between similar types of interface.

Studer - A Future Oriented Solution Partner
Faced with DR's 'dream' we knew it would be a big task to take on such a huge project with a lot



Jarle Felin





Fader start related timer, shown on producer module.



XL module, where engineer or producer can listen to and talk to 12 lines simultaneously including label transfer.



Mic key matrix for setting which microphones shall be muted by pressing the mic key button (cough button)

DR BYEN is based on a coherent strategy involving established IT and production systems based on standardised common IT platforms. Production facilities, transmission systems and archives support knowledge sharing and sharing of audio/video material that forms the basis of new and improved workflows.

As a general design criteria from the outset, the solutions must fulfil DR's current needs, and at the same time offer integrated flexibility, so that the facilities can be adapted to DR's future needs. The basic communication infrastructure and some relevant production facilities must be prepared for upgradeability to HDTV or HDTV-enabled.

new technology, but on the other hand it was a great opportunity to develop the system of the future in co-operation with DR. Today, we are extremely proud of what has been achieved by DR and Studer working hand in hand. Technology for the future!

The easiest parts of the system were the actual consoles! The OnAir 3000 fitted well with DR's specifications. The challenge was DR's monitoring demands and their working practices where producers and presenters play an important role in the technical operation of the program. In some instances DR want the

producer and presenters to actually do parts of the program in conjunction with the engineer.

Therefore, a lot of the consoles are split with modules both in studios and other places within the control rooms. Together with DR we introduced the so called 'AB console', where in one instance all modules are used simultaneously as 'one' console even if the modules are placed around in different positions. In the other instance, the console is totally divided into 2 parts (A and B) and they can work independently, so one control room and studio becomes 2 control rooms. This of course provides a very flexible structure and significant savings.

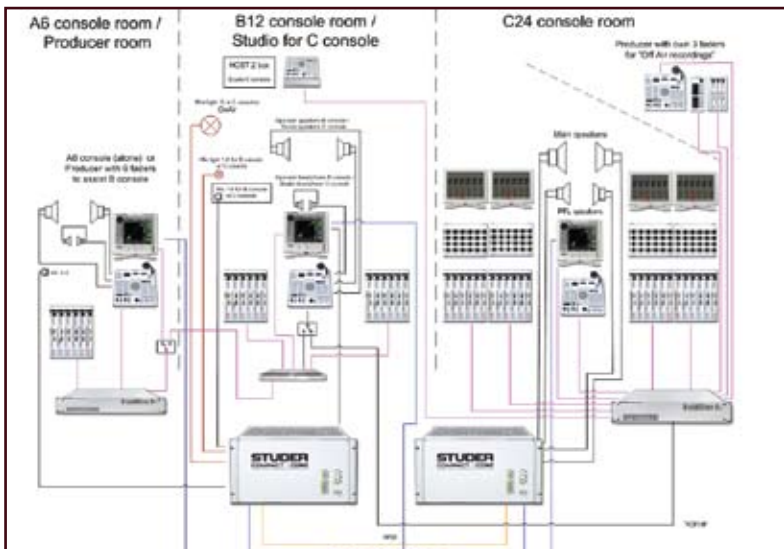
Another important issue was the Nordic scale metering which was introduced both on the fader modules and in the SW meters.

In DR there are a lot of traditional working practices. To apply these to the new environment, Studer developed a series of 'boxes' like a Start box, a Mic Key box, a Cart box, a Headphone box with logic as well as special versions of monitoring/talkback boxes. Control system panels were built into main screens and special fader screens with external DVI/USB input making it possible to run OnAir 3000 and CMS applications on the same screen even with touch control on both!

Together with DR, Studer introduced new features in the software to include timer logic. Now all channels can show a timer related to the last opening fader and also transfer this information to the producer box. New monitoring functions were integrated, especially related to AB console setup and PFL.

All consoles have access to a central administration and snapshot server for logins and snapshots, meaning that any user can go to any workspace and feel at home.

In addition, we developed a special software feature that can control and be controlled by any broadcast control/automation system that communicates via the SW-P08 protocol. Together with DR, we have even enhanced this protocol. This means that you can listen to or



AB setup integrated with a C console

choose your channels on any line that is available in the router even with automatic return lines and labels all the way to the faders. This is of course 2 way, so the BC control system can switch the SCores of each console and receive labels.

Multiple Dalet play-out systems were installed at DR. To interact with these systems, the OnAir 3000 speaks 'Monitora', a protocol to remotely control play-out systems.

During the early phases DR mentioned that they were looking for an IP based telephony system. This perfectly fitted into Studer's schedule, as we were about to release the Call Management System (CMS). This is a system which can replace all telephone hybrids and codecs in a broadcast house.

CMS is fully integrated with the OnAir 3000. This was achieved using IP, including routing with auto return lines, control of fader modules and of course label transfer.

DR has a CMS site-wide license with a maximum number of 480 simultaneous calls. All parts of DR's IT infrastructure are completely redundant and so there are redundant servers and networks everywhere.

The CMS system has integrated well with the Cisco Call Manager system at DR. Both databases, CMS and Cisco, were mirrored so that any update done on one is automatically

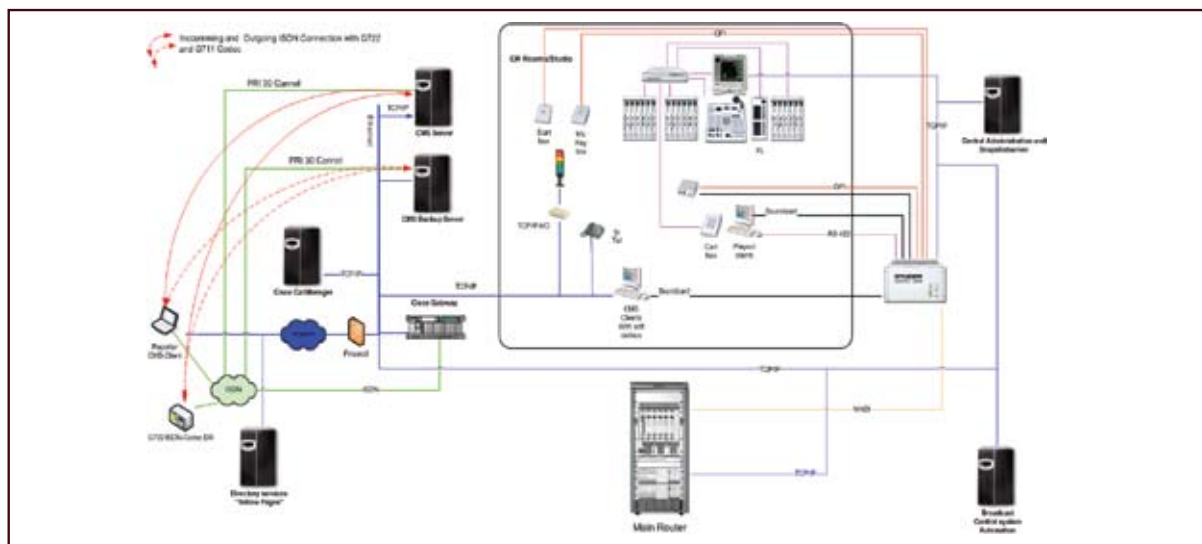
updated in the other. CMS clients also work like any IP telephone in the building even with the possibility of a self-answering machine.

With a direct connection to the official Danish directory services, the CMS system can even take data from it and so find out who is calling if a caller is not already in database. The callers name will then transfer all the way to the fader, where it is shown as a label. As an additional advantage, CMS provides a full history on the caller telling how many times he has been calling, if he has won competitions, last call, etc.

DR also uses the gaming option. This option activates an interactive answering machine to eliminate contenders letting them answer as many rounds as you like via DTMF. Those who come through all rounds will be led into the waiting room ready to go on-air.

With the DR project, Studer did not only realise a massive audio installation with multiple audio systems sharing their signals, we also accepted the challenge to establish networked control of these devices by integrating them into a central call management system, several play-out systems and a third party broadcast control system.

Implementing these new technologies was a great success for Studer and DR. Today, over 90 OnAir 3000 systems are installed in DR BYEN.



Research and Development – Continuous versus Radical

The Harman Mixer Group, consisting of Studer (Switzerland) and Soundcraft (UK) has a new head of Research and Development. Former hardware engineer and Vista product manager Stefan Ledergerber explains some of his views on R&D, 'living with contradictions', 'old habits' and the need for radical innovation.



Stefan Ledergerber

How disruptive should innovative ideas be allowed to be? What can the market accept? Will a new approach possibly be rejected because it asks us to change our 'habits' too drastically?

Following traditional 'habits' guarantees market acceptance, but often means missing the opportunity for big improvements. If we constantly follow established routes and workflows we will never make the big leap forward or – even worse – move backwards; a complete market may be substituted by high-impact, radically different products leading on to new competitors entering those markets.

An example of a substitution might be the PC that emerged as a core tool for professional audio production, including mixing. What was first seen as unacceptable for professional use slowly developed in its own niche, it gradually improved, then one day offered features that the professional user didn't want to miss and therefore decided to accept the perceived disadvantages in order to benefit from the new features.

In this scenario old habits cease to be a topic anymore. So where's the line between continuous innovation (cost reduction and feature expansion) and radical innovation using new approaches?

It must be Studer's goal to marry the two. When looking at our patented user interface technology, Vistonics™ I believe we've managed to achieve this combination and it becomes apparent why it is our key technology for the coming years: It actually supports some of the old habits without asking for too much change, it's

all so obvious to users. An example; on an analogue console a frequency pot looked different to a panner, Vistonics™ maintains that optical difference in the digital world and therefore almost feels like you're operating an analogue console, but at the same time it doesn't limit flexibility and presents the vast number of digital parameters in a most ergonomic manner.

Another example of the way Studer cares about 'habits' while keeping an eye on new ideas is the brand new 5.1 channels on the Vista console family. Rather than copying competitors' approaches, Studer stepped back, re-thought the problem from the ground up, and came up with a different, and what we believe is an improved approach to the topic. Our approach to a 5.1 channel now offers functions which are familiar from a stereo channel perspective. For example we offer balance control over the surround signal rather than introducing multiple faders for level corrections.

So why should we change 'habits' if there's no immediate need?

In R&D purely taking market input and following the requests of today's users isn't the complete story. I believe R&D must face the challenge to do more than that. We must understand the root issues of our customer base and constantly try to marry contradicting topics in addition to providing the expected deliverables to the market. We did this well in the past and I am absolutely sure we will do even better in the future – watch this space, it's going to be exciting!

Providing Integrated Solutions

In modern radio broadcast installations, numerous highly sophisticated systems are used to produce the final on-air signal. The more systems there are, the more important it becomes to have all of them working together as one big system. Studer already offers a broad range of systems supporting this philosophy.



Axel Kern

Integration is the key to success. The main advantage of an integrated studio installation is the ease of operation and a new dimension of flexibility. But integration can also affect the costs of equipment in a positive way, since resources like codecs can be shared instead of requiring a set for every studio.

For a manufacturer of radio broadcast devices, integration means providing interfaces which can be used to remotely control other systems which are ready to receive commands by other systems.

To be able to communicate with each other, systems need to be interconnected. Sure, this can be done with a peer-to-peer connection like RS232. But in terms of integrating multiple systems, peer-to-peer connections are no longer suitable. The precondition in that case is a physical network.

In a broadcast facility, a LAN (Local Area Network) is the base for integrating systems with each other. IP based data transport and various network topologies provide a secure exchange of information between networked devices.

Controlling devices via IP

The ability to be controlled remotely requires a system to have an open interface. Two approaches are possible. One is to open up the internal command structure for third party implementation. The other is to adapt an existing open protocol into the system to be able to talk to as many others as possible.

The Studer OnAir 3000 as well as the Route 6000 follow both strategies:

Studer systems come with DNET, a proprietary protocol which allows remote control of almost any parameter inside the system. This protocol is already in use integrating with other Studer systems, and is also available for third party integration.

Studer OnAir systems are already able to communicate via a couple of other protocols which are open standards in the broadcast world. The Probel protocol is used to remotely control a device, to set crosspoints, to switch send sums, to set parameters or to change signal labels in displays. Others are meant to remotely control playout or automation systems. A widely used protocol of this range is the 'Monitora' protocol. With this option, a mixing console is able to remotely control a large number of the existing play out systems in the market.

SW-ProBel02, SW-ProBel08 and the Monitora protocol are implemented in Studer's OnAir systems. The transfer of commands is handled via IP on the network.

Other applications using the LAN

Another standard, used by digital telephony to distribute audio over a LAN infrastructure, is Voice over IP (VoIP).

In a broadcasting centre, a large number of telephone lines will be used for studio phone-in or for production purposes. This is where Studer's CMS (Call Management System) comes into play. CMS is an extremely powerful client-server software application, which uses the standard IT infrastructure in combination with a central PBX to enable users from anywhere in the network to manage the complete telephony workflow.

CMS offers the full bandwidth of functionality needed in modern broadcast centres. Phone calls on defined numbers are collected centrally, waiting rooms are available to 'park' callers before taking them on air, voting options can be used to reduce the number of callers by the system automatically.

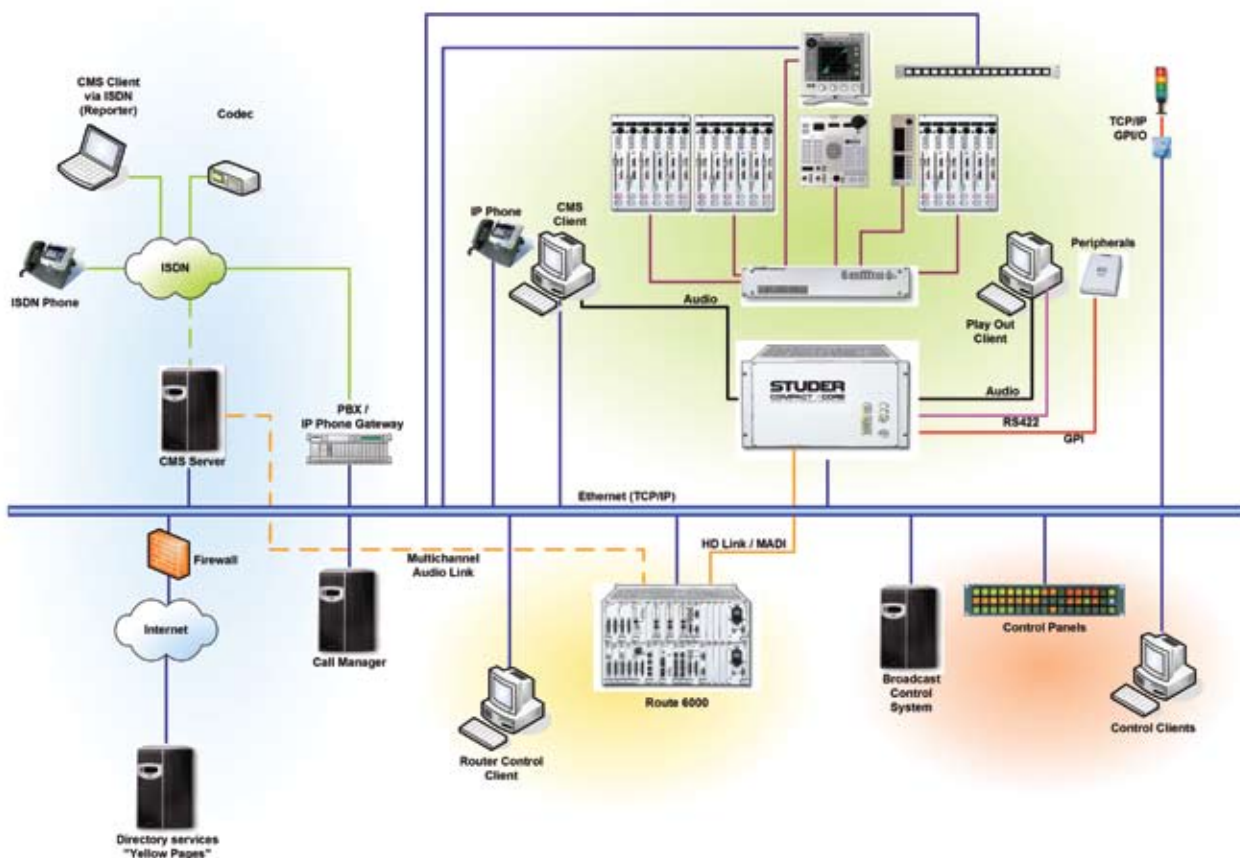
Using IP to distribute audio and control data between the CMS server and CMS clients offers many opportunities which cannot be achieved easily without an IP network. Any PC within the network equipped with the client software and a headset can be used to initiate, receive and manage telephone calls. Producers and journalists can support the show from their office desks. They can receive phone calls, pre-select the callers and can forward them to waiting rooms.

As CMS is fully integrated with Studer OnAir systems, a DJ connected to the same CMS server with his own CMS client running on the OnAir 3000 fader screens can pick the pre-selected callers without wasting time with

preconferencing before going on air. Of course, preconferencing is still possible with CMS, but the system also speeds up the workflow, since producers or engineers supporting a show can directly move a caller to a fader of a mixing console – with a simple action in their CMS client. The channel label indicates the caller's name, as the system collects it from the PBX or an external directory service.

Audio in networked environments

In a networked broadcast environment, audio signals need to be distributed, especially in medium to large broadcasting centres where the number of shared or distributed audio signals are in the hundreds. Central playout systems, external sources arriving in the main control room, telephone lines with their returns and others all need distributing. Consequently, a large number of channels must be available for production purposes as well as for connected studios, which themselves can be connected to several mixing consoles.



In order to share signals across connected systems, a routing device can be located centrally in an installation linking all audio devices using bi-directional multi-channel connections, providing multi-channel handling, limiters and other processing for main outputs as well as a summing functionality

A so called 'star' router can be regarded as the heart of an audio network, and provides important security features, as fail-safe operation of a central router is imperative for any broadcast environment.

In terms of control, a central router should provide a wide variety of options, including PC based software solutions which are important for administration purposes, e.g. setting I/O labels or crosspoints being monitored.

Setting crosspoints must also be possible from a connected device like a mixing console or a single producer panel in a control room. Finally, a router should offer an interface to interconnect third party devices using an open control protocol.

Studer's Route 6000 already offers all of these features:

- It is able to handle a large number of input and output signals, while supporting a variety of different signal formats on various types of I/O modules.
- Route 6000 can be equipped with optional DSP and power supply redundancy. For full redundancy, the system can even be doubled.
- It can be controlled by an intuitive PC based software application (Route 1000) as well as from the control surface of an OnAir 3000 using DNET. To integrate it with third party devices, Route 6000 complies with SW-ProBel02 and SW-ProBel08.

Overall control

The larger an installation is, the more complex

the requirements. Being able to adapt individual operating philosophies is very important. In most cases it is not the assembled hardware, that reaches its physical limits, but the ability to implement the customers workflow to an installation which separates the wheat from the chaff.

Since no installation is the same as another and operational requirements are always different, third party broadcast control systems are often the solution.

Such systems are designed to adapt individual operating concepts into Studio hardware. They offer features like user management, event scheduling or I/O matrix operation in combination with a totally flexible programmable user interface of both hardware and software modules.

Studer's OnAir and Router systems have the right interfaces to be integrated with a broadcast control system. These systems use open protocols like SW-ProBel02 and SW-ProBel08 to talk to the connected devices using IP on a LAN infrastructure.

Broadcast integration is the key for broadcasters to enable their staff to concentrate on their work and to keep control of complex systems. Studer's OnAir systems are perfect for such integration.

A Novel Approach to Surround

The advent of HD video in OB trucks and TV production studios has defined surround sound as the standard to accompany the brilliant high-definition picture. However, handling the 6 audio channels per source on 6 separate faders uses valuable console real-estate.

The STUDER way of doing it

Studer has pioneered multi-channel audio systems on digital consoles with its surround management system, and the Vista series is now being offered with a new way of handling 5.1 input sources on a single fader. Studer has taken a unique approach to managing surround input channels, and by listening to experienced broadcasters and has developed a new type of input channel which does not simply consist of mono and/or stereo channels.

With the Studer 5.1 input channel, the engineer is able to have Input, EQ, Dynamics and Panning sections totally designed for premixed 5.1 input sources. The main goal is that he can adjust the most important parameters directly via touch on the Vistronics™ screen without the need to 'spill' single mono or stereo channels to additional faders, where other important sources would be hidden and become unavailable. This is achieved by introducing completely new parameters to 'balance' the 5.1 signal using the Vistronics encoders.

This way, engineers can maintain the perfect arrangement of 'one fader for one source' on their mixing console, and keep a good overview with fast access to every single source parameter.

New controls

Routing sources to input channels :

A surround source can be patched to a 5.1 input channel very easily by using the 'auto route' facilities where all 6 discrete mono sources are patched at once with a single mouse click. This makes patching as simple as patching to mono inputs.

Bus assign :

With the industry-accepted surround channel order of 'L R C Lfe Ls Rs' Studer has changed the

bus order in Vista consoles to reflect this ITU standard. The newly introduced labelling of the busses in the Vistronics touch area allows a better overview and secure and quick assigning.

Adjustable input order :

In daily broadcast it is still common for shows not to be in 5.1 format. An input order selector has been designed comparable to the '2CH



Peter Weber



mode' (L to both, R to both, swapped, mono) in stereo channels. Input order is a very fast way to untangle different standard surround material, so that once it is on the 5.1 fader, everything is in "L R C Lfe Ls Rs".

Balance the 5.1 signal :



Now we come to the most important section - Studer has designed an innovative method to adjust a 5.1 signal to the requirements of the actual surround mix. New parameters have been created in order to give the engineer the most effective tools to balance the surround signal.

Balance – Basically an evolution from stereo inputs, here the balances between front channels L-R, rear channels Ls-Rs, and also the balance between front and back can be adjusted.

Centre level – Centre level adjustment - most important to correct dialogue level.

Centre usage – when desired, takes dialogue out of the centre, for example, and adds it to L and R, converting the incoming centre channel gradually into a more phantom centre.

Lfe level – To enhance or reduce the Lfe level.

Adjust the surround image :

After the balance has been set, a further set of parameters come into play where now the 'image' of the surround signal can be altered - such features are rarely ever found on other consoles.

Front Width – Also as an evolution from stereo

inputs, the front channel width can be adjusted from 0.200%.

F-B Depth – A unique new control – the perceived distance between front and rear signals can be extended or reduced.

Back Width – The same width control as on the front channels – but here separately for the rears also from 0.200%.

Operate fader / master EQ / master Dyn :

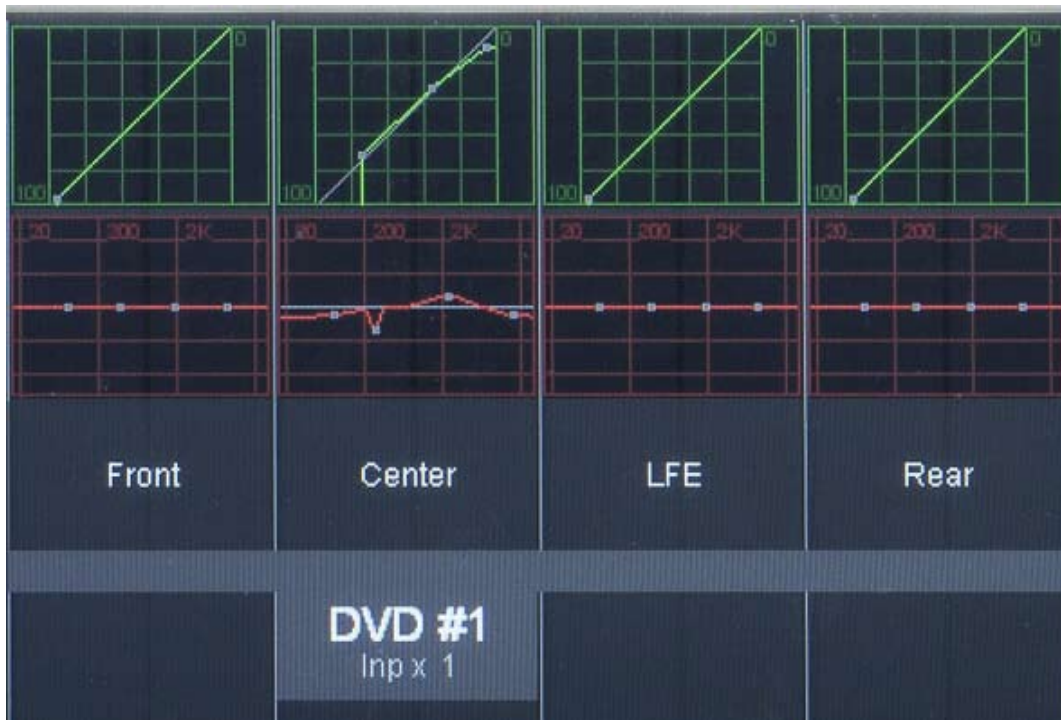
Once the balance is set, the 5.1 input channel can be handled in the same way as a mono or stereo input channel. Most importantly the signal is brought into the mix with one single fader and all the necessary adjustments can be made on one single channel strip. When EQ is needed it can be applied via EQ master parameters which are accessible in the same way as on mono or stereo inputs. EQ is then applied to all of the surround



signal legs except for the Lfe. Dynamics processing is handled in the same way. Working with these most important controls is what we expect to be about 95% of the surround engineers work.

Panaround if needed

With the newly introduced ability to turn around a ready mixed surround image the engineer has the tool to correct 'the direction' of a premixed source. A surround sound image can be adjusted by as much as a full 360° circle. A misadjusted surround microphone



can be aligned without leaving the mixing console!

Channel View for sub EQ/ sub Dyn :

Only when certain legs of the signal have to be adjusted differently from others – e.g. adding high frequency in the rears – does the channel view have to be selected. Channel view shows all the separate EQ and Dynamics settings of



'Front', 'Centre', 'Lfe' and 'Rears'. Here one can tweak the surround legs differently – with the touch of a button.

In addition to the 5.1 input channels, Studer has also introduced 5.1 Group and Master channels.

Now even more faders can be saved, since a complete surround group or a surround master only uses up one single fader. This gives more space for more input sources in channel-hungry productions.

New Algorithm - 5.1 Width

To complete the new functionality, a new surround panning module is also available for stereo channels. Since there are still a significant number of stereo sources used in a typical surround production, engineers also need to bring these into the 5.1 format. Studer has now implemented a way to pan such stereo signals to the surround mix, providing the ability to 'wrap' a simple stereo signal to a surround sound field. Every stereo channel can now be equipped with the new 'upmix' panner.

This works in three modes : normal LR, 5.1, and 5.1 width mode - the most uncommon, where a revolutionary algorithm (using Harman

corporate intellectual property) which basically extends the stereo width control to the surround speakers. LR mode is normal stereo panning; 5.1 mode simply uses 'standard' panning where e.g. the Left channel is also sent to the Ls speaker etc.

Efficient production...

These tools open a whole new world of easy surround production where the engineer can again focus on creativity whilst always having a good overview and very fast access to the numerous sources .



Studio Work Becomes Part of the Office



Wolfgang Voigt

Besides simple telephone calls, CMS provides far more capabilities than common telephone hybrid systems do, it even replaces them.

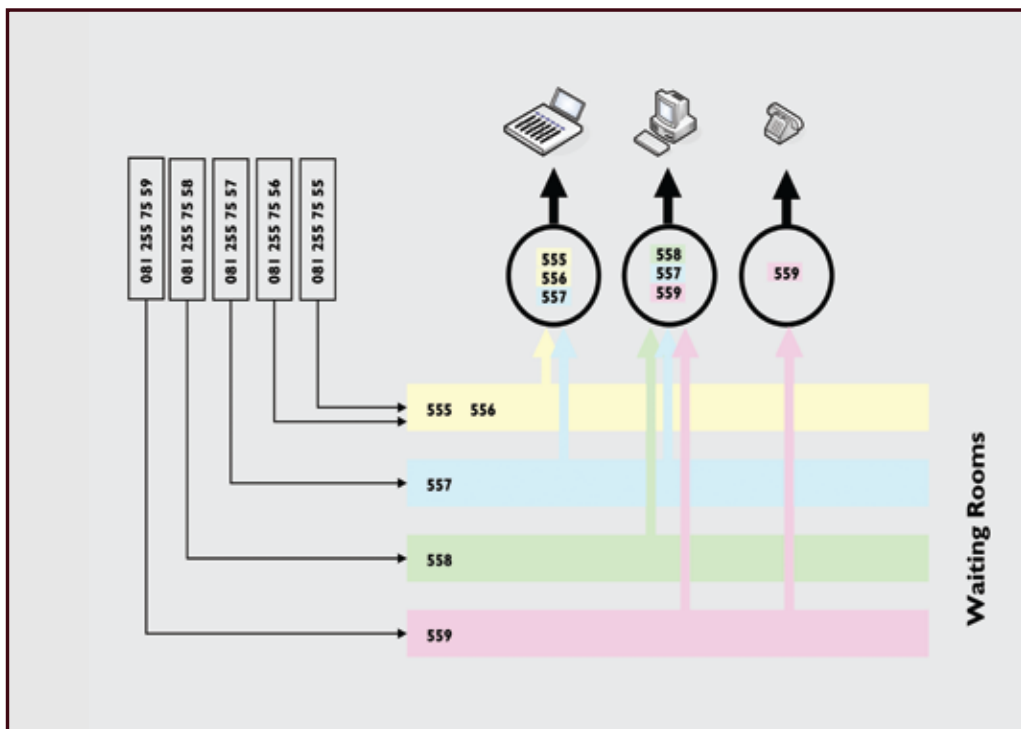
Waiting Rooms

Unique to the Studer CMS is the ability to set up holding areas for callers known as Waiting Rooms. Here, incoming callers may be held prior to being put on-air, listen to hold music, leave messages on an answering machine or be given messages about the particular show, such as 'the line is now closed, competition is over', or 'all lines are busy'.

Waiting rooms can be shared by users so that the details of a caller held in a particular waiting room are visible to all parties, or just some.

Opening hours

Waiting Rooms and Phone lines can be allocated 'opening hours', where calls will only be routed to the studio at certain times. These opening



Waiting rooms open up some very interesting possibilities. Specific incoming line numbers may be assigned to waiting rooms so calls are parked there automatically, or callers can be moved to different waiting rooms depending on specific criteria.

hours may be predefined or manually changed live by the Broadcaster. For easy access and use, a standard web application provides access to the setup for voting, games, statistics and pre-recorded voicemails.

Voting and Gaming

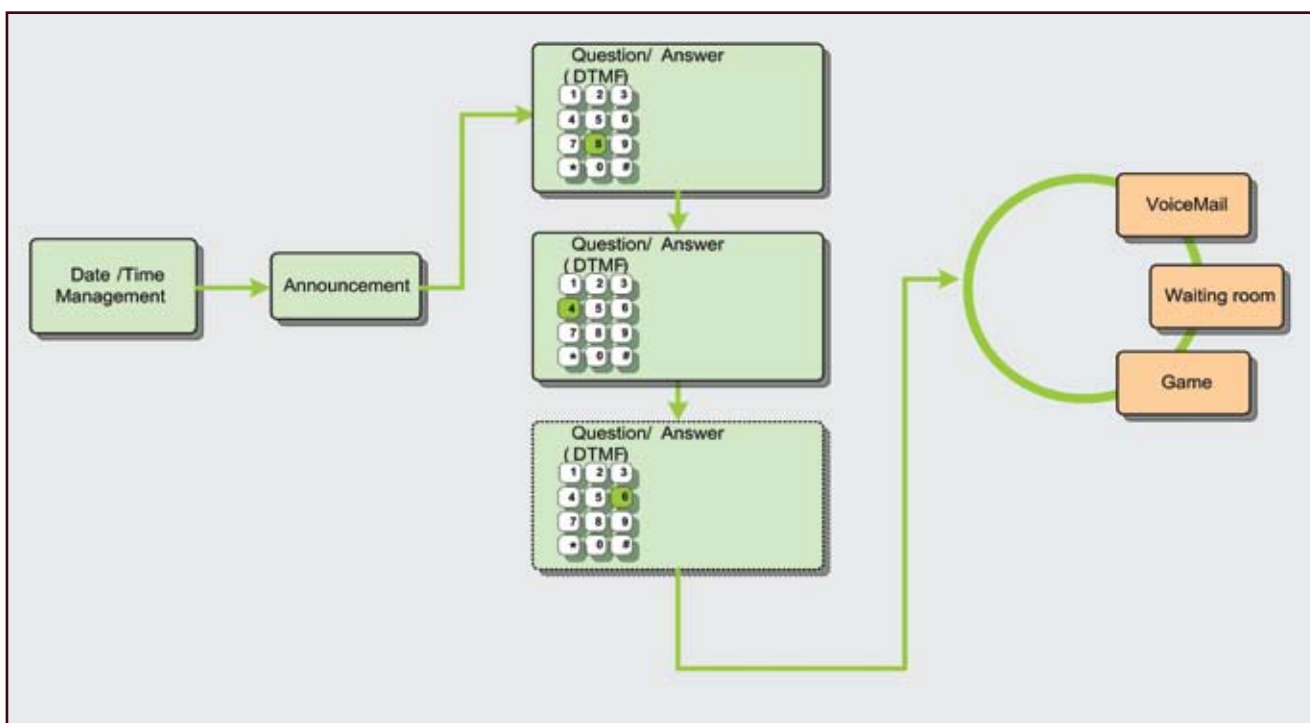
CMS allows simple or complex voting and game shows to be created and run.

Telephone voting can be accomplished simply with CMS. Callers may use their telephone keypad to vote for a contestant (multiple choice acts in a talent show, for example), a hot local topic (yes/no voting). Voting can also have opening hours assigned to it so callers will know that the line is closed.

does all the call handling background work and brings the call's information to the DJ's screen.

The Producer - can choose to work in the Studio or in his office, all he needs is a CMS client and a headset to be part of the on-air team in the studio. If he needs to brief a remote journalist calling in, he can do so before putting him on-air, all via CMS.

The Assistant - can take over calls from the DJ in order to record address details so that prizes may be sent to the winners.



Voting can be done in the background, with the DJ who then only needs to be informed of the results. Any user with the required access rights can easily check the vote results in a web browser. Results may be automatically calculated by the CMS or exported to an external CRM package.

Pre-selection of game or show contestants can be made easy through a simple Q&A session using the callers keypad to answer a pre-recorded question correctly to progress in the competition,

The DJ - can handle calls which are ready to go on-air and doesn't need to know if the call comes either from ISDN or the analogue world - CMS

The same rule applies to any team member, such as a researcher or engineer.

Integration With Studer's OnAir 3000 Consoles

When integrated with a Studer OnAir 3000 console, the system offers a centralised, total radio solution. Control of CMS functions becomes available on the OnAir 3000 fader screen touch panel, callers names will be displayed on fader labels and handling of the outside sources becomes much more intuitive.

This removes the need for several screens around a console which would otherwise be handling several applications individually.

System Hardware/Software

CMS can create very small systems with just a few PCs and one studio up to very large systems with a large number of PCs and many studios. The system can either be connected with a PBX (Private Branch Exchange) or directly to ISDN and Internet (VoIP).

The system is based around a main server, which is used to manage all the phone lines, calls and database functionality, and the in-use operational software, split into Producer and Studio Clients.

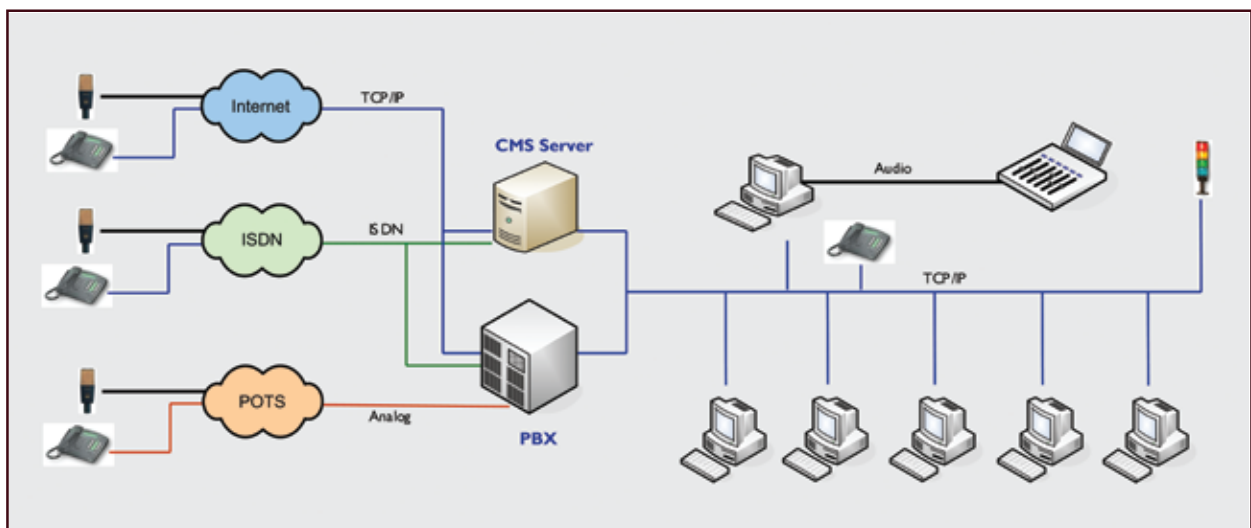
These platforms run on PC's which are connected as normal over a standard IT infrastructure to the Voice Server. This is why control can be accessed from almost any part of a facility with network connections, even from remote studios or stations which have a VLAN connection.

VoIP: The Studer CMS handles VoIP telephone traffic with ease. With internet connections, the voice server can control up to 240 channels either directly or via holding areas to broadcast studios, editor's desks, or call operators. There are virtually no limits when managing the calls via holding areas. Standard audio cards provide the connection to the analogue audio world.

ISDN: Up to 120 channels can be connected with the voice server via an ISDN adapter. Again, operation is via the same application that controls VoIP and analogue telephone lines.

POTS: The Studer CMS can of course handle analogue telephone hybrids. In this scenario, the server manages up to four analogue telephone hybrids per studio or audio workstation via the network.

Communication (control, voice/audio and signalling) between the CMS server and CMS client is via TCP/IP, therefore no special cabling is necessary.



The Voice Server

At the heart of the system is the CMS server that can handle almost any kind of telephone line connection. The operators do not need to know which kind of source to handle (e.g. ISDN, analogue, VoIP) – to them they simply look the same.

CMS offers the following standard communication protocols:

- H.323 for VoIP
- G.711 soft codec for speech
- G.722, G722.2 available soon, Speex, Ogg Vorbis for high-quality audio
- AAC, available soon

Interconnecting Your Broadcast Environment

The new Route 6000 represents the result of the constant research work Studer is well-known for.

Approved Technology

Based on the SCore Live, the central engine of the OnAir 3000 and Vista family, Studer's Route 6000 is highly suited to space-conscious installations. Customers investing in these products will also benefit by keeping the service costs at a minimum level since the core modules are compatible.

It is equipped with an internal D21m I/O System with up to 192 inputs and outputs. Core and internal I/O system take up only 6 units of rack-space, while further D21m hubs can be easily connected using HD links on CAT5 tie lines.

One Route 6000 core can carry up to 1728 physical inputs and 1728 physical outputs. This means, a maximum of 18 D21m hubs respectively up to 30 MADI stage boxes can be connected to the core.

The Route 6000 is a highly scalable system. Allowing the choice of DSP size as well as I/O capacity, the system can be fully tailored to specific installation requirements without losing the option to easily expand the system at a later date.

Naturally, Route 6000 does not only distribute audio, but also provides audio signal processing including limiter, compressor, equaliser, summing/combining, level adjustment.

Every project places different demands on deployed technology, so the Route 6000 is designed to cover the two most important requirements: modularity and security.

With a broad variety of input and output formats, the Route 6000 meets a wide range of broadcast specifications. Besides usual audio formats like Mic, Line and AES/EBU, several

other I/O modules are available to support formats like MADI, ADAT, TDIF, SDI, Dolby®E, Aviom A-Net®, Cobranet® and Ethersound®.

For failsafe operation, multiple redundancy options can be offered. The Route 6000 can be equipped with redundant DSP cards as well as redundant power supplies. Full coverage can be established based on a secondary networked core.

Integration

The Route 6000 is also fully integrated with all Studer DNET products. It supports networking, I/O sharing, unique resource handling (e.g. mic inputs), codec management, central LogScreen, remote configuration, 2wire/4wire routing and many more. Two-step I/O sharing with control parameters is also possible (e.g. microphone gain control, fader start, red light, etc.).

To set cross points within the Route 6000 simply, Studer offers an intuitive and easy-to-use graphical user interface. The Route 1000 controller software uses Studer's proprietary DNET protocol to communicate with the router. It provides the ability to control the router from any point in the network, and may even switch to any other Route 6000 within the same network to control it.

In order to integrate the router with larger broadcast installations, it can also be controlled by major third party broadcast control systems. The Route 6000 supports open interface protocols like Pro-Bel SW-P02 and SW-P08 (serial or Ethernet). This enables sophisticated control systems to easily control the Route 6000 cross points and system parameters with multiple hard- or software panels or schedulers.

With all its features and functionalities, the Route 6000 is the right system for your broadcast installations.



Axel Kern



Studer on tour



The new Vista 5SR

Proven Vista 5 digital mixing technology,
ready for life on the road.

Visit the Harman Pro Group at Booth 408
and Demo Rooms 2D09 / 2D10



AKG launches two changeable D 5 and C 5 microphone heads for the WMS 450 Wireless Microphone System. Perfect for vocals.



I-Tech is the world's premier touring amplifier. Robust, powerful, networked, and under 13kg featuring up to 4000W of continuous power per channel.



New Powered VRX Series Constant Curvature line arrays deliver stunning JBL sound for smaller venues, designed and built to the same high standards as the industry leading VerTec® Series.



Now with integral BSS Audio and Lexicon processing, Soundcraft Vi Series digital live sound consoles incorporate Vistonics™ II and Soundcraft FaderGlow™ to deliver intuitive digital mixing.



The ZonePRO™ 64 Digital Zone Processor represents the professional's choice of foundation for designing and building even the most demanding integrated system.



With the MX500, Lexicon hardware reverbs can now be driven directly to the software plug-in realm compliments of the world's first FireWire hardware Reverb processor.



The new Soundweb™ London BLU-8 programmable zone controller further enhances the diverse range of control options for the evolutionary Soundweb™ London platform.



HiQnet System Architect™ software - the world's only configuration and control software application capable of addressing the complete professional audio system - connecting microphone to speaker.



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Time is ticking on the transition to HD

If you're planning for Multicast 5.1 and stereo broadcast, and need SDI and Dolby E audio distribution, investing in a Studer Vista Digital Audio Console means you'll be ready for HDTV now. With the acclaimed Vistonics user interface making operation simple and fast, Vista consoles represent the fastest route to the future.



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