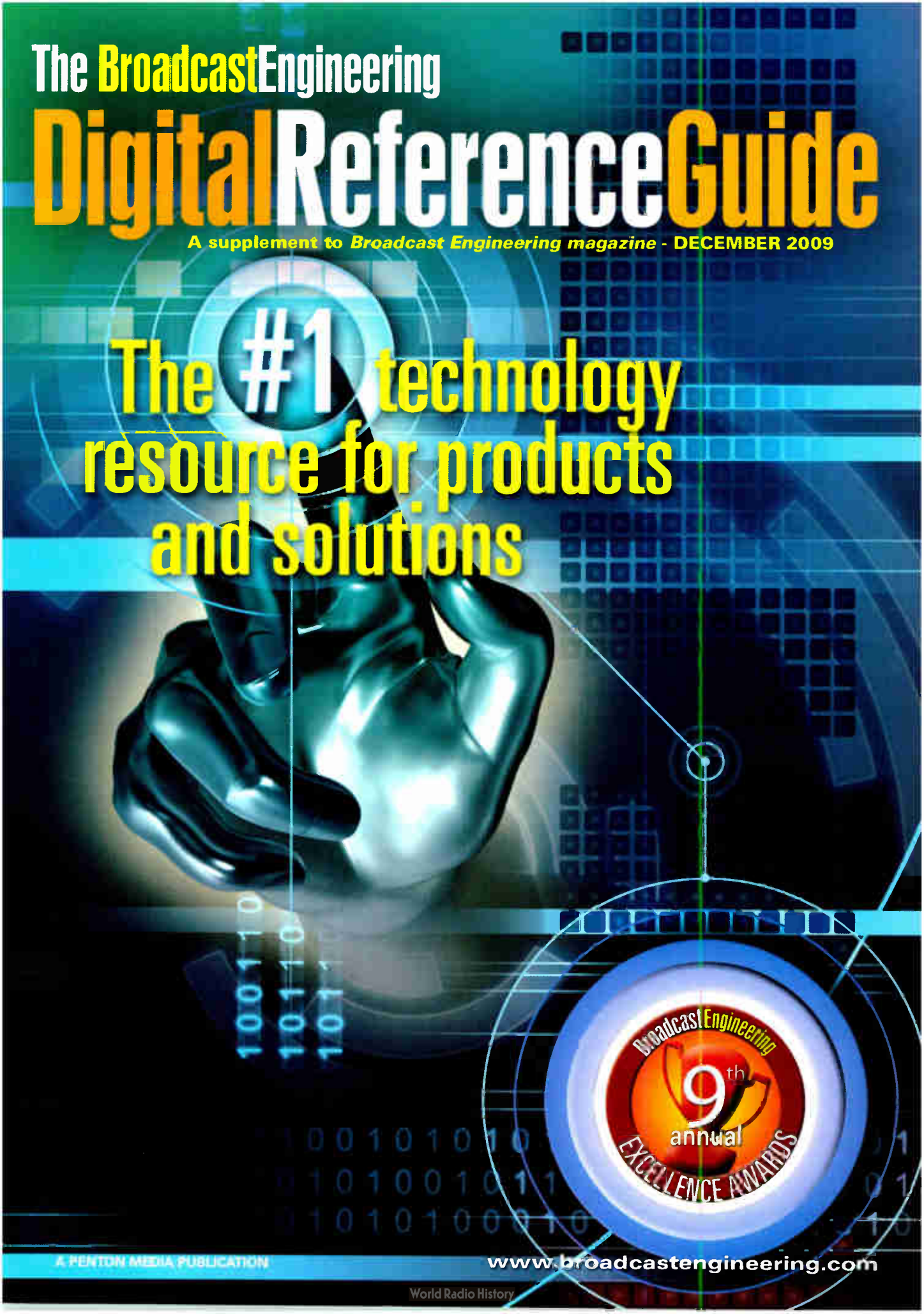
The Broadcast Engineering

Digital Reference Guide

A supplement to *Broadcast Engineering magazine* - DECEMBER 2009

The #1 technology resource for products and solutions



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www.broadcastengineering.com

FOR.A®
INNOVATIONS IN VIDEO and AUDIO TECHNOLOGY

Imagination to Creation

HVS-300HS: The New Standard in Small HD/SD Switchers!

Unrivalled Features, Unequalled Cost Performance

- Very compact main unit (1RU high)
- 4 types of control panels: standard panel, front panel, remote panel, and control GUI
- HD/SD-SDI 4 input/4 output standard, Max. 12 input/8 output
- Frame sync, re-sizing engine, and Proc Amp on each input
- Variety of I/O options: HD/SD-SDI, DVI-D, VGA, HD/SD analog component, and analog composite
- Built-in 16-split multiviewer, supporting 4, 10 or 16-split view with tally and title display
- Up-stream Keyer (with Chroma Key) and DSK both with 2D DVE
- Dual Picture-in-Picture function
- Various 2D and 3D DVE transitions
- Over 100 wipe patterns
- Two channels of still stores
- ANC data pass through
- Aux remote control (option)

Now FOR-A offers a complete line of switchers from our affordable 1M/E up to our new 3Gbps ready 4M/E model

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- USA Western (CA)
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- USA Eastern & Midwest (NJ)
  Tel: +1 201-944-1120
- USA Southern (FL)
  Tel: +1 352-371-1505
- Latin America & Caribbean (FL)
  Tel: +1 305-931-1700
- Canada (Toronto)
  Tel: +1 416-977-0343
- UK (London)
  Tel: +44 (0)20-8391-7979
- Italy (Milan)
  Tel: +39 02-254-3635/6
- Korea (Seoul)
  Tel: +82 (0)2-2637-0761
- China (Beijing)
  Tel: +86 (0)10-5170-9870

www.aja.com

One workflow.
From Lens to Post.

Ki PRO

Ki Pro is an all new way of connecting production and post. Finally, shoot on the same codec as you edit with, Apple ProRes 422, built natively into Ki Pro's stand-alone, portable hardware.

With its extensive analog and digital connectivity, virtually any video and audio source can be fed into Ki Pro. It also includes AJA's powerful 10-bit realtime up/down/cross-conversion, enabling instantaneous recording of SD or HD from any camera format.

Record pristine ProRes media to a removable Storage Module with built-in FireWire 800, or to 34mm ExpressCard Flash — both instantly mount on your OSX desktop for immediate editing and file access.

Ki Pro is tough and rugged, yet small and portable, designed for real production environments. Powered through an industry standard 4-pin XLR, you have flexible AC and battery options. Use Ki Pro on a table, or mate it between your camera and tripod via a bulletproof optional aluminum cage, complete with sliding baseplate and accomodation for 15mm rods.

Visit www.aja.com to discover the full details of how Ki Pro will change your world.

ProRes

- Record natively to Apple's ProRes 422 codec for full raster 10-bit 4:2:2 HD and SD.
- Record to a removable Storage Module with built-in FireWire 800 or 34mm ExpressCard Flash.
- Built-in WiFi and Ethernet for complete control via a web-browser, or your iPhone.
- Connect any digital camera via SDI or HDMI, or any analog camera. Convert in realtime from SD to HD, or 720 to/from 1080. Ki Pro is your hub for all types of sources, regardless of format or connectivity.

Ki Pro. Because it matters.

AJA®
VIDEO SYSTEMS

TABLE OF CONTENTS

THE #1 TECHNOLOGY RESOURCE

The *Broadcast Engineering* Digital Reference Guide gathers all the information you need to locate products and vendors for your next project into one printed source.

You can identify vendors by product category or alphabetically. In addition, all of this information is available electronically on the *Broadcast Engineering* Web site. You can electronically search for vendors by name or product category in seconds. Go to *www.broadcastengineering.com*, and give it a try.

This year's entries are ...

The *Broadcast Engineering* Excellence Awards have become the hit of the industry as stations, networks, vendors and systems integrators all vie for top honors. This year is no exception, with 40 entrants — all wanting to be picked as the top facility in their category!

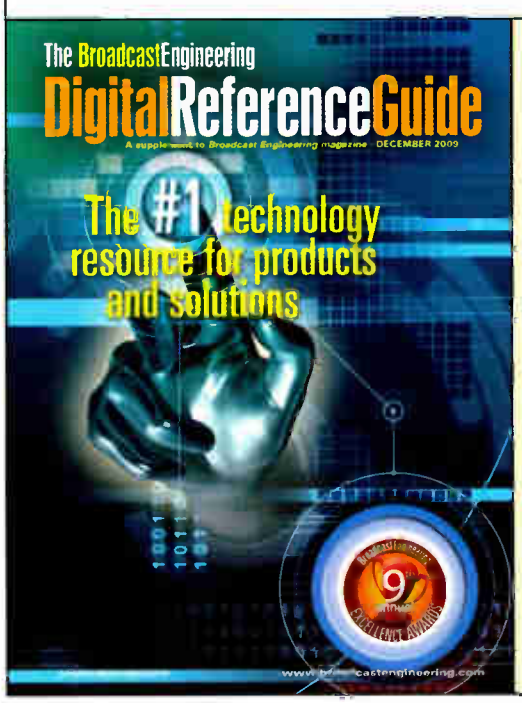
Complete your voting by Feb. 1, 2010. The winners of the Excellence Awards will be announced in the March pre-NAB issue.

Brad Dick
Editorial Director

READERS VOTE AND SELECT THE WINNERS

You choose the winners of the 2010 *Broadcast Engineering* Excellence Awards.

See page 39 for this year's entries, and look for the March issue to find out who the winners are!



Beauty on the outside.
Beast on the inside.

It's easy to be enticed by the alluring good looks of the Niagara® 7500 – the newest HD streaming solution from ViewCast. On the outside, its sleek, innovative design and responsive touch-control interface will excite you. Its brilliant high-resolution HD display will dazzle you. But on the inside, it's a beast.

The Niagara 7500 devours your HD video and easily transforms it into high-quality streams for delivery to IP and mobile networks. Its powerful video pre-processing features streamline and simplify your workflow. Inverse telecine, closed caption extraction and rendering, de-interlacing, scaling, cropping and bitmap overlay are just a few of its standard features.

You can switch on-the-fly between HD or SD video, and with ViewCast's SimulStream® technology, you've got the power to stream simultaneously in multiple formats, bit rates and resolutions from a single SDI video source.

The Niagara 7500 from ViewCast. Beauty on the outside... a beast on the inside.

Speak with one of our streaming experts today at ***800-540-4119***, or visit us on the Web at **viewcast.com\be** to learn more.

ViewCast®

USA 800.540.4119 | Europe, Middle East, Africa +44 1256 345610

PRODUCT INDEX

PRODUCT INDEX

AUDIO ACCESSORIES

Acoustic materials

Acoustics First Corp
888-765-2900

Auralex Acoustics Inc
317-842-2600

Yanchar Design & Consulting Group
949-770-6601

Audio accessories

AMS Neve
888-888-6383

Bittree
800-500-8142

Drake Electronics
+44 1223 815000

JT Communications
352-236-0744

K-Tek
760-727-0593

Petrol
845-268-0100

Audio codecs

Dolby Laboratories Inc
800-33D-OLBY

Audio meters

Logitek Electronic Systems
800-231-5870

RTW GmbH & Co Kg
+49221709130

Sencore Inc
800-SEN-CORE

Television Systems Ltd (TSL)
+44 1628 676200

Ward-Beck Systems Ltd
800-771-2556

Audio monitor amplifiers

Link Electronics Inc
573-334-4433

Mackie
800-258-6883

Ward-Beck Systems Ltd
800-771-2556

Wohler Technologies Inc
888-5-WOHLER

Audio patch panels

ADC
800-366-3889

Bittree
800-500-8142

Gepco Intl Inc
800-966-0069

Switchcraft Inc
773-792-2700

Headphones

Audio-Technica US Inc
330-686-2600

beyerdynamic - USA
800-293-4463

Drake Electronics
+44 1223 815000

RTS: Bosch Security Systems, Inc., Communications Systems Division
800-392-3497

Speakers

Azden
800-247-4501

Mackie
800-258-6883

Yanchar Design & Consulting Group
949-770-6601

Surround Sound accessories

Dolby Laboratories Inc
800-33D-OLBY

Enco Systems
800-362-6797

Linear Acoustic
888-292-3117

RTW GmbH & Co Kg
+49221709130

Ward-Beck Systems Ltd
800-771-2556

AUDIO MIXERS

Portable mixers

Audio Technologies Inc
856-626-3480

Azden
800-247-4501

Calrec Audio Ltd
+44 1422 842159

Lectrosonics
800-821-1121

Mackie
800-258-6883

Wheatstone Corp
252-638-7000

Zaxcom
973-835-5000

Studio mixers

AMS Neve
888-888-6383

Calrec Audio Ltd
+44 1422 842159

Euphonix
650-855-0400

Harrison Consoles
615-641-7200

Lawo North America
888-810-4468

Logitek Electronic Systems
800-231-5870

Mackie
800-258-6883

Salzbrenner Stagetec Mediagroup Inc USA
888-782-4391

Solid State Logic
+44 1865 842300

Studer USA Harman Pro North America
818-920-3212

Wheatstone Corp
252-638-7000

Rethink automatic loudness control

Excessive loudness variation is probably the most common viewer complaint, and it's now something you can eliminate entirely. Our Automatic Loudness Control for our Densité interfaces is designed to address all typical loudness problems, including audio jumps between programs and commercials. To ensure effective loudness control without adversely impacting program content, we've incorporated the latest proven technologies from our partners, **Linear Acoustic** and **Jünger Audio**. It's time to rethink what's possible.

ALC
AUTOMATIC
LOUDNESS
CONTROL

Miranda

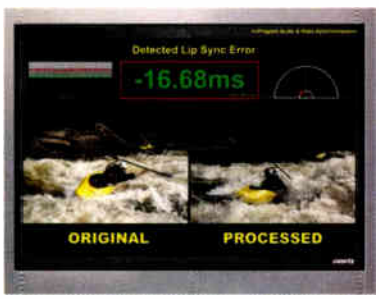
Rethink what's possible

www.miranda.com/loudness

AUDIO PROCESSING

Audio compressor/ expanders

Evertz
905-335-3700



IntelliTrak™ is an Evertz developed technology that performs program audio & video synchronization measurement. It provides a non-intrusive audio and video lip sync analysis without the addition of a watermark. Using VistaLink PRO, IntelliTrak™ reports measurement accuracy of less than 2ms. IntelliTrak™ offers an optional automatic re-synchronization. IntelliTrak™ was designed to be used for real program content. It can be installed as a value-add option on many Evertz products. IntelliTrak™ can be controlled and monitored in real-time with VistaLink PRO. IntelliTrak™ has already earned the acceptance and approval of leading broadcast labs worldwide.

Linear Acoustic
888-292-3117

Rane
425-355-6000

Wheatstone Corp
252-638-7000

Audio effects systems

AMS Neve
888-888-6383

Soundfield USA
702-365-5155

AUDIO RECORDING

Audio playback devices

360 Systems
818-991-0360

Enco Systems
800-362-6797

Audio recorders/players (ATR, MD, etc.)

360 Systems
818-991-0360

Enco Systems
800-362-6797

Mackie
800-258-6883

Zaxcom
973-835-5000

AUDIO ROUTING

Audio A/D-D/A converters

Audio Technologies Inc
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Axon Digital Design BV
888-919-9379

Benchmark Media Systems Inc
800-262-4675

Blackmagic Design
408-954-0500

Ensemble Designs
530-478-1830

Harrison Consoles
615-641-7200

ISIS Group
888-622-4747

Link Electronics Inc
573-334-4433

Nevion
805-247-8560

Pixel Instruments
408-871-1975

Sigma Electronics
866-569-2681

Ward-Beck Systems Ltd
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Audio compression

Ensemble Designs
530-478-1830

Harris Broadcast Communications
800-231-9673

Linear Acoustic
888-292-3117

Audio DAs

Audio Technologies Inc
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Axon Digital Design BV
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530-478-1830

Link Electronics Inc
573-334-4433

Multidyne Video & Fiber Optic Systems
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Nevion
805-247-8560

Rane
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Ward-Beck Systems Ltd
800-771-2556

Audio routers

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Clear Blue Audio Video
303-487-4449

Delec
+49 6351 1317 0

Harris Broadcast Communications
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Lawo North America
888-810-4468

Logitek Electronic Systems
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Nevion
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Salzbrenner Stagetec Mediagroup Inc USA
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Studer USA Harman Pro North America
818-920-3212

Wheatstone Corp
252-638-7000

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888-919-9379

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919-845-7744

Dalet Digital Media Systems
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Digital Broadcast
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Florical Systems Inc
352-372-8326

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800-231-9673

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OmniBus Systems
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Pilat Media
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SGT
+33 1 64 73 74 74

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+44 1865 842300

Solid State Logic (SSL)
323-549-9090

VCI Solutions, Automation Div
413-272-7200

Video Technics Inc
404-327-8300

ViewCast
800-540-4119

Vizrt
+46 8 522 277 07

Vizrt
212-560-0708

VSN Video Stream Networks
+34 937349970

Xytech Systems Corp
818-303-7800

Zeus Broadcast
407-352-6501

Master control switchers

Harris Broadcast Communications
800-231-9673

Lawo North America
888-810-4468

Miranda Technologies Inc
514-333-1772

Netia
+33 4 67 59 97 47

Pixel Power
818-276-4515

Snell
818-556-2616

Utah Scientific
800-453-8782

PSIP and DTV encoders

Axcera
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Crispin Corp
919-845-7744

Motorola Satellite & Broadcast Network Systems
858-404-2933

TV business automation (traffic systems)

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Harris Broadcast Communications
800-231-9673

Pilat Media
+44 20 8782 0700

VCI Solutions, Automation Div
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VSN Video Stream Networks
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WideOrbit
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+44 1932 333790

Professional Communications Systems Inc
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SGT
+33 1 64 73 74 74

TELESTREAM

Telestream
530-470-1300

VCI Solutions, Automation Div
413-272-7200

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WideOrbit
404-378-3381

Zeus Broadcast
407-352-6501

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Autocue Group Ltd
+44 208 665 2992

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Comprompter News and Automation
608-785-7766

Crispin Corp
919-845-7744

Dalet Digital Media Systems
212-825-3322

Digital Broadcast
352-377-8344

Media Computing
480-575-7281

MicroFirst
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Pebble Beach Systems
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Professional Communications Systems Inc
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Quantel
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Ross Video Ltd
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ScheduALL
800-334-5083

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Solid State Logic
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Spencer Technologies
888-246-4127

VSN Video Stream Networks
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CABLE TV EQUIPMENT

Broadcast cable equipment

ATCi
480-844-8501

BarcoNet
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Broadata Communications
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EMCEE
480-315-9283

Emcore/Opticomm
800-867-8426

Harmonic Inc
800-788-1330

KTech Telecom
818-773-0333

Leightronix
800-243-5589

MagicBox Inc
541-752-5654

Motorola Satellite & Broadcast Network Systems
858-404-2933

never.no AS
+ 47 22 01 66 20

Nickless Schirmer & Co
800-543-1584

Preco
818-842-4632

Quintech Electronics
800-839-3658

Scientific-Atlanta
770-236-5000

Sencore Inc
800-SEN-CORE

Teamcast
+33 2 23 252680

Telestream
530-470-1300

Volicon
781-221-7400

Wegener
770-814-4000

CATV system components

Amino Communications LLC
678-636-6000

ATCi
480-844-8501

BarcoNet
770-236-5000

Broadata Communications
800-214-0222

Gloriole Electroptic Technology
416-225-8051

Kathrein Scala Div
541-779-6500

Keywest Technology
800-331-2019

Motorola Satellite & Broadcast Network Systems
858-404-2933

Nickless Schirmer & Co
800-543-1584

Scientific-Atlanta
770-236-5000

CAMERA ROBOTICS

Camera remote controls

Azzurro Systems Integration
201-767-0850

Camplex
620-342-7743

Shotoku Broadcast Systems
866-SHOTOKU

Vinten
888-2-Vinten

Vinten Radamec
845-268-0100

Robotic camera controls

Canon USA Inc, Broadcast & Communication
800-321-4388

Comprompter News and Automation
608-785-7766

Frezzi Energy Systems, Div of Frezzolini Electronics Inc
800-345-1030

Shotoku Broadcast Systems
866-SHOTOKU

Vinten Radamec
845-268-0100

Virtual sets

Replica Technology
716-337-0621

Vizrt
212-560-0708

CAMERA SUPPORT

Camera support products (tripods)

Anton/Bauer Inc
800-541-1667

Band Pro Film & Digital Inc
818-841-9655

Glidecam Industries
800-600-2011

Listec Video
631-273-3029

Miller Camera Support
973-857-8300

OConnor
818-847-8666

Panther
+49 89 613 90028

Sachtler
845-268-0100

Shotoku Broadcast Systems
866-SHOTOKU

Vinten
888-2-Vinten

Pan/tilt heads

Directed Perception
650-692-3900

Frezzi Energy Systems, Div of Frezzolini Electronics Inc
800-345-1030

Fujinon Inc
972-385-8902

Glidecam Industries
800-600-2011

Miller Camera Support
973-857-8300

OConnor
818-847-8666

Panther
+49 89 613 90028

Sachtler
845-268-0100

Shotoku Broadcast Systems
866-SHOTOKU

Vinten
888-2-Vinten

Vinten Radamec
845-268-0100

CAMERAS

Camcorders

Panasonic Broadcast & Television Systems Co
800-528-8601

Sony Electronics
800-686-SONY

Camera accessories

16x9 Inc
866-800-1699

Angenieux
973-812-3858

Anton/Bauer Inc
800-541-1667

Autocue Group Ltd
+44 208 665 2992

Autoscript Inc
203-926-2400

Band Pro Film & Digital Inc
818-841-9655

Camplex
620-342-7743

Century Optics
818-766-3715

Electronic Script Prompting
630-887-0346

Fujinon Inc
972-385-8902

Glidecam Industries
800-600-2011

K-Tek
760-727-0593

Litepanels Inc
818-752-7009

Miller Camera Support
973-857-8300

Nucomm Inc
908-852-3700

OConnor
818-847-8666

Petrol
845-268-0100

QTV
212-929-7755

Sachtler
845-268-0100

Schneider Optics
818-766-3715

Sony Electronics
800-686-SONY

Telescript
888-767-6713

WTI (Wireless Technology Inc)
866-468-6984

Cameras

ARRI Inc
845-353-1400

Band Pro Film & Digital Inc
818-841-9655

Carl Zeiss Optics
888-226-3776

Grass Valley
800-547-8949

Ikegami Electronics
800-368-9171

Panasonic Broadcast & Television Systems Co
800-528-8601

WTI (Wireless Technology Inc)
866-468-6984

CGS

Character generators

Chyron
631-845-2051

Compix Media Inc
949-585-0055

EEG Enterprises
516-293-7472

Harris Broadcast Communications
800-231-9673

Horita Co
949-489-0240

Keywest Technology
800-331-2019

MagicBox Inc
541-752-5654

Miranda Technologies Inc
514-333-1772

Pixel Power
818-276-4515

Screen Subtitling Systems
+44 1473 831 700

Softel
+44 118 9842151

Spencer Technologies
888-246-4127

Vizrt
212-560-0708

Teleprompters and prompting software

Autocue Group Ltd
+44 208 665 2992

Autoscript Inc
203-926-2400

CPC-Computer Prompting & Captioning
800-977-6678

Electronic Script Prompting
630-887-0346

Listec Video
631-273-3029

QTV
212-929-7755

Telescript
888-767-6713

COMPUTERS

Computer accessories

Blackmagic Design
408-954-0500

Sonnet Technologies Inc
949-587-3500

Computer networking products

ATTO Technology
716-691-1999

Ciprico
800-727-4669

Gloriole Electroptic Technology
416-225-8051

IPV
+44 1223 477 000

Computer systems

BOXX Technologies
512-835-0400

ScheduALL
800-334-5083

Data storage systems

ATTO Technology
716-691-1999

Bycast Inc
604-801-5300

Ciprico
800-727-4669

EMC

Masstech Group Inc
905-886-1833

Orad
212-931-6723

Proavio USA
562-324-6500

Sonnet Technologies Inc
949-587-3500

Data transmission systems

ATTO Technology
716-691-1999

SysMedia
+44 1293 814 200

Video cards

Blackmagic Design
408-954-0500

Bluefish444
+61 39682 9477

Bluefish444
866-314-7785

DVEO Broadcast Division
DVEO div of Computer Modules Inc
858-613-1818

Matrox Electronic Systems, Video Products Group
800-361-4903

ViewCast
800-540-4119

DEALERS, DISTRIBUTORS

Supplier type

Advanced Broadcast Solutions
206-870-0244

Azzurro Systems Integration
201-767-0850

Communications Engineering
703-550-5800

Discount Video Warehouse
800-323-8148

Interlink Equipment Brokering
800-524-9982

Preco
818-842-4632

Roscor
800-843-3679

DESKTOP VIDEO

Desktop video

AJA Video Systems
530-274-2048

Apple

Blackmagic Design
408-954-0500

Bluefish444
866-314-7785

IPV
+44 1223 477 000

Matrox Electronic Systems, Video Products Group
800-361-4903

Pixelan Software
360-647-0112

Telestream
530-470-1300

DIGITAL AUDIO WORKSTATIONS

Digital Audio Workstations

Enco Systems
800-362-6797

Euphonix
650-855-0400

Mackie
800-258-6883

Proavio USA
562-324-6500

Sony Creative Software Inc

DUPLICATION

Duplication

Panasonic Broadcast & Television Systems Co
800-528-8601

Sony Electronics
800-686-SONY

FILM EQUIPMENT

Film equipment

DFT Digital Film Technology
818-288-5503

K5600 Inc
800-662-5756

GRAPHICS

Animation/Graphics software

Apple

Artbeats
800-444-9392

Baron Services
256-881-8811

Luxology
650-336-1380

Replica Technology
716-337-0621

Vizrt
212-560-0708

Animation/Graphics systems

AccuWeather Inc

Avid Technology
800-949-2843

Baron Services
256-881-8811

Bluefish444
+61 39682 9477

e-mediavision.com
+44 208 755 2014

Harris Broadcast Communications
800-231-9673

MagicBox Inc
541-752-5654

Miranda Technologies Inc
514-333-1772

Pixel Power
818-276-4515

Replica Technology
716-337-0621

INTERCOM

Intercom

Clear-Com Communications
510-337-6600

Delec
+49 6351 1317 0

Drake Electronics
+44 1223 815000

Riedel Communications Inc
818-241-4696

RTS: Bosch Security Systems, Inc., Communications Systems Division
800-392-3497

Telex Communications
800-392-3497

LENSES

Lens converter/ accessories

16x9 Inc
866-800-1699

Angenieux
973-812-3858

Canon USA Inc, Broadcast & Communication
800-321-4388

Carl Zeiss Optics
888-226-3776

Century Optics
818-766-3715

Schneider Optics
818-766-3715

Thales Angenieux
973-812-3858

Lens systems

Angenieux
973-812-3858

Canon USA Inc, Broadcast & Communication
800-321-4388

Carl Zeiss Optics
888-226-3776

Fujinon Inc
972-385-8902

Schneider Optics
818-766-3715

Thales Angenieux
973-812-3858

LIGHTING

Lighting

16x9 Inc
866-800-1699

Anton/Bauer Inc
800-541-1667

ARRI Inc
845-353-1400

Cool-Lux
800-223-2589

Devlin Design Group
858-535-9800

Frezzi Energy Systems, Div of Frezzolini Electronics Inc
800-345-1030

K5600 Inc
800-662-5756

Kino Flo
818-767-6528

Litepanels Inc
818-752-7009

PAG USA
888-724-8721

Videssence
626-579-0943

MICROPHONES

Microphone accessories

K-Tek
760-727-0593

Sennheiser Electronic
877-736-6434

Soundfield USA
702-365-5155

Microphones

Audio-Technica US Inc
330-686-2600

Audio Ltd
+44 1494511711

beyerdynamic - USA
800-293-4463

Marshall Electronics
800-800-6608

RTS: Bosch Security Systems, Inc., Communications Systems Division
800-392-3497

Sennheiser Electronic
877-736-6434

Soundfield USA
702-365-5155

Telex Communications
800-392-3497

Wireless microphones

Audio-Technica US Inc
330-686-2600

Audio Ltd
+44 1494511711

Azden
800-247-4501

beyerdynamic - USA
800-293-4463

Lectrosonics
800-821-1121

Sennheiser Electronic
877-736-6434

Telex Communications
800-392-3497

Zaxcom
973-835-5000

MICROWAVE & FIBER

ENG microwave links

Alcatel-Lucent
800-252-2835

Broadcast Microwave Services
800-669-9667

ELBER SRL

Microwave and RF Resources
509-585-9377

Miteq
631-436-7400

Nucomm Inc
908-852-3700

RF Central
717-249-4900

Vislink News and Entertainment
+44 1494 774400

Fiber optic transmitter/ receiver systems

Blackmagic Design
408-954-0500

Broadata Communications
800-214-0222

Camplex
620-342-7743

Communications Specialties Inc
631-273-0404

Fiberlink® Matrix is a fully configurable and SMPTE compliant 32x32 optical router. The inputs and outputs can be ordered in quantities of one and the input and output quantities don't have to match allowing you to build a Matrix that is ideal for your specific application and budget!

Drake Electronics
+44 1223 815000

Emcore/Opticomm
800-867-8426

Ensemble Designs
530-478-1830

Evertz
905-335-3700

Extron Electronics
800-633-9876

Gloriole Electroptic Technology
416-225-8051

Harmonic Inc
800-788-1330

Harris Broadcast Communications
800-231-9673

Multidyne Video & Fiber Optic Systems
800-488-8378

Nevion
805-247-8560

Nucomm Inc
908-852-3700

Riedel Communications Inc
818-241-4696

Stratos Intl
800-323-6858

The Switch, Parent Company-Beers Enterprises Inc
310-339-4017

Telecast Fiber
508-754-4858

STL/TSL links

Alcatel-Lucent
800-252-2835

Andrew
800-DIA-L4RF

ELBER SRL

Kathrein Scala Div
541-779-6500

Microwave and RF Resources
509-585-9377

Multidyne Video & Fiber Optic Systems
800-488-8378

RF Central
717-249-4900

Screen Service Broadcasting Services
+39 30 3582225

TZ Sawyer Technical Consultants
301-921-0115

Vislink News and Entertainment
+44 1494 774400

Telco interface equipment

Alcatel-Lucent
800-252-2835

Amino Communications LLC
678-636-6000

Drake Electronics
+44 1223 815000

Nevion
805-247-8560

Telephone hybrids

Drake Electronics
+44 1223 815000

MULTIMEDIA/INTERNET

Interactive systems

Amino Communications LLC
678-636-6000

IPV
+44 1223 477 000

Irdeto Access
+31 23 556 2270

Softel
+44 118 9842151

SysMedia
+44 1293 814 200

ViewCast
800-540-4119

Vizrt
212-560-0708

Internet production systems

Media Computing
480-575-7281

Netia
+33 4 67 59 97 47

Vizrt
+46 8 522 277 07

Vizrt
212-560-0708

Media streaming equipment/services

AccuWeather Inc

Digital Rapids
905-946-9666 ext 212

DVEO div of Computer Modules Inc
858-613-1818

Electrosonic Inc
888-343-3602

EVS Broadcast Equipment
+32 4 361 7000

HaiVision Network Video
877-224-5445

Irdeto Access
+31 23 556 2270

Streambox Inc
206-956-0544

TELESTREAM

Telestream
530-470-1300

ViewCast
800-540-4119

The Niagara 7500 from ViewCast gives you HD streaming so advanced, it's simple. Features include:

- *Switch on-the-fly between HD & SD sources*
- *Resize, scale & crop your HD source*
- *Stream in multiple formats, simultaneously*
- *Robust SDK for system integration*

POWER PRODUCTS

Batteries

Active Power

Anton/Bauer Inc
800-541-1667

Cool-Lux
800-223-2589

Frezzi Energy Systems, Div of Frezzolini Electronics Inc
800-345-1030

IDX System Technology
310-891-2800

North Star Technical Services
800-842-1671

PAG USA
888-724-8721

Battery analyzers

Frezzi Energy Systems, Div of Frezzolini Electronics Inc
800-345-1030

Battery chargers

Anton/Bauer Inc
800-541-1667

Cool-Lux
800-223-2589

Frezzi Energy Systems, Div of Frezzolini Electronics Inc
800-345-1030

IDX System Technology
310-891-2800

PAG USA
888-724-8721

Power (AC) products

Active Power

Middle Atlantic Products
800-266-7225

Versatile Power
408-341-4600

Power supplies

Frezzi Energy Systems, Div of Frezzolini Electronics Inc
800-345-1030

IDX System Technology
310-891-2800

Versatile Power
408-341-4600

UPS systems

Active Power

Hewlett-Packard, Rack & Power Infrastracture Group
800-786-7967

North Star Technical Services
800-842-1671

PRODUCTION SWITCHERS

DVEs

Echolab
978-715-1020

Miranda Technologies Inc
514-333-1772

Keyers

Broadcast Video Systems Corp (BVS)
905-305-0565

Crystal Vision Ltd
+44 1223 497049

Echolab
978-715-1020

Eyeheight Ltd
866 469 2729

Miranda Technologies Inc
514-333-1772

Veetronix Inc
800-445-0007

Production switchers

Advanced Broadcast Solutions
206-870-0244

Analog Way
212-269-1902

Brick House Video
+44 1962 777733

Broadcast Pix
978-600-1100

Echolab
978-715-1020

Echolab Inc
978-715-1020

Eyeheight Ltd
866 469 2729

FOR-A Corp of America
201-944-1120

Grass Valley
800-547-8949

Ikegami Electronics
800-368-9171

Ross Video Ltd
613-652-4886

Snell
818-556-2616

Sony Electronics
800-686-SONY

Spencer Technologies
888-246-4127

Veetronix Inc
800-445-0007

RECORDING MEDIA

Recordable media (tape and disc)

Maxell
800-533-2836

Sony Electronics
800-686-SONY

RF COMPONENTS

Dummy loads

Bird Technologies Group/TX RX Systems
866-695-4569

SPINNER GmbH
+49 89 12601-0

RF combiners

Acorn RF
207-627-7474

Andrew
800-DIA-L4RF

Dielectric Communications
800-341-9678

EMCEE
480-315-9283

Jampro Antennas Inc
916-383-1177

Micro Communications
800-545-0608

Propagation Systems Inc - PSI
814-472-5540

Radio Frequency Systems GmbH

SPINNER GmbH
+49 89 12601-0

RF transmitting tubes

Acrodyne Industries
800-523-2596

Comtech Xicom Technology Inc
408-213-3000

Daily Electronics
800-346-6667

ELBER SRL

Richardson Electronics
800-737-6937

Thales Components
973-812-4323

Thales Electron Devices
+33 13070 3500

Tower accessories/ lighting

Sabre Towers & Poles
800-369-6690

Tower management services

Richland Towers
813-286-4140

TZ Sawyer Technical Consultants
301-921-0115

Towers

Electronics Research Inc
812-925-6000

Radio Frequency Systems GmbH

Richland Towers
813-286-4140

Rohn Industries
309-697-4400

Sabre Towers & Poles
800-369-6690

Transmission line/ accessories

Andrew
800-DIA-L4RF

Dielectric Communications
800-341-9678

Electronics Research Inc
812-925-6000

Jampro Antennas Inc
916-383-1177

Micro Communications
800-545-0608

Propagation Systems Inc - PSI
814-472-5540

Radio Frequency Systems GmbH

Rohn Industries
309-697-4400

Sabre Towers & Poles
800-369-6690

SPINNER GmbH
+49 89 12601-0

SATELLITE EQUIPMENT

Satellite receivers and antennas

Andrew
800-DIA-L4RF

ATCi
480-844-8501

The Simulsat Multibeam Earth Station is the world's only antenna that can simultaneously receive signals from up to 35 satellites within a 70° view arc, withequal performance on each satellite. Simulsat is approximately equivalent in cost to 3 commercial C-Band parabolic antennas, but performs like 35. Since an increasing number of applications require multiple satellite reception, ROI is immediate.

BarcoNet
770-236-5000

Comtech EF Data
480-333-2200

Intelsat
212-839-1800

Miteq
631-436-7400

Nickless Schirmer & Co
800-543-1584

Vislink News and Entertainment
+44 1494 774400

Wegener
770-814-4000

Satellite uplinks

Andrew
800-DIA-L4RF

ATCi
480-844-8501

ATCi offers several unique packages to meet customers' unique needs at a price that can't be beat. ATCi provides this service and has installed numerous uplink systems to various locations worldwide. ATCi can tailor a complete custom engineering package for uplink design, equipment,antenna selection, and troubleshooting. Whether your project is large or small, ATCi can design a solution for you.

Comtech EF Data
480-333-2200

Comtech Xicom Technology Inc
408-213-3000

Intelsat
212-839-1800

Media Broadcast
+49 761 590 14234

Miteq
631-436-7400

Richardson Electronics
800-737-6937

Thales Components
973-812-4323

Thales Electron Devices
+33 13070 3500

Vislink News and Entertainment
+44 1494 774400

STUDIO ACCESSORIES

Cable management systems

ADC
800-366-3889

Gepco Intl Inc
800-966-0069

Middle Atlantic Products
800-266-7225

Stratos Intl
800-323-6858

Cleaning equipment/ products

Maxell
800-533-2836

Engineering software

Amberfin
866-939-3167

WireCAD
866-273-5298

Zeus Broadcast
407-352-6501

Master clock systems

ESE
310-322-2136

Outdoor display equipment

BUF Technology
858-451-1350

Racks/furniture

Forecast Consoles Inc
800-735-2070

Marketec/Rack Innovations
800-557-8861

Middle Atlantic Products
800-266-7225

Storeel
770-458-3280

Winsted
800-447-2257

Studio accessories

Autoscript Inc
203-926-2400

Devlin Design Group
858-535-9800

Forecast Consoles Inc
800-735-2070

Telescript
888-767-6713

Television Systems Ltd (TSL)
+44 1628 676200

Tools

Gepco Intl Inc
800-966-0069

Transport cases

Anton/Bauer Inc
800-541-1667

Weather/data systems

AccuWeather Inc

Baron Services
256-881-8811

Vizrt
212-560-0708

SYSTEMS INTEGRATORS

Systems integrators

Advanced Broadcast Solutions
206-870-0244

Alteran Technologies
818-998-0100

ATCi
480-844-8501

AZCAR

AZCAR
888-873-0800

Azzurro Systems Integration
201-767-0850

Beck Associates
888-422-8600

Burst
888-472-2820

COMMUNICATIONS ENGINEERING, INC.

Communications Engineering
703-550-5800

DVEO div of Computer Modules Inc
858-613-1818

e-mediavision.com
+44 208 755 2014

Frezzi Energy Systems, Div of Frezzolini Electronics Inc
800-345-1030

Frontline Communications
727-573-0400

Larcan USA
303-665-8000

Lawson & Associates Architects
301-654-1600

Media Computing
480-575-7281

Professional Communications Systems Inc
800-447-4714

RF Central
717-249-4900

Roscor
800-843-3679

Salzbrenner Stagetec Mediagroup Inc USA
888-782-4391

Sony Electronics
800-686-SONY

Television Systems Ltd (TSL)
+44 1628 676200

TV Magic
858-650-3155

WireCAD
866-273-5298

Yanchar Design & Consulting Group
949-770-6601

TBCS & FRAME SYNCS

Aspect ratio converters

Algolith Inc
866-ALGOLITH

Axon Digital Design BV
888-919-9379

Ensemble Designs
530-478-1830

Miranda Technologies Inc
514-333-1772

Nevion
805-247-8560

TeraNex
407-858-6000

TV One
800-721-4044

Composite/component encoder/decoders

Axon Digital Design BV
888-919-9379

EEG Enterprises
516-293-7472

Ensemble Designs
530-478-1830

Nevion
805-247-8560

Ross Video Ltd
613-652-4886

Delay products

Crystal Vision Ltd
+44 1223 497049

Doremi Labs
818-562-1101

Ensemble Designs
530-478-1830

Nevion
805-247-8560

Pixel Instruments
408-871-1975

Frame synchronizers

Algolith Inc
866-ALGOLITH

Axon Digital Design BV
888-919-9379

Cobalt Digital Inc
800-669-1691

Ensemble Designs
530-478-1830

FOR-A Corp of America
201-944-1120

Harris Broadcast Communications
800-231-9673

The X50™ frame synchronizer/converter features two processed outputs and delivers exceptional quality and functionality for hybrid video/audio baseband processing applications. Part of the award-winning Harris series of 1RU processors, the powerful X50 offers best-in-class features - including color correction, 3 Gb/s and fiber optic capability - in an affordable, energy-efficient package.

Miranda Technologies Inc
514-333-1772

Nevion
805-247-8560

TeraNex
407-858-6000

HDTV up/downconverters

AJA Video Systems
530-274-2048

It's a multiformat world, and the new FS1 brings it all together... at a breakthrough price. Turn SD to HD, HD to SD, or HD 1080 into 720 (and vice versa), with FS1's hardware-based 10-bit up/down/cross-conversion. Embed/disembed audio, adjust video/audio, HD captioning, remote control w/LAN-based web-server, DHCP, and SNMP monitoring, and much more.

Amberfin
866-939-3167

Axon Digital Design BV
888-919-9379

Blackmagic Design
408-954-0500

Brick House Video
+44 1962 777733

Cobalt Digital Inc
800-669-1691

Crystal Vision Ltd
+44 1223 497049

Ensemble Designs
530-478-1830

Evertz
905-335-3700

Harris Broadcast Communications
800-231-9673

KTech Telecom
818-773-0333

LYNX Technik Inc
661-251-8600

Miranda Technologies Inc
514-333-1772

Nevion
805-247-8560

Ross Video Ltd
613-652-4886

TeraNex
407-858-6000

TV One
800-721-4044

Scan converters

Analog Way
212-269-1902

Communications Specialties Inc
631-273-0404

The Scan Do® HD Scan Converter converts Digital DVI and Analog RGB, at resolutions up to 1920 x 1080, to 3G/HD/SD-SDI output, providing broadcast-quality video images. It supports all SMPTE 3G-SDI output resolutions up to 1080p, HD-SDI output resolutions up to 1080i and SD-SDI resolutions.

Echolab Inc
978-715-1020

Ensemble Designs
530-478-1830

TV One
800-721-4044

Standards converters

Axon Digital Design BV
888-919-9379

Brick House Video
+44 1962 777733

Nevion
805-247-8560

Telestream
530-470-1300

TeraNex
407-858-6000

Time base correctors

Ensemble Designs
530-478-1830

FOR-A Corp of America
201-944-1120

Keywest Technology
800-331-2019

Video A-D/D-A converters

Axon Digital Design BV
888-919-9379

Blackmagic Design
408-954-0500

Cobalt Digital Inc
800-669-1691

Ensemble Designs
530-478-1830

LYNX Technik Inc
661-251-8600

Miranda Technologies Inc
514-333-1772

Nevion
805-247-8560

Ross Video Ltd
613-652-4886

TEST & MEASUREMENT EQUIPMENT

Audio test and measurement equipment

ATCi
480-844-8501

If you are looking to work with the ever-prevalent DVB-S2 and HD signals, the ONLY spectrum analyzer solution is TE-2000 from ATCi. TE2000 is the ultimate field test equipment for both terrestrial and satellite covering North America and world standards. This new design offers exceptional user- friendliness and accuracy all contained within a smaller and lighter package.

DK-Technologies America
800-421-0888

Dolby Laboratories Inc
800-33D-OLBY

Hamlet
949-597-1053

Lectrosonics
800-821-1121

Mixed Signals
310-227-8620

Modulation Sciences Inc
800-826-2603

RTW GmbH & Co Kg
+49221709130

Sencore Inc
800-SEN-CORE

Tektronix Inc
800-835-9433

Ward-Beck Systems Ltd
800-771-2556

Whirlwind
800-733-9473

Compression/MPEG test equipment

Audemat-Aztec
305-249-3110

DVEO div of Computer Modules Inc
858-613-1818

Ensemble Designs
530-478-1830

Hamlet
949-597-1053

JDSU
800-478-4424

K-Will
818-961-2401

Mixed Signals
310-227-8620

Nevion
805-247-8560

Pixelmetrix NA
866-749-3587

Sencore Inc
800-SEN-CORE

TANDBERG Television, Part of the Ericsson Group
678-812-6209

Tektronix Inc
800-835-9433

Triveni Digital
609-716-3500

RF test equipment

Audemat-Aztec
305-249-3110

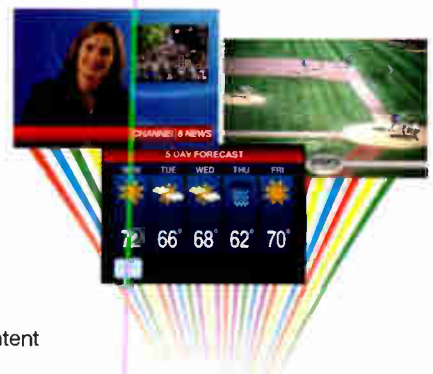
Belar Electronics Lab Inc
610-687-5550

Complete ATSC Mobile DTV Transmission Solutions

Upgrade any ATSC transmission system to support ATSC M/H Mobile DTV

Axcera's complete ATSC Mobile DTV Transmission System includes:

- Axcera's ATSC Mobile DTV Preprocessor/Multiplexer - Combines ATSC fixed and mobile content into a single, ATSC A/153-compliant transport stream
- Axcera's Axciter™ Intelligent ATSC Modulator - Makes most any UHF or VHF transmitter ATSC M/H Mobile DTV capable
- Encoding and Electronic Service Guide (ESG) Solutions - Working with best-of-breed technology partners, Axcera offers a complete integrated solution including mobile content encoding and ESG generators



And for the best mobile coverage possible, Axcera also offers the industry's only commercially deployed ATSC A/110B-compliant Distributed Transmission System (DTS) equipment.

For more information about Axcera's comprehensive ATSC Mobile DTV transmission solutions visit: www.axcera.com/atsc-mh-solutions

Call Us Today at 1-800-215-2614 or Email info@axcera.com to Learn More!
www.axcera.com

Axcera
the rf experts

Bird Technologies Group/TX RX Systems
866-695-4569

JDSU
800-478-4424

Modulation Sciences Inc
800-826-2603

Narda Safety Test Solutions
631-231-1700

Sencore Inc
800-SEN-CORE

Teamcast
+33 2 23 252680

Tektronix Inc
800-835-9433

Versatile Power
408-341-4600

Spectrum analyzers

Belar Electronics Lab Inc
610-687-5550

Bird Technologies Group/TX RX Systems
866-695-4569

Bird Technologies Group has expanded their SignalHawk Series of Spectrum Analyzers and Vector Network Analyzers to include a dedicated Rackmount version. Over an Ethernet network, you can remotely analyze the performance of your system and diagnose problems before you even leave your desk. YOU'RE HEARD, LOUD AND CLEAR.

Narda Safety Test Solutions
631-231-1700

Tektronix Inc
800-835-9433

Sync/test generators

DK-Technologies America
800-421-0888

Doremi Labs
818-562-1101

Ensemble Designs
530-478-1830

Evertz
905-335-3700

Hamlet
949-597-1053

Horita Co
949-489-0240

Leader Instruments
800-645-5104

LYNX Technik Inc
661-251-8600

Tektronix Inc
800-835-9433

Test equipment-general

Belar Electronics Lab Inc
610-687-5550

DSC Laboratories
800-DSC-LABS

Hamlet
949-597-1053

Harris Broadcast Communications
800-231-9673

JDSU
800-478-4424

Leader Instruments
800-645-5104

Narda Safety Test Solutions
631-231-1700

Pixel Instruments
408-871-1975

Rohde & Schwarz
888-TES-TRSA

Sencore Inc
800-SEN-CORE

Tektronix Inc
800-835-9433

TV aural modulation monitors

Modulation Sciences Inc
800-826-2603

TV RF monitoring equipment

Audemat-Aztec
305-249-3110

Bird Technologies Group/TX RX Systems
866-695-4569

Sencore Inc
800-SEN-CORE

Tektronix Inc
800-835-9433

Video analyzers

Ensemble Designs
530-478-1830

Hamlet
949-597-1053

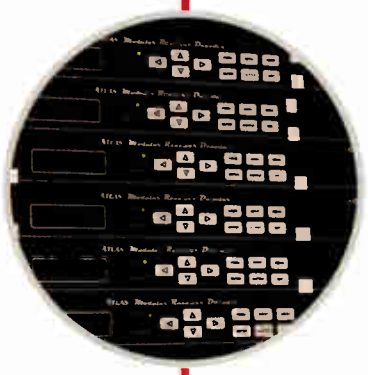
Harris Broadcast Communications
800-231-9673

K-Will
818-961-2401

Sencore Inc
800-SEN-CORE

Tektronix Inc
800-835-9433

Triveni Digital
609-716-3500



analysis & operational gear for video engineers

Sencore develops and markets world class digital content delivery solutions, state of the art test and measurement equipment and high-end video processors.

Our comprehensive pre- and post sale support has delivered MSOs with turnkey solutions for video signal delivery, system monitoring and analysis, custom system installation and content management.

Sencore provides professional customer service and technical product support for engineers by engineers.

The Sencore product portfolio includes : Receiver Decoders, Transcoders, Gateways, Streamers, Servers, Analyzers, Probes, RF Meters, Satellite Alignment Equipment, Calibration Products and Video Processors.

www.sencore.com
605.339.0100

SENCORE
where content meets technology

Video monitors

K-Will
818-961-2401

Mixed Signals
310-227-8620

Nevion
805-247-8560

Panasonic Broadcast & Television Systems Co
800-528-8601

Tektronix Inc
800-835-9433

Triveni Digital
609-716-3500

Waveform monitors/ vectorscopes

Blackmagic Design
408-954-0500

DK-Technologies America
800-421-0888

Hamlet
949-597-1053

Harris Broadcast Communications
800-231-9673

Leader Instruments
800-645-5104

Sencore Inc
800-SEN-CORE

Tektronix Inc
800-835-9433

TV TRANSMITTERS, TRANSLATORS, EXCITERS & ANTENNAS

Frequency conversion equipment

Axcera
800-215-2614

EMCEE
480-315-9283

Quintech Electronics
800-839-3658

MMDS products

Andrew
800-DIA-L4RF

Axcera
800-215-2614

EMCEE
480-315-9283

Screen Service Broadcasting Services
+39 30 3582225

Remote control systems (transmitter)

Audemat-Aztec
305-249-3110

Axcera
800-215-2614

Comtech Xicom Technology Inc
408-213-3000

TV exciters

Acrodyne Industries
800-523-2596

Axcera
800-215-2614

DMT USA
888-912-TEAM

DVEO div of Computer Modules Inc
858-613-1818

Harris Broadcast Communications
800-231-9673

KTech Telecom
818-773-0333

Linear Industries Inc
877-428-5793

Rohde & Schwarz
888-TES-TRSA

TV transmitters

Acorn RF
207-627-7474

Acrodyne Industries
800-523-2596

Audemat-Aztec
305-249-3110

Axcera
800-215-2614

The 6X Series liquid-cooled transmitter offers very high power density in a small footprint, with N+1 power supplies for excellent reliability, hot-swappable amplifiers for simple maintenance, and a fully broadband ³progressive² type combiner for future upgradeability. Power levels are available to 40kW ATSC, 30kW DVB or 60kW analog.

DMT USA
888-912-TEAM

EMCEE
480-315-9283

Harris Broadcast Communications
800-231-9673

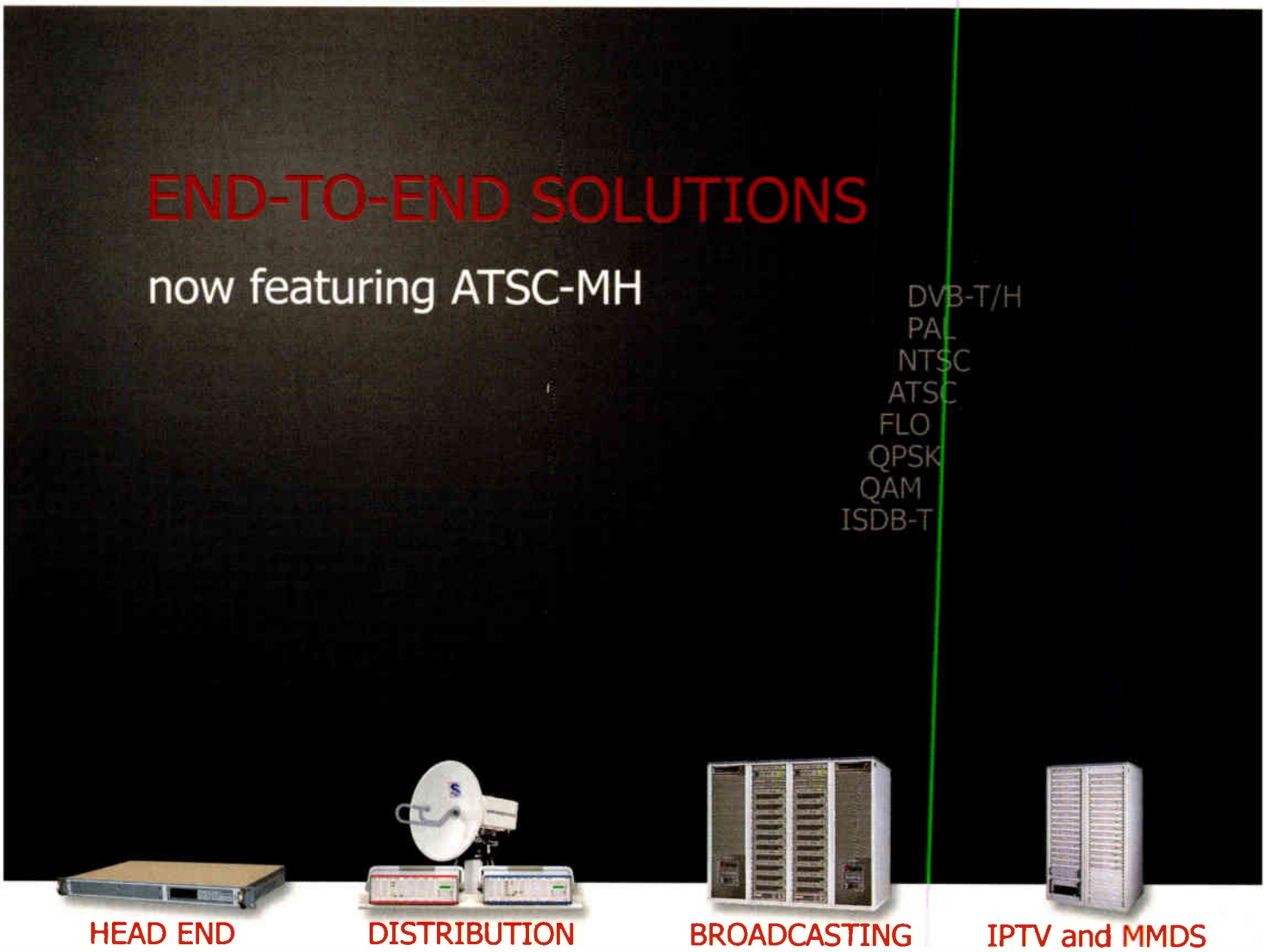
Larcan USA
303-665-8000

Lawson & Associates Architects
301-654-1600

Linear Industries Inc
877-428-5793

Media Broadcast
+49 761 590 14234

Screen Service



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Gerling & Associates
740-965-2888

Satellite flyaway systems

Gerling & Associates
740-965-2888

Vislink News and Entertainment
+44 1494 774400

Satellite uplink trucks

E-N-G Mobile Systems
800-662-4522

Frontline Communications
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Gerling & Associates
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Media Broadcast
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VIDEO ACCESSORIES

EAS products VBI data software systems

Broadcast Video Systems Corp (BVS)
905-305-0565

GPS equipment

Ensemble Designs
530-478-1830

Time code equipment

ESE
310-322-2136

Horita Co
949-489-0240

never.no AS
+ 47 22 01 66 20

Screen Subtitling Systems
+44 1473 831 700

Video accessories

Broadcast Microwave Services
800-669-9667

Sonnet Technologies Inc
949-587-3500

Videoframe Inc
530-477-2000

Video captioning equipment

Broadcast Video Systems Corp (BVS)
905-305-0565

CPC-Computer Prompting & Captioning
800-977-6678

EEG Enterprises
516-293-7472

Ensemble Designs
530-478-1830

Screen Subtitling Systems
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Softel
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Wohler Technologies Inc
888-5-WOHLER

Video patch panels

Bittree
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Switchcraft Inc
773-792-2700

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Compression encoder/ decoders

Adtec Digital
615-256-6619

BarcoNet
770-236-5000

Cinegy
323-417-0880

Digital Rapids
905-946-9666 ext 212

Digital Vision
818-769-8111

Doremi Labs
818-562-1101

DVEO div of Computer Modules Inc
858-613-1818

Electrosonic Inc
888-343-3602

Evertz
905-335-3700

HaiVision Network Video
877-224-5445

Harmonic Inc
800-788-1330

Harris Broadcast Communications
800-231-9673

IPV
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Motorola Satellite & Broadcast Network Systems
858-404-2933

Nevion
805-247-8560

Streambox Inc
206-956-0544

TANDBERG Television, Part of the Ericsson Group
678-812-6209

Telestream
530-470-1300

ViewCast
800-540-4119

Vislink News and Entertainment
+44 1494 774400

Statistical multiplexers

BarcoNet
770-236-5000

TANDBERG Television, Part of the Ericsson Group
678-812-6209

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Amberfin
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Motorola Satellite & Broadcast Network Systems
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Scientific-Atlanta
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Algolith Inc
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Digital Vision
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Ensemble Designs
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Editing systems and components

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Avid Technology
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Blackmagic Design
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Bluefish444
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EditShare EMEA
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Hi Tech Systems
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Proavio USA
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Nonlinear editors

Apple

Artbeats
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Avid Technology
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EVS Broadcast Equipment
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Matrox Electronic Systems, Video Products Group
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Pixelan Software
360-647-0112

Quantel
203-972-3199

VIDEO MONITORS

Line doublers/ quadruplers

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Multi-image displays

Apantac LLC
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Barco Visual Solutions LLC
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Echolab Inc
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Evertz
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Harris Broadcast Communications
800-231-9673

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Preco
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866-475-2627

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Christie Digital Systems Inc
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Image Video

Marshall Electronics
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Ward-Beck Systems Ltd
800-771-2556

Wohler Technologies Inc
888-5-WOHLER

Video presentation equipment

Apantac LLC
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Chief
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Christie Digital Systems Inc
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DVC Digitalvideo Computing GmbH
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Extron Electronics
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Video walls

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Barco Visual Solutions LLC
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Gefen
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Intelsat
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ISIS Group
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NVision
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Quintech Electronics
800-839-3658

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Sigma Electronics
866-569-2681

Snell
818-556-2616

Utah Scientific
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Veetronix Inc
800-445-0007

VIDEO STORAGE

Archive/DVD Storage

Bycast Inc
604-801-5300

Crispin Corp
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Digital Broadcast
352-377-8344

Front Porch Digital
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Wegener
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On-air presentation systems

Chyron
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Ciprico
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Video Technics Inc
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Vizrt
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Vizrt
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Tape library systems

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Storeel
770-458-3280

Winsted
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VDRs (video disk recorders)

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Omneon
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Video servers

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Doremi Labs
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DVC Digitalvideo Computing GmbH
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Fischer Connectors
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Maser Communications
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Neutrik USA
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800-642-9473

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800-366-3889

Axon Digital Design BV
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Canare Corp of America
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Clark Wire & Cable
800-222-5348

Emcore/Opticomm
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800-551-0121

Gefen
800-545-6900

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800-966-0069

Lemo USA Inc
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Mohawk
800-422-9961

Multidyne Video & Fiber Optic Systems
800-488-8378

Nemal Electronics Intl
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Neutrik USA
732-901-9488

Riedel Communications Inc
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Stratos Intl
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Modular frame systems

Axon Digital Design BV
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Belden
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Canare Corp of America
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Clark Wire & Cable
800-222-5348

Gepco Intl Inc
800-966-0069

Kramer Electronics
888-275-6311

Lemo USA Inc
800-444-5366

Maser Communications
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Mohawk
800-422-9961

Nemal Electronics Intl
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Fischer Connectors
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Gepco Intl Inc
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Lemo USA Inc
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Neutrik USA
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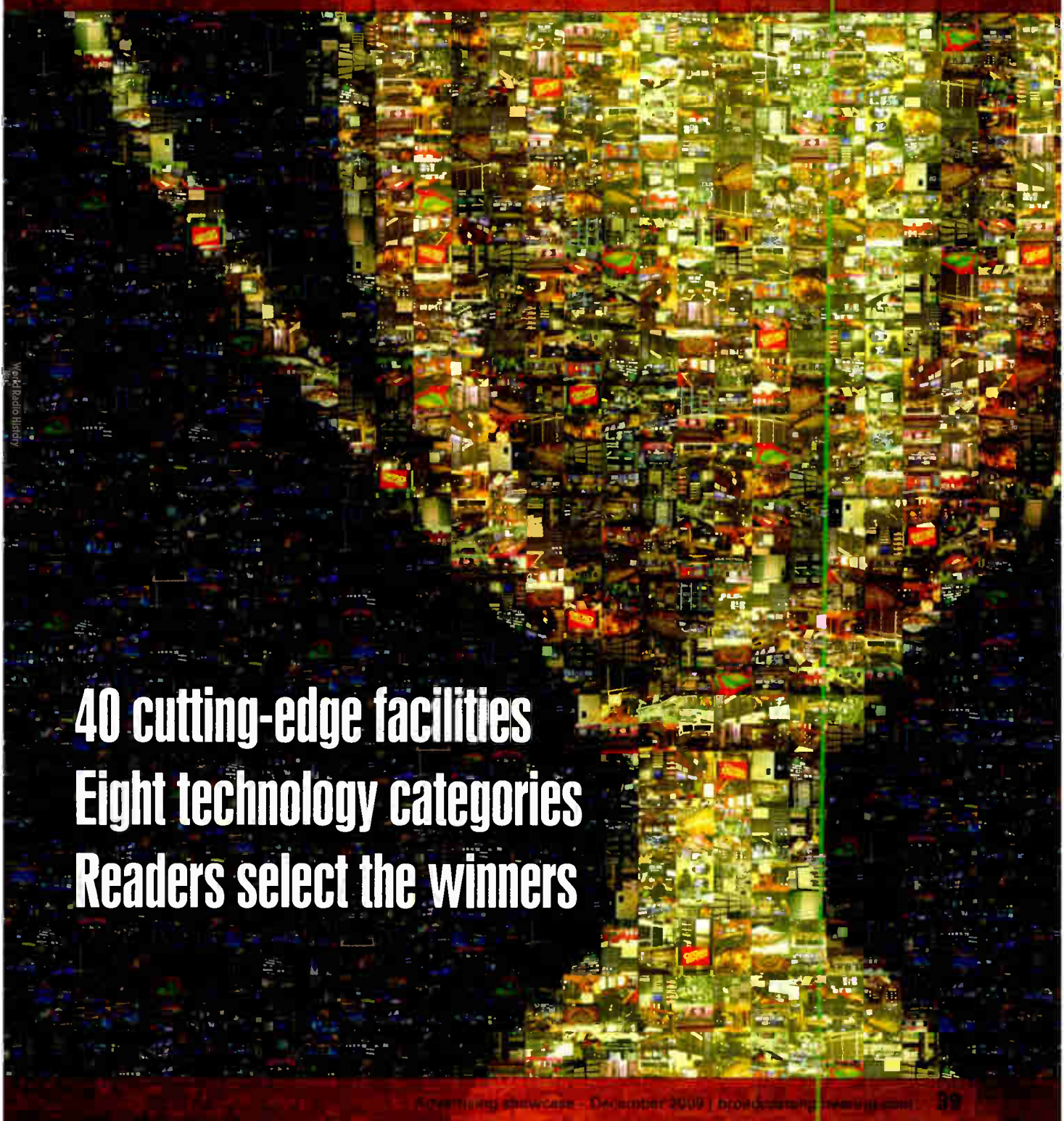
The BroadcastEngineering ninth annual

ExcellenceAwards



40 cutting-edge facilities
Eight technology categories
Readers select the winners

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Yes, it's time to vote again. Help *Broadcast Engineering* select the winners of the 2010 Excellence Awards.

The Excellence Awards recognize innovation, high-quality design and construction in telco, cable, broadcast and production facilities. Winners are selected by *Broadcast Engineering* readers through voting on the Web site.

With 40 entries from around the world, this year's contest includes some of the most sophisticated and high-tech facilities ever built. Each facility is competing for your vote.

To vote for your favorite installations, visit *www.broadcastengineering.com*. Click on the Excellence Awards button, and select one facility from each of the eight categories.

Votes must be entered by Feb. 1, 2010.

The winning facilities will be announced in the March 2010 issue of *Broadcast Engineering* and will be honored at the 2010 National Association of Broadcasters (NAB) convention.

Brad Dick

Brad Dick
Editorial Director

This year's Excellence Award entries are:

KAXT-CA

Excellence Award category

New studio or RF technology — station

Submitted by

Harmonic

A growing number of low-power stations are quickly recognizing the potential of digital transmission for expanding service offerings, raising video quality and creating new revenue streams. Now, these stations can follow the lead of KAXT-CA, a Class A community station based in San Jose, CA. This year, KAXT launched an unprecedented digital ATSC television service capable of broadcasting up to 20 MPEG-2 video and audio services within the 19.39Mb/s ATSC spectrum. Using advanced video processing solutions from Harmonic, transmission equipment from Linear Industries, and PSIP generation from Triveni Digital, KAXT is currently broadcasting 12 video channels and four audio channels and is already planning to add four more audio services.

When planning the digital switchover, KAXT faced a number of challenges — the largest of which was finding a cost-effective technology solution that could accommodate the station's aggressive launch schedule. After some deliberation, the station decided to offer at least 10 digital SD channels with capabilities for eight radio services as well, which required a powerful encoder. Since KAXT was building its digital service from the ground up, engineers soon realized that the bottom line price was not significantly affected by the addition of more channels. By using adaptive encoding techniques and advanced look-ahead processing, the higher channel count could allow for even more flexibility in the statistical multiplexing variables; with more channels, the software can spread the quality hits out across more channels.

For the new digital service, KAXT chose Harmonic's Electra 5000 encoders, DiviTrackIP statistical multiplexing and NMX Digital Service Manager to compress and manage the video and audio services efficiently. Triveni Digital's GuideBuilder PSIP generator manages the large number of virtual channels and EPG metadata files and feeds the carousel to the Harmonic ProStream 1000 remultiplexer over IP. The GuideBuilder PSIP generator also provides a future-proof path to mobile DTV.

KAXT's new digital operation features an all-ASI plant design from the studio to the transmitter site on Mt. Allison. The ASI output from the Harmonic ProStream remultiplexer output is fed into a Mosley microwave system and delivered on the mountain straight to the exciter's ASI input. The Linear Industries AT71K0-1 1000W digital UHF transmitter and AT7001 exciter complete the groundbreaking system with advanced linear and nonlinear precorrection to provide the most pristine signal possible.

The end result of this collaborative deployment allows viewers in KAXT's diverse market to receive and experience a much broader array of multicultural content from a single source. KAXT is the first station in the United States to offer such a large range of programming in the ATSC 19.39Mb/s spectrum. The solutions from Harmonic, Linear and Triveni Digital make it possible to deliver more channels with excellent video quality at ultra-low bit rates, when compared with the station's previous analog service, and in a cost-effective manner that met KAXT's budgetary requirements. ■

Design team

Harmonic: Joel Wilhite
KAXT-TV: Warren Trumbly, Ravi Kapur
Linear Television: Perry Priestly
Triveni Digital: Mark Rushton

Technology at work

Harmonic: DiviTrackIP statistical multiplexing and NMX digital service manager, Electra 5000 encoders, ProStream 1000 remultiplexer
Linear Industries: AT71K0-1 1000W digital UHF transmitter, AT7001 exciter
Triveni Digital: GuideBuilder PSIP generator

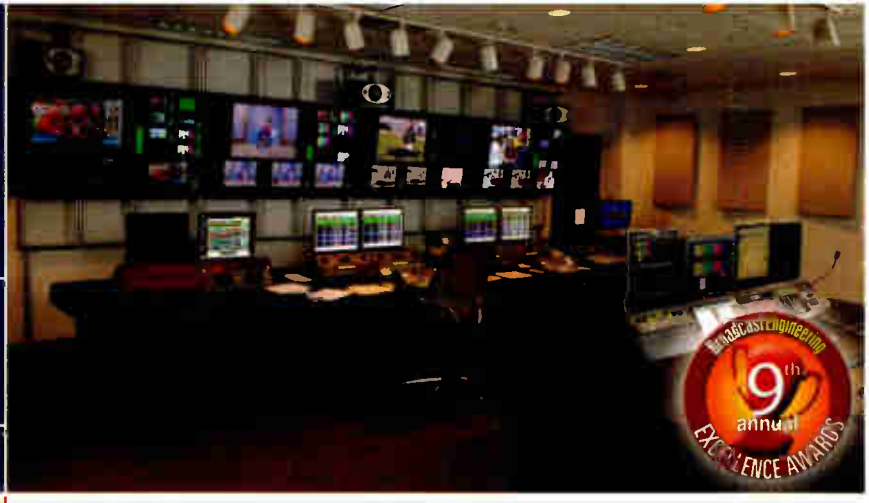
Kentucky Educational TV

Excellence Award category

New studio or RF technology — station

Submitted by

Roscor



Design team

KET: Mike Clark, dir. of tech. planning; Mike Brower, dir. of prod.; William Smith, special projects eng.; Rick Melton, dir. of eng. op.; Paul Stackhouse, dir. of Web and multimedia services; William Novak, proj.mgr.
Roscor: Mark Albert, sr. proj. eng.; Jerry Hanna, eng.; Carl Lemaine, Avid systems; Craig Frankenstein, ProTools; Fred Engel, workflow; Daniel Epstein, network; David Rank, proj. mgr; Robert Childers, installation supervisor

Technology at work

Avid: AirSpeed server, ICON audio consoles, Interplay asset management, ISIS media network, Media Composer, Pro Tools, Symphony NLE software
Chyron: Channel Box graphics
Copan: Revolution 300T/TX tape library
Evertz: 5600 master sync generators
Grass Valley: K2 servers, Kayak switchers
Harris: QuiC media analysis server
Masstech: MassStore WAM
Meyrs: ProTrack traffic
Miranda: Kaleido and iControls monitoring and control
NVerzion: Automation software
Panasonic: TH series 10 plasmas
Qualstar: LTO library
Sony: DHC-1500 HD cameras, XDCAM HD
Starfish: Isis captioning
Tannoy: Speakers
Tektronix: WFM7020 and WFM7021 waveform monitors
Telestream: FlipFactory
Utah Scientific: UTAH-400 routing switcher, MC-2020 MC switchers

Roscor recently completed the rebuild of Kentucky Educational Television (KET) in Lexington. KET broadcasts three ATSC channels statewide and also delivers purpose-built programs via new media technologies and cable VOD. The goal of this project was to design and build a tapeless, file-based system infrastructure, including rule-based automated workflow functionality to the extent possible and practical. The system designed by Roscor in partnership with KET's technical staff was the product of a thorough workflow analysis of the media movement throughout the plant for all types of programs produced or presented by KET. The resultant system design has achieved KET's goals and supported KET's vision.

Major elements in the design include an Avid ISIS/Interplay production environment including AirSpeed MS ingest devices for direct file recording from the studios to the ISIS as well as Pro Tools ICON studio audio consoles, which provide completely editable audio files for facilitating enhanced audio post production. Twelve Avid edit rooms plus numerous Assist and Access stations provide the collaborative production/post-production environment. Roscor provided and integrated K2 playout servers with 15TB of storage and Kayak production switchers from Grass Valley. A four-channel automation system was provided from NVerzion, along with master control switchers and a 288-squared HD-SDI, plus four additional levels, routing switcher from Utah Scientific. Terminal gear and multi-image display systems are from Miranda, including the iControl monitor and control system, which monitors the Miranda products as well as third-party SNMP-compliant devices.

Content management and rule-based workflow is managed by Masstech's MassStore, which provides the hierarchical storage for the media assets to a 148TB Copan virtual tape library and to a Qualstar LTO robotic tape library. Through MassStore's interfaces with ProTrack traffic, automation and Interplay files are transferred, proxies are created and in-house format masters are made and archived. Based on either rules or ad-hoc requests, files are copied to a Harris QuiC automated test system for quality control, Starfish closed-captioning editor for caption creation or editing, or to a Telestream FlipFactory for creation of alternative file formats for Web streaming, DVD, VOD, or podcasting. In each case, the resultant files are automatically moved to the appropriate remote location or to watch folders, where additional rules take control.

Critical attention was given to the robustness and security elements of the KET network. In addition to enterprise virus protection and separation of the business and production networks, redundant Fortinet FortiGate in-line security appliances were integrated, providing firewall, VPN, intrusion protection, traffic shaping and additional antivirus, antispyware, antimalware and Web filtering.

Transition planning and coordination were key to this project. The new facilities were built in the same areas as the existing, and KET needed to remain operational and on-air. In addition to replacing the existing hardware, Roscor also provided new consoles, cabinetry and renovation of the physical plant. ■

Oklahoma Educational TV Authority

Excellence Award category

New studio or RF technology — station

Submitted by

Axcera

The Oklahoma Educational Television Authority (OETA) provides public television programming throughout Oklahoma. While OETA operated on VHF frequencies for analog, the FCC initially allocated UHF frequencies for digital simulcast. OETA built UHF DTV facilities to fulfill this requirement but felt that it would be most beneficial to return to VHF for DTV operation following the analog sunset. This would save the noncommercial network thousands of dollars in energy costs each month.

The first step was to issue a request for bids for two VHF transmitter systems, one of which would serve the Tulsa market and the other for Oklahoma City. To ensure a solid, reliable DTV signal, OETA specified dual transmitter systems for both locations, complete with switching capability, that would detect any failure and automatically switch to the backup transmitter. This system was also specified to allow both transmitters to be combined to air, a feature that would turn out to be very useful in the future.

OETA selected Axcera to build the system. Axcera offered a clean design that met all of the specific needs for the unique dual transmitter configuration. Each system uses two Axcera Innovator HX transmitters and a Myat switchless combiner, allowing the main, backup or both transmitters to be selected while the system is on the air. Additionally, Axcera's long history in the industry and reputation for quality and service gave OETA a high level of confidence.

OETA set a goal to convert to 100 percent digital by the original 2009 analog sunset date of Feb. 17, 2009. Because the broadcaster chose to return to its analog frequencies, each system needed to be installed while both the existing VHF analog and UHF digital signals remained on the air, and the systems needed to be ready to flash-cut on Feb. 17. This required preparing the existing transmitter facility in Tulsa and building a new transmitter facility in Oklahoma City.

Because the majority of the Oklahoma City facility construction occurred in December 2008 through January 2009, it was not without incident. This included an unfortunate situation in which a worker pumping concrete slipped, and the hose he was holding pumped concrete onto the new air-conditioning unit, rendering it useless. However, with hard work and some long hours, the facility was completed less than one week prior to Axcera's arrival to install the transmitter.

The systems were brought online in time for a successful Feb. 17 cutover. The equipment all worked well. However, OETA soon discovered that the FCC allocation of 15kW ERP was not enough VHF power to replicate the original analog coverage area. This is where the good fortune of the unique N+1 system came into play. Because the N+1 system would allow both the main and backup transmitters to be combined to air, output power could be doubled, providing strong coverage throughout the service areas in both locations.

The system is operating reliably and meeting all of OETA's goals. Between savings from reduced electricity costs and elimination of lease payments in Oklahoma City, OETA is realizing a savings of approximately $30,000 per month, while providing an excellent signal to its viewers. ■

Design team

Axcera: Jeff Heldman, app. eng.; Walt Beaver, sr. field svc. eng.; Don Thomas, sr. field svc. eng.; Jim Moore, sr. field svc. eng.
Myat: Derek Small, dir. of filter prod.; Stephen Kolvek, dir. of coaxial prod.
OETA: Earle Connors, dir. of eng.; Ted Newcomb, sr. tech.; Mark Norman, deputy dir. of tech.

Technology at work

Axcera: HHV3750AD VHF DTV main/alternate transmitters, HX series main/alternate controller
Burk: GSC3000 remote control
Myat: DTV mask filters, switchless combiners
Panasonic: BT-LH1700W monitor
Sencore: MRD-3187A demodulator
Spectracom: 8195B GPS receiver

TV Globo TVDR

Excellence Award category

New studio or RF technology — station

Submitted by

GLOBO Comunicação e Participações SA

Design team

TV Globo: Ana Eliza Faria, eng. mgr.; Paulo Henrique de Castro, sys. conceiver; Arthur Vilella, eng. mgr.; Cíntia Leite, prog. mgr.; Marcelo Souza, headend coordinator; Rodrigo Nascimento, set-top box coordinator; Carlos Fernandes, eng.; Deyse Freitas, eng.; Gustavo Dutra, eng.; Patrícia Freire, eng.

Technology at work

Cisco: DCM9900 digital content manager multiplexer, D9034 SD H.264 MPEG encoder, D9054 HD H.264 MPEG encoder, D9854 receiver/decoder, RDSA network management system
Nagravision: Merlyn conditional access system
Newtec: NTC 2277 DVB-S2 modulator, NTC 2185 IF redundancy switch
Prime: RRG48B GPS module
Thomson: DSI705THO set-top box

Digital terrestrial TV is being launched in Brazil with great success, reaching more than 65 million people in less than two years. However, Brazil is a huge country, and there are rural areas that will never be covered by terrestrial TV. In fact, even though terrestrial TV covers even small cities in Brazil, the only TV Globo TV signal that currently reaches these rural areas is a C-band analog satellite national feed, which, being unencrypted, also overlaps local TV coverage areas and spills over into adjacent countries, causing both commercial problems and difficulties in sporting exhibition rights. Aiming to better serve the rural communities and digitize the analog satellite signal before analog technology becomes obsolete, TV Globo decided to develop a system targeted for rural areas based on GPS. It was conceived years ago, but only recently the GPS silicon implementation became mature enough for the project's needs.

Project planning for TV Globo's Digital Television for Rural Areas (TVDR) began in 2005 when Nagravision and Thomson joined the project as partners, followed later by Prime. Checking its location through a GPS module, the set-top box will only yield TV GLOBO's satellite signals in the rural areas of Brazil.

In November 2009, this pioneer system will launch in the Rio de Janeiro rural area and will subsequently be expanded throughout Brazil. TVDR will feature only one satellite national feed, but regional feeds will replace the national feed, region by region. A conditional access system was developed for this project, linking geo-referenced maps to each regional feed. As each regional feed becomes available, the receivers located in the corresponding region will automatically choose it. If the location is outside Brazil, no signal will be decrypted.

TV Globo serves 99.5 percent of the Brazilian population and produces 90 percent of its programming, including 2500 hours of soap operas and more than 1800 hours of news programs per year. It is a free-to-air TV network with a business model based solely upon advertising. Furthermore, it is committed to keeping alive regional cultures through the programming efforts of its 121 affiliated TV stations throughout Brazil, and TVDR is the perfect ally toward this goal.

To ensure the launch of the first signal in Rio de Janeiro, the technical team designed, integrated and tested the whole system in detail. The operational team was involved and trained throughout the process to facilitate the start of this new operation. The key components of the system are a conditional access system from Nagravision, encoders and multiplexers from Cisco, a set-top box from Thomson and a GPS module from Prime.

TVDR's project team developed a system that will benefit the population of rural areas with digital quality and lend to satellite transmissions the regional aspects of terrestrial TV, while helping to eliminate rights issues and preserve TV GLOBO's business model.

WLII-TV and WSUR-TV

Excellence Award category

New studio or RF technology – station

Submitted by

AZCAR

This year, Univision Puerto Rico celebrated the grand opening of its new facility, taking its Spanish-language stations from the analog world to an all-digital hybrid HD and SD widescreen environment. AZCAR, engaged in the project for more than five years, supported Univision in the consulting, design and integration effort. The contributions of the local station personnel, Univision's engineering teams and AZCAR have paved the way to a modern, efficient and file-based multichannel DTV plant. The project involved not only building the studios, news, production and technical facilities, but also retrofitting a temporary site, moving and then operating there for more than three years while the new building was constructed.

Univision now uses its file-based facility to re-edit and broadcast all network-provided content and to create locally produced entertainment and news programs. The Guaynabo facility services the entire island via cable and over-the-air HD broadcast, generating the signals for WSTE-DT, branded Tele-Isla, which transmits over a four-site distributed transmission system, and WLII-DT, a full-power station branded as Univision Puerto Rico. WLII operates a satellite station, WSUR-DT, with another full-power station, locally-owned WORA-TV, which repeats more than 95 percent of WLII's programming under an affiliation agreement.

AZCAR's design team worked with local station engineering and management staff, as well as Univision's group engineering executives, to develop a cost-efficient, automated facility with state-of-the art technology supporting multichannel master control, live production studios and news. The offices and studios occupy portions of a new multicultural arts and entertainment complex complete with a performance theater and a ground floor 70ft by 90ft TV production studio. The studio features audience seating for regular Spanish-language live productions. A second floor 40ft by 45ft studio, plus an adjacent 7000sq-ft operating newsroom, provides for news-related activities.

Designed as a file-based HD infrastructure, the master control, TOC, rack room and engineering encompass 9400sq ft of the building's basement. Core components consist of Miranda NVISION 5100MC HD master control switchers, Harris ADC automation, Grass Valley K2 air and production servers, Evertz EQX router and VIP-X monitoring and terminal distribution equipment, Clear-Com intercom, Tektronix signal measurement, and MassTech's MassStore/MassTranslt suite of asset management tools.

The news and production systems are composed of Grass Valley K2 EDIUS, Apple Final Cut Pro and Quantel sQ server/editorial platforms. A Sony MVS-8000 production switcher configured for SD widescreen supports the legacy SD camera systems, with a Euphonix System 5 MADI-based audio mixing console for sound. Studio and field content is shot and edited in widescreen, and then upconverted at playout to HD.

Once the technical systems were designed, AZCAR built out the new facility in less than four months. With the site commissioning and staff training completed, Univision went live in late September 2009. ■

Design team

Univision WLII-TV and WSUR-TV: Charlie Marino, dir. of broadcast IT sys. development; Michael Drazin, special proj. mgr.; Mike Gano, dir. of broadcast tech.; Jeff Staigh, assistant dir. of eng., corporate; Ira Goldstone, VP eng.; Larry Sands, president and general mgr., Puerto Rico; Andres Diaz, VP eng., chief eng., Puerto Rico
AZCAR: Al Martin, proj. mgr.; Andrew Cox, lead eng.; Patrick Gordon, installation supervisor; Paul McMenama, lead CAD

Technology at work

Apple: Final Cut Pro
Avocent: KVM matrix
AVP: AV-D232 series jackfields
Clear-Com: Intercom
Euphonix: System 5 MADI-based audio mixing console
Evertz: EQX router, VIP-X monitoring and terminal equipment
Grass Valley: K2 production/air-servers, EIDUS production editing
Harris: ADC automation
Masstech: MassStore and MassTranslt MAM systems
Miranda: NVISION 5100MC HD MC switcher
Quantel: sQ server
Sony: MVS-8000 production switcher
TANDBERG: E5710 encoder, TT1260 IRD
Tektronix: 7000 series measurement
TSL: Tallyman
Wohler: Audio monitoring

WNYC
The Greene Space

Excellence Award category

New studio or RF technology — station

Submitted by

The Systems Group

Design team

The Systems Group: John Meusel, proj. mgr.; Paul Rea; proj. eng.; Jose Morales, integration supervisor;
WNYC Radio: Steve Shultis, CTO; Jim Stagnitto, dir. of eng.

Technology at work

API: Vision recording console
Avocent: KVM switching
BroadcastBionics: PhoneBox call screening system
DigiDesign: ProTools LE/HD2 editing
Digital Alert Systems: DASDEC EAS system
Harris: Modular distribution/ conversion
Hewlett-Packard: Servers and desktop PCs
Sierra Automated Systems: Audio mixing, routing, intercom
Silex Media: D.A.V.I.D. DigaSystem asset management and automation
Studio Network Solutions: SANmp proTools SAN

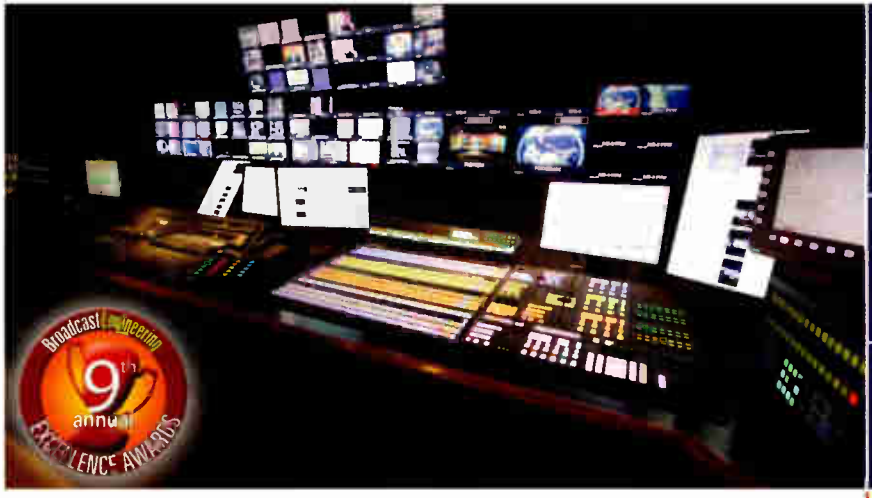
Earlier this year, WNYC Radio unveiled The Jerome L. Greene Performance Space to present live radio shows, exclusive commissioned works, political and cultural conversions, audio theater productions, and musical performances. The Greene Space has transformed a traditional public radio station into a cultural 125-seat destination.

The broadcaster brought in The Systems Group (TSG) for the consultation and integration of The Greene Space project, which is designed around an earlier first-phase project to fully digitize its new studios. To provide a high-quality recording environment, the studio floors are floated, and special double-pane glazed glass protects the full-length studio windows. Low-wattage LED theatrical lighting, a bamboo stage, the use of recycled materials and interactive programming on environmental issues support The Greene Space name.

This modern broadcasting event space is outfitted with high-end digital audio and video production systems and relies upon multiple platforms to deliver live, radio, webcasting and telecasting digital programming.The audio hub integrates a Sierra Automated Systems (SAS) routing platform configured with 1536 inputs and 1536 outputs, allowing flexibility for audio routing throughout the various production spaces. The decentralized, redundant core of the system is spread through two equipment rooms on different floors and reaches out to 34 remote I/O hubs throughout the facility. The SAS system also provides facility-wide intercom functionality. The nature of the "anything, anywhere" approach required significant innovation to allow operators in each control room to be able to control the pool of shared equipment located in the centralized equipment rooms. This was facilitated by a variety of IP- and Web-based control systems. A Silex Media D.A.V.I.D. DigaSystem automation and asset management suite of products provides file-based access to the full range of content stored on the network. All audio content is stored on a 24TB Isilon storage array managed by the DigaSystem. The clustered nature of this system allows for strong-fault tolerance with a virtually limitless potential for growth. An additional 24TB of storage is available on another SAN accessible from 70 ProTools workstations throughout the facility.

The studio is based on API Vision analog surround mixing consoles configured with 40 channels of automated faders. A ProTools HD2 rig with 48 inputs and 48 outputs gives plenty of flexibility for in-room recording and mix-down. A data center provides support for next-gen IT systems. Core server systems were built with blade servers to reduce network switch and KVM port counts. They also reduce the data center's power and air-conditioning requirements. Adwar video teamed up with Whitehorse Video Productions to provide the HD video production systems featuring robotic Sony HD cameras.

Based on a hybrid multiplatform to engage audiences with radio shows, video webcasts, concerts and cultural discussions, the integrated technology, design and system integration of The Greene Space is providing WNYC with another platform to grow its audience for the broadcaster's creative lineup of compelling high-quality programming.



WPLG-TV

Excellence Award category

New studio or RF technology — station

Submitted by

Ross Video

In 2008, WPLG-TV began the process of building a new 67,000sq-ft, two-story TV facility in Pembroke Park, FL. The facility would house two studios, a satellite tower and administrative and data storage areas. A number of key objectives included making the building and key systems hurricane resilient, improving the layout, enabling an HD news workflow (including ENG) and building a production control room environment to allow newscasts to be done in either an automated or manual fashion.

Located in a hurricane zone, WPLG has to be able to remain on-air while providing critical updates to local viewers. The building structure was designed to be hurricane resistant, exceeding the South Florida Building Code, and in some instances, door and window manufacturers had to redesign and test their products to meet the requirements supplied by WPLG's insurance carrier.

Another challenge was to engineer building power and air-conditioning to survive multiple failures while keeping the station on the air. When multiple failures occur, cooling is allocated on a priority basis to the most mission-critical areas.

The building layout brings news, engineering and IT into one space to create better interaction and efficiency. The IT-centric building enables a tapeless HD workflow while housing the graphics design hub for all six Post-Newsweek TV stations.

Special acoustic considerations were also implemented in the studios and control rooms, including isolated concrete floor slabs, low-velocity air supply and separating walls with five layers of drywall and internal/external sound-absorption material.

WPLG built the HD news workflow with equipment that would ensure smooth operation. HD field acquisition is done using Sony XDCAM HD, and HD editing in the field is done with Avid NewsCutter/Mojo. Content is then microwaved back to the station and into a central storage server for playout. Due to some challenges with various file, codec and control compatibility, manufacturers also had to get involved.

Ultimately, the issues were resolved, and the result was a solid, tapeless workflow for the station. This has increased the speed and efficiency of production, resulted in operational cost-savings and allowed human resources to be better used.

The first newscast was March 28, 2009, and Phase 2 of the production control room workflow (winter 2009) will be centered on the Ross OverDrive automated production control system. OverDrive will control the Ross Vision production switcher along with other control room equipment. The planned system will provide a flexible manual or automated production approach to enable WPLG to produce more news cleanly and efficiently. ■

Design team

Beck and Associates: System design and integration
DFW: MEP consultants
Miller Construction: General contractors
Rees and Associates: Architects
WPLG: Darren Alline, chief eng.; Steve Ellis, asst. chief eng.; Darren Koski, maintenance supervisor; Juan Rodriquez, special proj. supervisor

Technology at work

Avid: iNEWS NRCS, Unity ISIS storage, AirSpeed Multi Stream video server
Beck: Broadcast service panels, consoles
ETC: Lighting control, dimmers
Evertz: Core infrastructure gear with VistaLINK monitoring, routers, multi-image displays
Ikegami: HDK 725P studio cameras
Kino Flo: Lighting
Lectrosonics: UM400A
Miranda: X play automation, Vertigo-XG graphics processor
NEC: LCD monitors
Ross Video: Vision and CrossOver switchers, OverDrive automated production control sys., openGear conversion, SoftMetal server
Raritan: Paragon KVM system
RTS: ADAM intercom
Vinten: AutoCam SP 2000 control sys. and pedestals
Weather Central: MetLine, ESP:Live HD, 3D:Live HD, RouteCast HD, NewsNavigator HD
Wheatstone: D10 and D12 consoles

WPVI-TV

Excellence Award category

New studio or RF technology – station

Submitted by

The Systems Group

Design team

Acoustic Dimensions: Acoustic design
AMA: MEP
HLW: Proj. architect
The Systems Group: Paul Rogo, proj. mgr.; Scott Griffin, PE; John Zulick, PE; Christian Dam, PE; Craig Tabler, installation supervisor/site mgr.
WPVI: Stuart Loberg, dir. of eng.; Hank Volpe, VP eng.

Technology at work

Apple: Final Cut Pro editing
Evertz: Modular gear, multiviewers, QMC master control
Florical: Automation
Grass Valley: Aurora news production, EDIUS NLE, Ignite integrated production, K2 servers, Trinix 512 routing switcher
Vizrt: Graphics

In late 2008, ABC-owned station WPVI Philadelphia selected The Systems Group (TSG) as one of its principle allies to help the station consult on, design, plan and implement a highly-effective file-based HD news, production and broadcast distribution workflow. The new station is an all-digital, HD facility that is now fully operational with its core infrastructure designed around an array of cutting-edge technology, including a variety of equipment from Grass Valley, Vizrt, Florical, Evertz and others.

WPVI was one of the country's first pioneering broadcast newsrooms to fully convert to HD back in 2006. Its goal for the newly upgraded facility was to streamline newscasts, broadcast productions and programming all in native HD around an integrated, file-based system. Another key goal was to design its facility around a flexible and efficient production and distribution infrastructure to support multiple streams of content.

The benefits of moving away from a tape-centric legacy system to a file-based workflow (from traffic all the way to play-to-air) were considerable for WPVI. The transition to a file-based workflow offered the station benefits such as content accessibility across all departments, facilitating sharing among them, and providing them with a seamless process from acquisition to transmission.

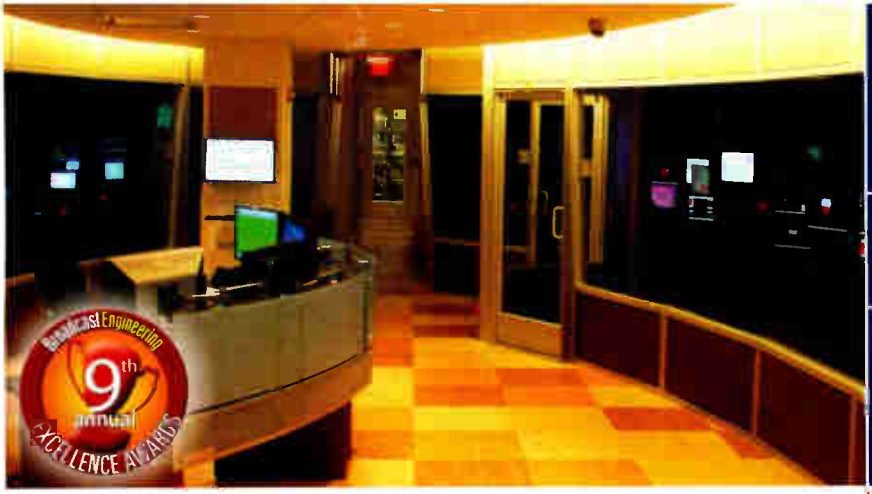
WPVI's challenge was to keep the existing facility on the air as the station migrated the systems over to the new building, continue to share content between the new and old facility, and conduct a phased cut over.

The new facility gave the station the opportunity to install all new base systems, with new master control, automation, server-based capture and playout, editing systems, and graphics. The daily file-based newscast backbone is designed around a Grass Valley SAN featuring mirrored K2 Summit HD servers, as well as the Aurora HD news production software platform, Aurora edit, and EDIUS nonlinear editing workstations. For news production, WPVI is utilizing the Ignite HD integrated production system driving Kayak HD production switchers. The creative services and local programming departments edit using Mac-based Final Cut Pro systems. For field acquisition, the station is using Panasonic P2 gear.

In master control, WPVI uses Evertz master control switchers with graphics created on a Vizrt on-air graphics platform, and all master control devices are under the control of Florical automation. A Grass Valley K2 content server farm and BaseCamp browse system is integrated with the Pathfire Digital Media Gateway system.

The facility's baseband HD signal management is based on a Grass Valley Trinix 512 routing switcher. The IT infrastructure handled the file transfer of media on fiber around the facility.

Creative engineering, thorough planning and strong project management have made the transition for WPVI an extremely smooth one. The station boosts a technologically advanced broadcast facility with enhanced workflow and content handling.



CBS

Excellence Award category

New studio technology — network

Submitted by

Pilat Media

CBS' new Media Distribution Center (MDC) in New York City replaces aging, tape-based legacy equipment in the current Broadcast Origination Center (BOC) with the absolute state-of-the-art in HD digital file server-based scheduling and playout technologies. Delivering full service in early 2010, the MDC handles up to 80 inbound feeds and 18 outbound network feeds for program playout to U.S. affiliates. Fiber and satellite links connect the 19,735sq-ft facility to CBS Television City in Los Angeles, where scripted programs are prepared for air and disaster recovery operations are located. The MDC will integrate live news and distribute live sports programs with regionalization as required and can support content for new media platforms such as CBS Sportsline, mobile TV applications and VOD services.

Key objectives for the MDC focused on automating and streamlining the workflow for all scheduling and playout operations and minimizing the potential for errors. This required a bulletproof strategy for managing internal and external resources. CBS turned to Pilat Media's Integrated Broadcast Management System (IBMS) for media management, program content scheduling and in-house technical facility scheduling.

By integrating its centralized, TV network enterprise-wide database and exploiting its comprehensive integration capabilities with other systems, IBMS is helping the MDC run at peak efficiency. Support for CBS' legacy systems enabled IBMS to provide a smooth, progressive migration path to MDC functionality. Broadcast-relevant data flows into the IBMS system from a wide variety of interfaces. Commercial and promo information are received from the CBS sales system. Program format and timing information are entered into IBMS. The system also takes in data from a separate sales traffic system for The CW Network.

Feeds from a Xytech Web service and ScheduALL enterprise resource management software provide scheduling data for external and internal routing and transmission resources, respectively. An interface with Telestream Flip Factory alerts IBMS to newly arrived commercials that are delivered as files on commercial delivery servers, and a two-way Web service interfaces to OmniBus which is the MDC automation provider. OmniBus manages and controls the movement and playout of all media operations. In addition, highly dynamic Web service interfaces handle the synchronization of schedules and playout and plant routing between IBMS and OmniBus. To close the loop, OmniBus passes as-run information back to IBMS, which in turn passes it on to the sales systems for both CBS and The CW.

Media management, performed by a joint Pilat Media-OmniBus solution, is helping CBS migrate to a tapeless environment with all the associated efficiencies. The combined system processes acquisitions, logging the details of material received into the system and manages ingest of that material to servers. In parallel, it also manages the MDC tape libraries, all within a single integrated environment.

Design team

CBS: Brent Stranathan, Howell Mette, Jay Bergman, Leslie Hanson, Barbara Santangelo, Don Fowler, Leonard Kies, Maggie Harris, Russell Khaimov, Al Heller, Chris Konoski, Eileen Pedersen
OmniBus: Sam Shore, Stu Pearce
Pilat Media: Phil Eadie, Bob Lamb, Eli Lev, Nic Bridgewater

Technology at work

Citrix: User access application running on Dell 1950s
Encore: Controlled router
Harris: Nexio AMP 3601 video servers, Velocity online nonlinear editing
HP: Blade servers
NetApp: File servers
Nortel: Ethernet routers and switches
OmniBus: Cossus automation and play-to-air system
Oracle: RAC Nodes running Enterprise Linux on Dell 2950s
Pilat Media: IBMS

Major League Baseball Network

Excellence Award category

New studio technology – network

Submitted by

Grass Valley

Design team:

Boolean Consulting: Integrators
MLB Network: Tony Petitti, president and CEO; Mark Haden, VP eng. and IT; Tab Butler, dir. media management
Major League Baseball Productions: David Gavant, VP exec. production; Elizabeth Scott, VP programming and business affairs; Jason Akira Jhung, logging supervisor
Major League Baseball – Office of the Commissioner: Peter Surhoff, VP IT ops. and tech. support; Mike Morris, VP IT application development; Padraic Boyle, business relationship mgr.

Technology at work

Apple: Final Cut Pro edit platforms
Grass Valley: Aurora HD editing platform, K2 HD media servers
Nesbit Systems: MLS tape library software
Reality Check Studios: Data processing software and intelligent interface
Vizrt: Graphic systems

Photo courtesy Bob Brower

For years, MLB Productions (MLBP) monitored the digital asset management space searching for a solution to manage its tape-based archive and growing video assets. When the new Major League Baseball Network (MLBN) was conceived, it became a renewed priority, and with the addition of this new broadcast entity, the challenge was even greater. The digital asset management system had to be cost-effective and accommodate each of the MLB entities and their various workflows. Moreover, the solution had to encompass a state-of-the-art HD production and distribution facility with shared resources to achieve each business requirement.

After investigating numerous avenues, it became clear that no off-the-shelf offerings solved MLB's myriad needs. Instead, a system was developed that integrates current, proven technologies — broadcast, production, digitization, editing — with custom-developed software to create one unified solution.

Time was a factor, and after more than six months of planning, integration and custom software development, the DIAMOND (Digitized Industry Assets Managed Optimally for Networked Distribution) system was launched in January 2009. Employing a cross-platform solution with several servers on the backend for redundancy and more than 16 logging workstations, DIAMOND was to be MLB's system for finding the proverbial "diamond in the rough" when searching, retrieving and repurposing content on a daily basis.

This logging, search and retrieval system interfaces closely with Grass Valley shared storage, an Aurora HD news editing platform and K2 media servers; Apple Final Cut Pro workstations; and a variety of other systems, including the Nesbit MLS, Vizrt graphics (controlled by Reality Check Studio) and in-studio scoreboards and displays. Leveraging a sophisticated ingest solution that brings video feeds from each ballpark into K2 encoders with the Aurora platform to manage the audio and video assets, DIAMOND embraces a range of content, including live game coverage, press conferences, field interviews and melts. Access to MLBP's vast historical archives is accessible through the system.

Going well beyond raw video footage, the detail of every pitch and result is recorded into the system live through a robust logging interface that tags a specific piece of video to an event via time codes. This is accomplished with MLB.com stringers, located at each game, that send pitch-by-pitch and play-by-play information back to Secaucus, where MLBP loggers marry the data with the game video in the DIAMOND Logger system. Additional descriptive/color information (craft logging) is added by these loggers to embrace the moment of the event in greater detail. On average, several hundred events — above and beyond the pitch-by-pitch metadata — are logged per game.

DIAMOND enables content to be searched, viewed and retrieved quickly by editing systems, speeding the editing of highlights and segments that need to be sent to air quickly, sometimes less than 30 seconds after a play has occurred. The system has proven to be an invaluable tool to multiple MLB entities mostly because its flexible architecture takes an enterprise-level approach to solving a greater problem that is not just specific to studio production.

Trans Video Communications' NET

Excellence Award category

New studio technology — network

Submitted by

Broadcast Integration Services

When Trans Video Communications (TVC) decided to launch the NET, a 24-hour-a-day, seven days a week, faith-based cable TV network based in Brooklyn, NY, it turned to Broadcast Integration Services (BIS) for the design and build of its new facility.

The new facility needed to support TVC's 24/7 operation and the focal point of the network's launch — "Currents," a half-hour news magazine program produced daily for air. The design of the new facility would need to integrate all the elements of daily news production, programming and live production together. The sharing of all media resources and leveraging current advances in technology was going to be key to the facility's success.

To achieve a high level of interoperability among systems and create efficiency during daily production while maintaining quality, BIS and TVC implemented an integrated production system (IPS). BIS and TVC leveraged advances in control room automation to enable a smaller staff to execute production and meet the demands of a daily news show. The IPS streamlined and automated a number of systems during production, including the production switcher, audio mixer and graphics/CG. The result was the building of a highly integrated production facility that minimized operating expenses and maximized production capabilities.

From field acquisition to editing to live production, all elements are integrated together. Daily field footage is shot on Panasonic P2 media and then directly transferred to Final Cut Pro (FCP) stations located in the newsroom. Show elements created in FCP are directly rendered to a series of Harris HDX video servers. The servers are configured to allow the FCP stations to access all the media located on the servers and directly render or mix elements to produce show segments instantaneously for daily production.

The production staff composes daily shows by entering show elements into the automation production playlist software. The software directly interfaces with all equipment during production. Users can select video clips stored on the Harris servers. Camera shots via Telemetric's robotic touch-screen system, graphics from the Avid Deko and audio accessed from the Yamaha LS32 digital audio mixer are all controlled and automated during production. The system's ease of operability allows users to adjust elements on the fly. Additional operational and maintenance efficiencies were achieved by implementing a Harris Platinum video routing system.

This system included an integral Centrio multiviewer and monitoring system. This integration of the router and multiviewer allows TVC production staff to display any router source instantly on any of the three main production control room screens, including tally and UMD information.

BIS also designed the production control room to operate independently without the use of the IPS, giving TVC ultimate flexibility to determine the operating mode that best suits its production needs.

Design team

Barbizon: Tom Casazza, lighting
BIS: Joseph Policastro, proj. mgr., Kevin Henneman, logistics; Andy Morris, eng.; Robert Gilmartin, eng.; Adam Semcken, eng.; Judi Southard, mgr; Mike Miniaci, integration supervisor
Boyce Products: David Boyce, set design
Janson Design Group: Joe Montalbano, dir. of arch.
Ross Video: Jeff Dryer, OverDrive training and support
TBC Consoles: Steve Struhs
TVC: Juan Morales, dir. of eng.; Kevin Cianciulli, chief eng.; Christopher Quinn, GM; Cedric Chin, studio dir.; Robert A. Ruggiero, dir. of prog.

Technology at work

Avid: Deko graphics
Evertz: Timing equipment
Facilis: Shared file system
Genelec: Speakers and audio monitor
Harris: Centrio image display device, FCP gateway, Nexio server system, Platinum routing switcher, T&M
Hitachi: Camera systems
Marshall: Video monitoring
Panasonic: P2 recording and playback media, LCD displays
Raritan: KVM system
Ross Video: OverDrive
RTS: Intercom
TBC: Broadcast consoles
Telemetrics: Camera robotics
Vinten: Studio pedestals
Yamaha: LS32 digital audio mixer

TV Globo

Excellence Award category

New studio technology — network

Submitted by

GLOBO Comunicação e Participações SA

Design team

TV Globo: Mauricio Felix, proj. mgr.; Julio Lima, proj. coordinator; Filipe Forte, proj. eng.; Silvio Pereira, R&D mgr.; Daniel Monteiro, proj. coordinator; Luiz Carlos Abrahão, maintenance mgr.; Alvaro Antelo, sys. researcher; Evaldo Ferreira, support eng.; Marcelo Ibrahim, news op. mgr.; Luis Domingos, news op. supervisor; Luiz Rabello, news op. mgr.; Anderson Gazio, news op. supervisor; Marcello Azambuja, proj. coordinator (Globo.com)

Technology at work

Dell: MD-1000 storage, ML family tape library, PowerEdge servers with Matrox XMIO2 board
Evertz: VIP multiviewer
Genelec: 8030 audio monitor
Hewlitt-Packard: ProCurve switcher
MySQL: Database
Sennheiser: Headsets
Sony: Luma family monitors, XDCAM PDW series, XPRI editor
Wohler: AMP1-S8 audio monitor

TV Globo strategically decided to deploy a file-based sports production system to provide sports content for a multimedia environment that includes terrestrial TV, pay TV and new media (Internet and mobile). This decision was motivated by the workflow and editorial quality improvements that file-based systems offer when compared with the linear-based process.

Three major steps were taken to accomplish the project's goals:

- Migrate from linear to nonlinear editing and playout systems;
- Implement ingest channels, central storage and logging systems; and
- Integrate with new media content platforms.

The first step started May 2008 by replacing the tape-based workflow with nonlinear edit suites and playout servers. From November 2007 to May 2008, TV Globo and Sony worked together to refine the XPRI nonlinear editing station. Then, a major effort was undertaken to train all image and text editors on the use of the new platform. Each editing suite comprises one XDCAM deck and one editing station. Content is ingested through the Ethernet interface to the local hard drive of the XPRI edit suite, or to a central storage where image editors have an individual amount of space to share content in a contributive way. Edited material is then exported through a 10Gb/s data link to the playout servers installed in the news control room.

The second step started with a fruitless market search for a tapeless system that would integrally adhere to the desired workflow. TV Globo then decided to develop a solution using its engineering departments. The main goal was to create a system capable of simultaneously recording, logging live feeds and making all this content immediately available to the editors. Based on IT servers, the system comprises a mirrored 3400-hour storage system, 14 ingest channels, 14 live logging stations, nine nonlinear editing suites, two mirrored playout servers and a structured gigabit network with 10Gb/s uplinks. In January 2009, the system went operational, allowing editors to quickly search, review and retrieve recorded material.

The third step was delivered in August 2009, when content stored in the sports server was made available to new media platforms. Raw and edited material could be retrieved from the central storage and delivered to any of the four editing suites dedicated to new media production. Once edited, a pool of render servers is accessible by all nonlinear editing stations to automatically convert the final edited clips to the desired output format.

With this system:

- Material is available to all editors simultaneously, no copy is needed, and content is ready for editing just a few seconds after the recording has started.
- Editors are able to produce more and better stories due to a richer database available in the central storage.
- The content in central storage is available to many new media platforms. ■

Arizona State University

Excellence Award category

New studio technology – HD

Submitted by

Sony Electronics

A journalism curriculum is best taught in the studio and in the field, with students getting hands-on experience. That's how the Walter Cronkite School of Journalism and Mass Communication at Arizona State University is carrying out its mission of preparing students for careers in the broadcast and digital media industries. The school recently moved into a new six-story, 223,000sq-ft, state-of-the-art complex in downtown Phoenix, where students have access to a range of HD technologies from Sony Electronics, helping them learn from the classrooms to the field.

"Everything we've done here has been for the purpose of giving our students the tools they need to learn their craft and future profession and to tell much better stories — whether they are reporting news, covering events or working with new media," said Chris Callahan, dean of the Cronkite School. "We're excited about the potential this technology has to create new types of learning possibilities."

The school's new home includes digital newsrooms, new media laboratories, computer labs, TV studios and control rooms, and dozens of digital editing bays. When the school started the TV program, it was a completely analog facility. The new downtown facility is completely HD.

The Cronkite School has two broadcast control rooms, one for daily news operations and another — called the Sony Television Studio — mainly used to train freshman and sophomores. The equipment in these rooms includes Sony HDC-1400 studio cameras, an MVS-8000G production switcher and the ability to control HDCX-310 robotic cameras in other parts of the building.

The students are also getting plenty of hands-on experiences with the company's XDCAM EX series compact memory camcorders, going into the field daily to gather content that is used for a variety of video projects, including "ASU NewsWatch," a live 30-minute newscast produced by the students four times a week. In addition, the school houses 40 PMW-EX1 camcorders. Students learn on the same state-of-the-art equipment that is used in the professional newsrooms and studios that they will soon be entering.

The Cronkite School also shares spaces with KAET-TV, the public TV station in the Phoenix metro area, giving students yet another opportunity to operate in a live news environment. The newscast is not solely ASU-specific. It covers ASU news, but it is also an Arizona newscast. Students cover stories at the state capital that some towns wouldn't necessarily send a crew to cover.

In addition to the EX cameras' flexibility and speed, students are also benefiting from features such as professional XLR microphone inputs and level control, manual focus, manual iris and white balance filers, as well as its picture composition and lighting capabilities. "They're learning the technology that any ENG shooter would be using today and getting a full experience," said Jim Dove, chief broadcast engineer for the school.

"We need to have the most up-to-date equipment and the relationship we've built with Sony is enormously important as we continue preparing students into the next century," Callahan said.

Design team

BFA: John Brooks, broadcast consultant
Ehrlich Architects and HDR
Kearney Electric
MCH: Randy Willis, A/V consultant
Sundt Construction
Walter Cronkite School of Journalism and Mass Communication: Jim Dove, chief eng.

Technology at work

Sony Electronics: HDC-1400 studio cameras, HDCX-310 robotic cameras, MVS-8000G production switcher, PMW-EX1 camcorders, XDCAM EX series compact memory camcorders

Dallas Cowboys Stadium

Excellence Award category

New studio technology – HD

Submitted by

Burst

Design team

Burst: Don Rooney, VP eng.; Grant Knox, design eng.; Andy Morris, design eng.; Nand Ganesh, test/commissioning; Dave Stengel, proj. mgr.; Danny Rowland, lead installer; Christian Freeman, lead installer; Letha Koepp, admin. proj. mgr.
Dallas Cowboys: Dwin Towell, dir. broadcast eng.

Technology at work

AJA: Conversion/frame syncs
Apple: Final Cut Pro
Avocent: KVM switch
Canon: HD POV camera
Chyron: HyperX3 CG
Click Effects: HD Crossfire
DNF: Controllers
Drawmer: D-CLOCK word clock measurement and DA
Evertz: EQX router with XLINK, Quartz port router, VIPX multiviewers, Xenon audio router with MADI/TDM
EVS: XT2 production server
Fast Forward Video: Elite HD DDR
Harris: NEXIO servers
Image Video: Tally interface
Riedel: Artist 128 intercom
Sony: HDC-1450 and HDC-X310 cameras, HDCAM, XDCAM, LCD displays, MVS-8000G switcher,
TBC: Consoles
Tektronix: WFM7120 scopes

Thanks to 16 HD cameras and thousands of HD displays throughout the new Dallas Cowboys Stadium, spectators can enjoy a live, up-close look at game-day activities, including tailgating, behind-the-scenes views of players and cheerleaders, and a sense of the overall atmosphere that permeates the largest domed stadium in the world.

Systems integrator Burst provided the detailed design, systems integration and project management of the HD production control rooms and central equipment room that feeds video signals to the massive HD screens, as well as thousands of additional HD displays located throughout the facility.

The stadium supports live broadcasts, production and post production in HDTV, as well as an in-house multichannel HD IPTV cable system for targeted advertising throughout the venue. In addition to the main control room, the facility has two auxiliary control rooms, a rack room with 35 8ft equipment racks and an owner's perch with eight dedicated replay devices.

The design for the control rooms in the new facility called for 1080i systems capable of delivering high-quality video to showcase the large HD screens while being flexible enough to handle a variety of events ranging from a simple conference in one of the stadium's meeting rooms to the Super Bowl.

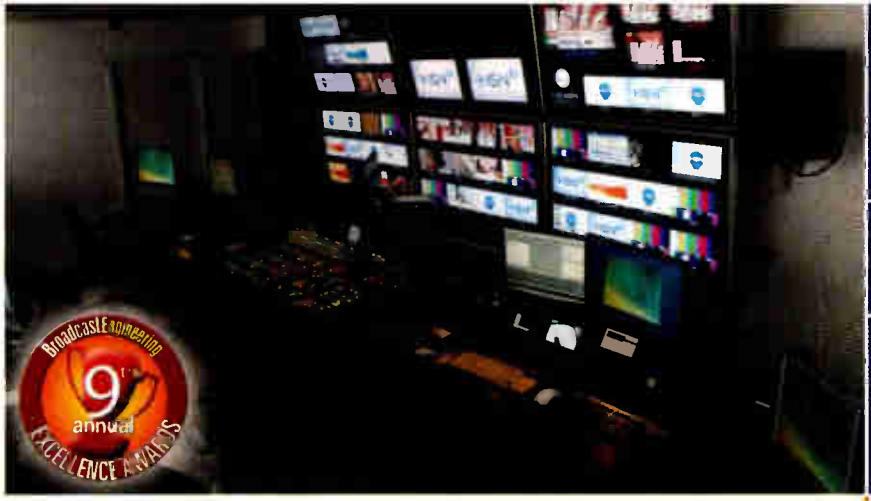
Building a TV production control room and supporting infrastructure in a massive facility that is under construction presents a variety of challenges and requires significant coordination and cooperation between interrelated trades and the general contractor. When multiple subcontractors are sharing a common overhead cable tray, a high level of cooperation and respect for each other's work is required.

The new control room facility relies on Evertz for the core systems such as sync generation, routing, distribution, conversion and multi-image displays. The routing fabric consists of an EQX 288 x 288 HD-SDI frame populated as 144 x 144, two Xenon frames with a capacity for 256 x 256 populated with 32 x 32 analog audio and 160 x 160 AES audio matrices. These two audio frames are integrated with a MADI/TDM interface that allows seamless A/D and D/A audio conversion within the router. At the heart of the main control room is a Sony MVS-8000G HD switcher. The control panel can directly control 13 router destinations through the use of an Evertz protocol translator.

Recording and playback are via a variety of devices that include a six-channel EVS system, two record/four playback channels of NEXIO server, a two-channel Crossfire, three Chyron HyperX3 CGs, and Sony HDCAM and XDCAM transports.

A Riedel Artist 128 matrix frame ties together all internal Riedel functions and integrates with external devices such as two-way radios, wireless intercoms and wireless IFBs, and it can be linked with other intercom systems.

This state-of-the art facility provides high-quality images to thousands of HD displays, has the flexibility to integrate with network production trucks and other outside systems, and will help set the tone for future stadium control room design.



HSN

Excellence Award category

New studio technology – HD

Submitted by

Sony Electronics

Interactive lifestyle network and retail destination HSN made the leap to HD production, adding 43 Sony HDC-1400 studio cameras and three Sony MVS-8000G production switchers to its seven-studio facility in St. Petersburg, FL.

The upgrade is part of HSN's efforts to create an end-to-end HD solution for the network. HSN is in the process of building an entirely new fiber-based HD infrastructure that includes the MVS-8000G switchers, digital audio controls and a new main router that allows for one centrally located camera-control center.

The HD upgrade project also includes XDCAM HD 422 PDW-700 camcorders, PDW-HD1500 decks, Sony BVM-L230 master monitors and an assortment of Sony LUMA LCD production monitors.

The network, which reaches more than 92 million households, selected Sony's HD technology for its "proven track record of superior sales and technical support," according to HSN.

"The TV screen is our storefront window, so it's important that we present our products using the highest quality presentation available today," according to the network. "HSN has been a 'Sony house' for some time, and they have been the perfect company to guide us as we enter the world of HDTV. Because HSN broadcasts live, 24/7, we turned to Sony not only for its best-in-class technology, but for its reliability and familiarity. Keeping the learning curve minimal for our crew was essential in order to maintain full operation of the network during the transition."

Design team

Ascent Media: Brian Reitmeyer, proj. mgr.; Greg Abel, proj. lead eng.; John Carpenter, design eng.; Les Correia, design eng.; Harry Thompson, design eng.; Aaron Stevens, proj. leader; Jonathan Kennedy, installer; Tai Bi, installer; Luong Bi, installer; Tom Sonjai, installer; David Allen, installer; Jace Reiken, test and commission eng ; Chip Broadwell, test and commission eng.

Technology at work

AJA: Converters
Autoscript: Teleprompting
Calrec: Digital audio console
Canon: HDTV lenses
Chyron: CG
Clear-Com: Intercoms
Cisco: Networking
Evertz: Analog-to-AES converter, audio mixer, distribution amplifiers, router
JBL: Speakers
Middle Atlantic: Speakers
Radio Design Labs: A/D converters
Sony: HD studio and portable cameras, LUMA LCD displays, MVS-8000G switchers, XDCAM HD 422 PDW-700 cameras, PDW-HD1500 decks, BVM-L230 master monitors
TC Electronics: Processing
Wohler: Digital audio monitors

KCSM-TV

Excellence Award category

New studio technology — HD

Submitted by

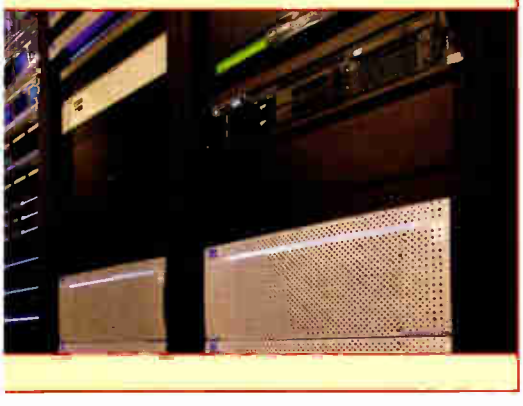
Omneon

Design team

ASG: Sales staff
KCSM: Chris Phillips, eng.; Hanns Ullrich, eng.; Michele Muller, dir. of tech.; John Hall, KCSM sr. editor; Marilyn Lawrence, gen. mgr.
Omneon: Eng. staff
Sundance: Eng. staff

Technology at work

Omneon: Spectrum media servers, MediaGrid active storage sys., MediaDeck video server, ProBrowse media proxy sys.
Rhozet: Carbon transcoder
Sundance: Automation, archive manager
Tektronix: Cerify automated video test sys.



KCSM's television and radio stations, licensed to the San Mateo County Community College District, made their broadcast debuts in 1964. From its broadcast facilities in the San Francisco Bay Area, KCSM-TV serves the nation's sixth-largest TV and radio market. The station boasts a coverage area that includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma counties. Additionally, KCSM is carried on 60 cable systems in the Bay Area, and more than half a million viewers tune in each week.

The station broadcasts around-the-clock with a professional staff while also serving as a learning laboratory for students enrolled in the College of San Mateo Broadcasting Arts Department. It is particularly sensitive of the need to do more with less, even while meeting consumer demand for premium broadcast content. Thus, to take advantage of the cost and time efficiencies of file-based production and to make a smooth shift to HD, the station undertook a significant expansion of its Omneon media storage and processing platform.

To grow its proven operational model into the age of digital television, HD and distributed media, KCSM chose to leverage the success of its Omneon Spectrum on-air server, adding to its bandwidth, expanding its storage, adding HD capability and integrating the system into the station's existing production environment. KCSM expanded its Spectrum system to accommodate eight HD/SD bidirectional channels and eight HD/SD playout channels, supported by automatic upconversion and operating under the control of Avid Sundance automation.

A new Omneon MediaGrid active storage system provides 240TB of raw storage and enables ready access to stored content via a high-bandwidth 1/10GbE network infrastructure. KCSM also purchased a new Omneon MediaDeck system to support live production, and the system provides four bidirectional channels with eight 500GB disk drives (a total of 3TB), as well as a complete ProBrowse system with two proxy generators to speed and simplify media browsing and access.

The newly enhanced Omneon platform has allowed KCSM to migrate smoothly away from costly videotape operations and to incorporate HD support without the need to invest in a new server system. The media storage and processing platform, delivered by systems integrator Advanced Systems Group, enables KCSM to digitize its existing video tape library; acquire, store, and broadcast both SD and HD video; and access all of its video assets with ease. Equally important, the upgrade has positioned the station to handle the new distribution and acquisition formats of PBS, Public Television and the San Mateo County Community College system.

Together, systems within the Omneon platform provide cost-saving efficiencies throughout the station's workflow, in turn empowering KCSM to continue its dedication to providing a high standard of programming to viewers across the Bay Area and to serving the educational goals of the San Mateo County Community College District.

SPEED

Excellence Award category

New studio technology — HD

Submitted by

Dalet Digital Media Systems

SPEED, the American cable TV network dedicated to motor sports, was looking for a system that could manage high-volume workflows in HD. "We did not want to be locked into one protocol," says Richard Miner, senior VP for production and network operations at SPEED. "We wanted the ability to be flexible. Relying on open standards was absolutely key to us."

SPEED chose Dalet Enterprise Edition to manage media and metadata across the ingest, production and distribution chains. Built on open standards, the system integrates seamlessly with standard IT equipment and broadcast products including Omneon video servers, Apple Final Cut Pro editors, DataDirect Networks SAN production storage, Front Porch Digital hierarchical storage management and IBM LTO tape library for archive.

The network operates at peak performance on weekends with scheduled broadcasts involving multiple feeds of multiple races from global venues, many at simultaneous or overlapping times. Dalet Ingest Manager enables a small crew to control and monitor 40 ingest channels and log editorial metadata, all recorded in DVCPRO HD.

HD content goes immediately to the production storage. Dalet simultaneously generates a low-res proxy, which enables 125 producers and assistants to simultaneously make rough cuts or even full melts using desktop editing tools. They can also use the search tools to browse the content catalog for additional materials. Packages are sent via Xtend to Final Cut Pro editors who finalize material in HD. Scripting and rundown creation is also done in the Dalet system.

All the created assets are used to their maximum potential. "Whether it's for the Web, for an iPod, VOD or the linear network, they are all working in the same bullpen, cutting the same material," Miner says. "The only question is how it will be transcoded for where it's going at the back end. Are we sending it from an Omneon down the line as video to master control in [Los Angeles]? Or converting it to files going to Hulu or iTunes? Or putting it on Speedtv.com? It doesn't matter. Dalet manages all of that in the background with watch folders that dictate the necessary formats and transcodes, and it pops out the other side."

Miner says the archive and partial restore capability in Dalet is "absolutely essential" to SPEED. It allows HD content archiving and partial restore at any time by managing content on both online and nearline storage. ■

Design team

Dalet Digital Media Systems: Thomas Zugmeyer, product mgr.; Daiva Lomsarge, proj. mgr.
SPEED: Richard Miner, sr. VP prod./network op.; Tom Creter, VP eng.

Technology at work

Apple: Final Cut Pro editors
Dalet Digital Media Systems: Enterprise Edition MAM
DataDirect Networks: S2A storage sys.
Front Porch Digital: DIVArchive content storage management
Hewlett-Packard: EVA 4400 storage array
IBM: LTO tape library
Omneon: MediaGrid storage sys.

UNLV

Excellence Award category

New studio technology – HD

Submitted by

AZCAR

Design team

AZCAR: Joe Persico, proj. mgr.; Steve Weiner, business development; Michael "Spike" Jones, solutions dir.; Hakim Kharbut, lead eng.; Neil Sutton, installation supervisor; Kneil Fullem, IT eng.; Sean Kennedy, IT eng.; Guy McCombs, eng.

Russ Berger Design Group: Russ Berger, president, acoustical design; Richard Schrag, acoustics and architectural eng.

UNLV: James Fernane, proj. mgr.; Dr. Lee Bernick, dean, Greenspun College of Urban Affairs; David Reese, general mgr., KUNV; Laurel Fruth, general mgr., UNLV-TV; Michael Piper, media network eng.; Dan Grimes, mgr. of instructional production and eng.

Technology at work

Avid: iNEWS NRCS, ISIS storage, NewsCutter video editing software
Avocent: HMX 1070, AMX5121 KVM
Cisco: Catalyst 6500, 2960 and 3960 switches
Clear-Com: Eclipse Median 64 intercom
Fujinon: XA22x7BES-SS-XA22 lenses
Harris: Platinum router, distribution, Predator multiviewer, VTM-4100 monitor
Image Video: TSI-1000 tally
Marshall: V-R44P monitors
Miranda: picoLink broadcast converters
Omnirax: Consoles
Panasonic: AJ-HD1400 DVCPRO HD VTR
Rorke Data: Galaxy LX4 NAS
Sony: HDR-UX20 camera, HDC1400 camera, PDW700 CineAlta cameras, MVS6000-HD switcher

Preparing the future workforce to support the evolution in digital media and mass communications requires providing state-of-the art facilities and systems that include current technologies and platforms to address the needs of today and tomorrow. Such a center was completed by AZCAR this past October in Las Vegas.

The Greenspun School of Journalism and Media Studies (JMS), located on the University of Nevada at Las Vegas (UNLV) campus, is home to KUNV, the university's on-campus FM radio station, and UNLV-TV, its self-supporting TV production unit. In addition to providing a solid teaching environment, UNLV-TV and KUNV also serve the larger community by producing and delivering educational content for and about the university to the community.

In 2008, the school moved into Greenspun Hall, a new $92 million, 117,000sq-ft building that is one of the most innovative journalism buildings in the country, emphasizing a converged media curriculum for the dissemination of messages via a multitude of platforms. This all-digital network-based HD broadcast facility includes TV studios, radio production and performance studios, writing labs, advanced editing labs, a converged media lab and a 200-seat auditorium built to accommodate video and audio production.

AZCAR and UNLV staff created a sophisticated media production, broadcast and educational environment aimed at preparing students for the future of journalism and mass communications industries. The environment was created to allow for different workflows other than those found in typical broadcast or production facilities. Through the use of HD field and studio production systems, the TV facilities use network-centric systems coupled with traditional linear (live) studio production equipment as the foundation for the teaching processes.

Beginning in mid-2009, the radio and TV studios commenced operations from the new hall. Live TV production is supported by two production control rooms (one built out, the second is planned) servicing the two studios. Four Sony studio cameras and associated handhelds are sharable between studios. Built to address the future, the signal infrastructure uses extensive GigE, HD-SDI and fiber transports (Sumitomo FutureFLEX tubes installed throughout) that enable distribution of HD content campuswide. UNLV chose 720p and XDCAM 422 encoding as its native formats.

Editorial and news production systems are by Avid, consisting of iNEWS, Interplay and ISIS storage. A 16-seat nonlinear editing lab is used for instructional and production purposes, in addition to six NewsCutter stations employed to produce news content for UNLV-TV broadcasts. A field production flypack, consisting of Sony Anycast and four XDCAM EX3 HD camera systems, allows students to produce live programs throughout the campus or beyond.

The building is built to LEED certification standards complete with a 150kW photovoltaic array that provides sustainable energy for the building. The facility offers tremendous hands-on opportunities for students to experiment, create and produce media content.

WDSE-TV

Excellence Award category

New studio technology — HD

Submitted by

Heartland Video Systems

WDSE-TV, the PBS affiliate in Duluth, MN, and Heartland Video Systems started planning the rebuild of the WDSE master control room in early 2008. At that time, WDSE's digital broadcast stream consisted of an HD rebroadcast from PBS; an SD rebroadcast of PBS Create, an SD channel that also fed the analog transmitter; and the MN Channel, a service consisting of Minnesota government sessions and local series programming.

The primary goal of the project was to provide a fully functional master control switcher for all four services as well as to make all of WDSE's content available on all services.

The primary design departure from the traditional HD/multiple SD system is that all content is ingested into the server in 1080i, switched through all the master control channels as 1080i and then cross- or downconverted just prior to encoding and transmission using Miranda XVP-1801 cards. While it might have been expected that this approach would have increased the cost of the project, it actually reduced the overall cost. Because a majority of the equipment already in the facility allowed for the output format to be set as HD regardless of the source material, the need for format conversion was greatly reduced. The Bitlink IRDs for PBS were all able to be reconfigured at no cost, and the TANDBERG RX1290 receivers were licensed for upconversion. The remainder of the SD equipment uses a small pool of AJA FS1s for upconversion. This concept also provided a natural level of redundancy for bypass switching because everything is in one format.

The existing Omneon server was upgraded with new HD media ports and a modest amount of additional storage capacity. NVerzion's TeraStore provided 72TB of nearline storage to handle all the HD content. An Omneon ProBrowse proxy server was included in the system to allow remote monitoring of content, and Utah Scientific's MC-400 switchers are fully SD/HD configurable and were set up to switch in HD.

A challenging aspect of the project was the requirement to build the new master control room in the same physical space and not interfere with daily operations. Two edit suites adjoining the existing master control room were combined to provide space for the new equipment room. The new equipment was installed and made operational, and the master control room was temporarily moved to an unoccupied office down the hall. Utah Scientific's MC-2020 master control console and the Miranda Kaleido-X multi-image processor made it possible to set up a temporary master control without moving much equipment. When the master control room was moved back into its permanent home, the NVerzion automation system was put online, automating all switching, recording and server playout.

All of WDSE's local programming is now being done in HD. The Snell Kahuna allowed for reconfiguration of its output to feed HD to the WDSE plant. At the input side, the Kahuna can accept SD or HD sources and transition between the two. ■

Design team

HVS: Dennis Klas, president/design eng.; Chad Ohg, sys. eng./proj. mgr.
Nverzion: Reed Haslam,dir. of sales; Larry Tsosie, sales and proj. mgr.; Lynn Williams, eng. proj. mgr.
Omneon: James Skupien, regional sales mgr.; Ben Frost, sys. eng.; Ron Schultz, field service eng.
WDSE: Rex Greenwell, dir. of eng. and ops.. Alroy Kessler, eng.; Jay Conley, eng.

Technology at work

AJA: FS1 up/down/crossconversion
Blackbox: KV 15xx series KVM switch
Ensemble Designs: Avenue dual sync generators with changeover switch, Avenue analog and digital distribution amps, Bright Eye analog/digital conversion
Middle Atlantic: LD series command consoles, MRK series equipment racks
Miranda: Densite series A/V processing, IRD-38xx series MPEG decoder/processors, Jazz upconversion, Kaleido-X multi-image display, Vertigo XG graphics
Nverzion: NTime, NGest, NControl, NView, NConvert automation, Terra Store nearline storage
Omneon: Pro-Browse proxy server, Spectrum HD server
Snell: Kahuna production switching
TANDBERG: Encoding sys.
Tektronix: Video monitoring/timing
TV Logic: LVM-241W and LVM-171WP video monitors
Utah Scientific: MC-400/4000 master control switching and branding, UTAH-400 routing switcher

WVIT-TV NBC Connecticut

Excellence Award category

New studio technology — HD

Submitted by

Broadcast Integration Services

Design team

BIS: Joseph Policastro; Adam Semcken, lead design eng.
KMH AV Integration: Kevin Henneman
WVIT Engineering: Joe DiMaggio, Mark Chase, Ed Rankin, Jack Kane, Karen Bradshaw

Technology at work

Avid: iNEWS news automation
Canon: Lenses
Evertz: Reference headend
Grass Valley: K2 Classic under Aurora Play
Miranda: Densité control, K2 multi-image monitor processor, NV9000 router control, Symphonie imaging frame
Ross Video: Vision mixer
Sony: HDC-1000, Bravia production monitor
Tektronix: WVR-7120 T&M
Wheatstone: D10 audio mixer

NBC owned-and-operated WVIT NBC Connecticut engaged KMH AV Integration in July 2008 to begin the planning and design for its new HD facility located in West Hartford, CT. Led by Keith Barbaria, director of technology and engineering for WVIT, design and operational goals were set in place to establish a wideband routing and distribution core, HD news production from the studio facility, and a migration to a tapeless editing and playback system using video server technology and shared storage. Additionally, WVIT required cabling infrastructure that would allow for maximum flexibility supporting today's high data rate signals while at the same time providing future growth and compatibility. To this end, a combination of single-mode fiber and Category 6A cable was installed throughout the facility with project partner Bascom Technologies.

KMH also needed to account for various analog 4:3 and 16:9 widescreen SD signals that would be integrated into the newscast. Equipment list development and systems design was completed in December 2008, and after a short period of equipment procurement, off-site staging began at KMH sister company Broadcast Integration Services (BIS). Approximately 70 equipment racks and more than 10,000 cables were prefabricated and loaded in racks and jackfields at the BIS facility, located in Union City, NJ, to be delivered in phases at the station in Hartford. KMH provided project management and coordination between the integration effort and the various construction trades, allowing the installation to progress smoothly. More than 90mi of cables were installed throughout the facility, including multiple system interconnect (BSP) locations on the studio and news floor, conference rooms, truck docks, satellite farms, and a roof location.

KMH began systems testing in late April 2009, with systems training and commissioning commencing in mid-May. To help WVIT ease into the migration to a server-based workflow, KMH used parallel installation teams to bring specific systems online to support user training and the timely ingest of tape-based media that would form the foundation of the first HD broadcasts from WVIT. With WVIT's engineering team maintaining two facilities and working with KMH during integration, rehearsals began in mid-June. Station engineering with KMH began the phased transition from the old facility to the new one by executing a series of well-coordinated system cut-overs maintaining divergent, redundant transmission paths until the move to the new building was completed.

With Phil Speliopoulos, WVIT production manager, heading up the training effort, the station quickly began to refine its operational workflow. A successful launch was executed on July 16, 2009, and without skipping a beat, WVIT NBC Connecticut delivered the first HD newscast to eager audiences. Subsequent successful launches of the DTV subchannels 30.2 Weather Plus, 30.3 Universal Sports and 30.5 WVIT (Web) were executed shortly thereafter, allowing WVIT to say goodbye to its old facility and become the first station in Connecticut to offer HD newscasts to its viewers. ■

First Christian Church

Excellence Award category

New studio technology — nonbroadcast

Submitted by

Ross Video

Several years ago, the leaders of First Christian Church in Huntington Beach, CA, were faced with a challenge. Attendance had picked up substantially, and it had become difficult to fit everyone inside one venue at one time. It was time for overflow, and the church leaders wanted a nontraditional approach, something different than a room with a live feed. However, First Christian Church's 100-year-old buildings didn't allow for modern churchgoers to experience church in a nontraditional way.

In an effort to provide more space and a variety of programming, the decision was made to offer multiple simultaneous services in different venues on campus by way of video. The idea seemed to attract more people, but with out-of-date facilities, SD and terrible parking, the only solution seemed to be a campuswide redevelopment.

With limited venue experience, the church leaders knew it was essential that a consistent theme and message be delivered, while maintaining their own identity and variety of programming in the newly constructed venues. With these criteria, First Christian Church put their faith in the design build team of Mankin Media Systems from Nashville, TN. Mankin worked closely with Shane Skaggs, video director at First Christian Church, to maximize dollars and equipment while keeping the consistency required.

A decision was made to build one central master control suite that would be the bridge to and from all of the church's venues. While on the same property, the venues would be in different buildings and have simultaneous programming. The master control would be side-by-side control rooms that could switch shows in any venue at any given time. At the hub of the control room is a Ross Video Vision multidefinition production switcher, while other major components included Harris Platinum routing, with built-in dual Centrio multiviewers; Apple Xsan; JVC HD ENG cameras; and Spyder from Vista Systems.

To be consistent with its message and theme, First Christian Church wanted to capture the sermon and thematic elements from its main auditorium as a package. Delivering that package in HD to venues with different programming would be more of a challenge; but to accomplish the time shift in HD, it chose a Ross Video SoftMetal video server, which has the ability to capture and play back on-cue in various venues simultaneously.

To overcome the distance between First Christian Church's buildings, fiber was chosen as the backbone of the infrastructure, with Harris and Blackmagic Design used for conversion and connectivity.

First Christian Church went live with two venues this past July 2009, with plans of all five being completed in 2010. ■

Design team

First Christian Church: Shane Skaggs, video dir.
Mankin Media Systems: Ben Mankin

Technology at work

AJA: FS1 conversion
Apple: Finalcut server, MacPro workstations, XSAN 2.2
Barco: HD8 projection
Blackmagic Design: Decklink HD Extreme, Decklink Optical Fiber, OpenGear converters
Fujinon: TH series HD lenses
Harris: Centrio multiviewers, G3 Inscriber CG, Platinum routing
Image Video: TSI 1000 tally routing
JVC: HD250 and HM700 HD cameras
Kulabyte: Flash Web delivery, H.264 conversion, RTMP streaming
Matrox: MXO, MXO2, MAX CompressHD
Panasonic: 11 and 12 series plasmas
Renewed Vision: ProPresenter, CG
Ross Video: openGear control and monitoring, SoftMetal video server, Vision switcher
RTS: Cronus IP communications
Sanyo: PLC series projection
Telestream: Episode H.264 conversion
Vista Systems: Spyder video processor
Yamaha: 01V96 consoles

Louisiana School for the Deaf

Excellence Award category

New studio technology – nonbroadcast

Submitted by

Technical Services Group (TSG)

Design team

Big Networks: Jackson Smith Thomas, CEO
Crestron: Steve Gimbert, sys. designer
Louisiana School for the Deaf: Jack Buckner, MIS dir.; Malcolm Meyers, dir. of media
Technical Services Group: Arthur "Bo" Hoover, CEO

Technology at work

Allwell: HD101 decoder set-top box
Axis: 1031m IP cameras
Cisco: Routers and switches
Crestron: QMRC IP-based enterprise control processor, e-Control IP-based control system, RoomView monitoring and control software
LG: HD plasma displays
Network Electronics: Component HD router
TSG: Custom middleware and control software
Visionary Solutions: AVN441HD encoder

The Louisiana School for the Deaf (LSD) occupies 116 acres south of Louisiana State University in Baton Rouge. The LSD campus encompasses 22 major buildings, including high school, middle school, elementary school, dormitories, physical education and stadium and auditorium complexes.

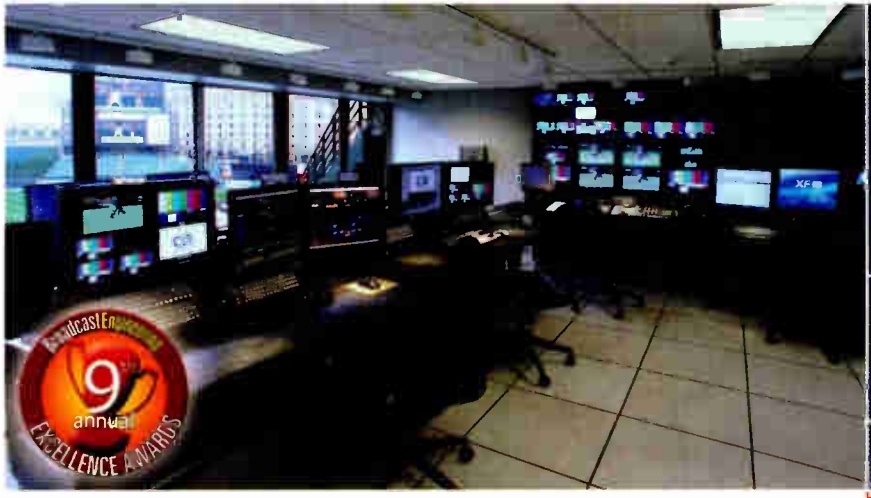
Technical Services Group (TSG) was selected to provide an HD-IPTV distribution and communications system. The project centers around the unique needs of the hearing impaired to communicate using sign language for two-way interactive communications. When the facility was first constructed in 1982, a black-and-white analog system was installed that used conventional RF distribution, analog CCTV cameras and a broadcast router to facilitate crossconnection of composite video paths between classrooms, administrative and operation locations with limited origination capabilities.

The vision of leveraging both IP and HD technology across the facilities' gigabit fiber-optic network began to take shape as LSD dealt with obsolescence of the analog system. The HD-IPTV system consists of 10 HD channels for 500 locations whereby content distribution, VOD and two-way communications was initially conceived.

The system delivers high-quality video to the 200 HD displays anywhere on campus and facilitates two-way communication, paging and emergency notification. Staff can now establish two-way video links between deployment locations on campus at 30fps across the network. Upon initiation of an emergency page or group call, remote enunciators, including strobes and audible alerts, are triggered in advance of the display's power-up and selection of the associated IP content stream. Once established, two-way video is bridged between the source and the destination. Group communications are facilitated as a one-to-many or one-to-all for departmental and emergency communications.

Many difficulties were encountered and overcome in the course of the deployment primarily related to the bleeding edge of encoder and decoder standards. While H.264 standards exist, uniform compatibility between devices presented many challenges. Reliable HD content coding with component HDMI and component video routing of locally generated content also provided unique challenges. The communications and control layer across the entire enterprise required custom software to facilitate origination and control for content channels, cameras, local interfaces to displays and remote annunciation equipment. Teachers required both desktop operation as well as remote control-capabilities to facilitate framing and operation from fixed-camera positions.

HD content channels are available via multicast, while the point-to-point and point-to-multipoint communications are bridged via H.264. The platform provides an HD video stream with scalability, quality and future capabilities never achieved before on a campuswide, enterprise level. ■



Oriole Park at Camden Yards

Excellence Award category

New studio technology – nonbroadcast

Submitted by

Communications Engineering Inc.

Baltimore Orioles fans experienced Oriole Park at Camden Yards in a whole new way when the 2009 baseball season began thanks to the debut of a new HD digital production system designed and built by Communications Engineering Inc. (CEI). The Maryland Stadium Authority, which operates Oriole Park at Camden Yards, brought in CEI to upgrade the existing analog facilities to a modern HD production facility. The new system can originate HD programming to the stadium's new HD LED video displays. The system also generates two new HD channels to add custom HD content to the in-house cable system. The project resulted in a modern-day event presentation that incorporates the latest HD capabilities. The new system includes resources to receive and record HD video and audio feeds from network television production trucks, as well as video signals from the dedicated video replay system, graphics system, cameras, satellite receivers, and other external audio and video sources.

CEI was responsible for developing engineering and operational information, while producing conceptual and detailed designs for the Oriole Park control room requirements. The project included generating floor plans, signal drawings, schedules and power requirements, as well as designing operating consoles, furniture and interfaces to existing systems. The system is designed to integrate with the HD broadcast trucks at Oriole Park, as well as Major League Baseball's Advanced Media initiatives. CEI also performed complete integration, testing and training at Oriole Park, while providing equipment and project management services for the entire modernization process, including schedule and budget controls. The system features new routing and production switching systems, monitoring equipment, fiber transmission equipment, intercom system, and HD cameras.

The project involved the first update of the control room since the stadium opened in 1992. One of the main goals was to improve the workflow in the room, and this was accomplished with more efficient digital equipment, improved consoles and a more effective layout. The existing control room was completely gutted to accomplish that goal. A key challenge was the presence of numerous trades in and around the control room at the same time CEI's work was in progress. The deadline was firm, because the facility had to be ready in time for opening day of the baseball season.

Another obstacle was the relatively low ceiling in the control room, which meant the monitor wall and racks had to be carefully designed to accommodate the space. In addition, a new HD video board had been installed at Camden Yards two years earlier, but the systems were still analog, which resulted in a more cumbersome workflow. The upgrade not only eliminated that problem, but also included a file-based workflow system that allows easy audio and video clip storage and playback. Plus, the new control room features a multiviewer at every operator position, allowing many sources to be easily viewed and managed from anywhere in the room. The end result is a more efficient system and a greatly enhanced experience for the fans.

Design team

Maryland Stadium Authority: Vince Steier, tech. mgr.
CEI: Frank Gilotti, VP president of tech. services; Brad Hughes, proj. mgr.; Felix Pena, dir. of mechanical eng.; Matt Weiss, sr. managing eng.

Technology at work

Avid: Deko on-air graphics
Canon: HJ22EX7, XJ60X9BIED and HJ17EX7 lenses
Click Effects: HD Crossfire touchscreen special effects system
Eizo: S2431WE-BK and S2100-BK monitors
Evertz: 64 x 64 dual audio router, HD monitoring and processing equipment, HD/SD-SDI reclocking distribution amplifiers, VIP-X system, VistaLink frame controllers and alarm monitoring equipment, Xenon router
Ikegami: HLM-2400 multiformat monitor
Image Video: Tally system
RGB Spectrum: DUALVIEW2 processors
Ross Video: Vision 3 switcher
Sachtler: System 90 tripod
Sony: HDC1450 cameras, HDWM2000/20 VTRs, LMD1750W, FWDS42H1 and BVMA14F5U monitors,
TBC: Custom consoles
Tektronix: WFM7120HD waveform monitors
Telex: Zeus II intercom system
TV One: C2-2105A converters
Wohler: AMP1A-LP, AMP2-S8MDA and AMP1A-4S audio monitors, HDMON 90WS video monitors

Rensselaer Polytechnic

Excellence Award category

New studio technology — nonbroadcast

Submitted by

Ross Video

Design team

Audio-Video
AZCAR
EMPAC

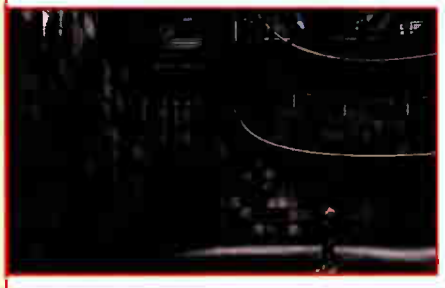
Technology at work

AJA Video: ioHD, FS1 frame syncs/converters, HDP converters
Apple: Final Cut Studio and Server
Blackmagic Design: Decklink and HDLink monitoring, mini converters, Multibridge Pro HD/SD interfaces
Canon: XL-H1 and XH-G1 cameras
Centrio: Multiviewers
Cisco: 3790 router
Clear-Com: Eclipse intercom with CellCom Wireless, VoICE and Partyline interfaces
Digital Projection: Lightning 45 HD3D 2K projectors with active 3D support
Fujitsu: XG2000C 10GbE switch
Gallery Software: VirtualVTR
Gefen: DVI, VGA and SDI over Fiber and Cat 5 extender and conversion
Harris: 6800+ DAs and fiber products, Centrio multiviewers, NEO conversion, Nucleus control panels, Platinum router, VideoTekT&M sys.
Laird: DVI over Cat 5 extenders
Lawo: MC266 mixer, Nova73 router
MOTU: V4HD interfaces
Nucleus: Conversion, timing
Projection Designs: F3+ and Cineo30 Single Chip DLP projectors
Ross Video: Vision QMD-X switcher
Sony: EX3 and HDCx310 cameras, projection sys.
Soundcraft: Vi4 mixers
TV One: C2-7310 switchers/converters
Telemetrics: PT-CP heads, RCP remote user control panels, Telepod tripods
Yamaha: DM1000, DM2000 and O1V mixers

Rensselaer Polytechnic Institute in Troy, NY, is one of the nation's oldest technological universities. Expanding its leadership in interdisciplinary research and education, Rensselaer founded the Curtis R. Priem Experimental Media and Performing Arts Center (EMPAC), a facility with next-generation presentation and production capabilities for art and science that span the physical and virtual worlds. EMPAC houses four main venues — as well as many smaller studios and lab spaces — under one roof, providing artists, scholars, researchers, engineers, designers and audiences opportunities for creative exploration.

Rensselaer faced its biggest challenge by starting from a blank page in designing and implementing EMPAC. EMPAC's engineers, in concert with other EMPAC staff and representatives from Rensselaer, worked with team members from AZCAR, Audio-Video and product vendors.

EMPAC's space, equipment and workflow needed to be reconfigurable. With little turnaround, the concert hall may be used for a live orchestral concert for an audience of 1200, a lecture series, recording solo piano work, architectural acoustic research or hosting an independent film festival. Physically, all spaces are also designed with NC15 noise floor criteria, making them ideal for live performance, recording and research platforms.



There were many vendors involved in the building of EMPAC, and flexibility was key when it came to choosing every detail. This is the main reason Rensselaer chose Ross for the switcher. The Ross Video Vision 3 QMD-X multidefinition production switcher fit the budget while leaving room for features such as VTR control, aux keys and smart conversion.

EMPAC's A/V infrastructure embraces the very latest in broadcast, live performance, post-production and research technologies. It installed an extensive cable plant of single-mode fiber, Cat 6A F/UTP and other traditional and nontraditional cable technologies to tie all the building's venues together. By doing this, any activity can be easily centralized or decentralized.

Since opening its doors in 2008, EMPAC continues to impact students, researchers, artists and audiences with opportunities fostered by leading-edge science and engineering performance technology.

The Teaching Company

Excellence Award category

New studio technology — nonbroadcast

Submitted by

Professional Products Inc.

The Teaching Company, based in Chantilly, VA, is a producer of educational courses distributed on DVD, audio CD and other media formats. The company moved its office and production facilities to a new location in Sterling, VA, in April 2009. Professional Products Inc. (PPI) of Gaithersburg, MD, designed, engineered and integrated an upgraded production and post-production system for The Teaching Company's new facility. The main goals of the new facility are to allow the Teaching Company to produce in HD video and expand its production capacity. This should accommodate the consumer market's demand for HD content.

The new production facility includes two television production studios, two video control rooms, a technical equipment core, a video mastering work area, a new XSAN storage system and a Fibre Channel network that supports post production on Apple Mac Pro workstations.

The new production system has been designed for HD 16:9 video productions using the 720p format. In the new studios, there are three HD cameras mounted on a movable jib, which allows wide cover shots as well as some overhead angles. The studio cameras and microphones are fed to an HD production switcher and a digital audio mixer. The program output of these devices records directly into the new XSAN and a DVCPRO HD VCR.

The ingest servers can encode audio at 24-bit resolution into its own unique file on the server. As a backup to the main program file generated by the ingest server, program audio is recorded on a multichannel Fostex DV824 digital audio recorder. The program audio is also recorded onto a DVCPRO HD tape, which allows full audio and video restoration should something happen to the original master production file.

A new Apple XSAN system has been used in the new facility because of storage demands. This XSAN consists of 14 Promise arrays totaling 105TB. The new storage allows The Teaching Company to produce at its current production schedule with HD data rates without impacting or disrupting its workflow.

Design team

PPI: Rick Winde, exec. mgr., designed systems group; Chuck Heffner, sr. app. eng.; Bob Myer, sys. des. eng.
The Teaching Company: Todd Tolbert, VP of tech., Brandon Hidalgo, CEO

Technology at work

ADC
AJA
Apple: Storage system
Auralex
Avocent
Biamp: Mixer and amplifier system
Chief
Christie
Clear-Com
Cobalt
Crestron
Dell
Evertz
Extron
Gallery: Digital ingest server
Harris: Timing equipment
Interpretive Woodwork & Design
Kramer
Lectrosonic
Magenta
Middle Atlantic
Omnimount
Panasonic
Polycom
Rorke Data
Ross Video
Small Tree Communications
Sony
TANDBERG
Tannoy
TVLogic
Viewsonic
Vutec
Wohler

TSA

Excellence Award category

New studio technology — nonbroadcast

Submitted by

Professional Products Inc.

Design team

PPI: Rick Winde, exec. mgr., designed systems group; Chuck Heffner, sr. app. eng.; Matt Franklin, sys. design eng.
TSA: Bruce Meermans, asst. dir., emerging technologies; Sterling Payne, acting deputy asst. admin.

Technology at work

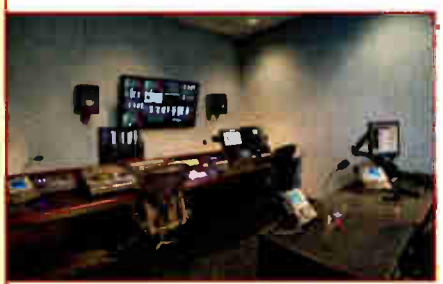
ADC
AJA
Analog Way
Apple: Final Cut Pro system
Audio-Technica
Aurora
Autoscript
Avocent
Clear-Com: Microphones
Evertz
Extron
Harris: NEXIO server platform
Hitachi
Ikegami
JVC
Mackie
Magenta
Middle Atlantic
MultiDyne
Omnimount
Ross Video
Samsung
Sennheiser
Sharp
Sony
TANDBERG
Tannoy
Telos
TVLogic
Vinten
Wohler
Yamaha

The main goals of the new Transportation Security Administration (TSA) television production facility, located in Arlington, VA, were to allow the agency to produce HD video and expand its production capacity. This allowed it to produce and distribute TSA content for public or private distribution in today's SD and HD standard. Professional Products Inc. (PPI), located in Gaithersburg, MD, did the design and build for this production facility.

The new production facility includes one television production studio, one video control room, a technical equipment core and a new video server storage system that supports post production on two network-attached nonlinear editors. The production system was designed for HD 16:9 video productions using the 1080i or 720pformat as detailed in the SMPTE 292M specification and allows for downconversion of the HD for SD duplication, distribution and streaming.

The new studio includes two HD cameras and the ability to connect a third camera into the system. Signals from the two cameras, microphones and an HD character generator are fed into a digital production switcher and digital audio mixer. Audio and video signals from three meeting rooms are also available via the router. The video output of the production switcher and program output of the audio mixer are combined before being fed into the HD video routing switcher. Programming is recorded on an HD video server, a disc recorder or a DVCAM recorder, or streamed over Ethernet.

After the studio production is complete, the post-production process begins. Studio or other ingested media are instantly available and editable on two Final Cut Pro (FCP) nonlinear editing systems. A rough edit is performed. Titles, graphics, audio processing and animations are added in post, if required. The final edit is performed, reviewed and published to the video server system.



The final product can be duplicated onto XDCAM disc, DVCAM, DVD or VHS, transmitted to an external destination, or encoded as a desktop media file for distribution or streaming purposes.

The post-production process remains on the server throughout the process as a digital file. At any stage during the process, the program can be viewed through the two FCP workstations. These workstations have hardware that allows the program to be viewed on an HD video monitor rather than on the workstation's desktop monitor.

TV Globo

Excellence Award category

New studio technology — nonbroadcast

Submitted by

GLOBO Comunicação e Participações SA

The goal of TV Globo's virtual set project was to provide a solution that allowed producers to digitally extend the physical sets, built inside stages or in exterior locations, using footage of the real location where the set is supposed to exist as well as provide freedom of camera movement with wider field of views. This would allow producers to shoot scenes inside the back lot as if they were shot at the real location, providing the company significant savings on the overall production cost.

To use live footage of the real location to extend the sets while providing the director freedom of camera movement, it was necessary to create higher-resolution images than those that were shot for many TV shows. TV GLOBO shoots its productions in HD (1920 x 1080).

To achieve this, the design goal was to create rigs that supported multiple cameras shooting live-action footage simultaneously with the correct position and angle necessary to build the high-resolution live panoramas later in post production. The rigs were designed by TV Globo and built from scratch based on several calculations that varied upon lens, camera body and CCD size.

One of the main difficulties was to seamlessly connect the resulting footage shot simultaneously with the HDTV cameras. The footage usually contains cars, buses and people that cross the entire field of view of all cameras, so there can't be any issues in areas where two images are being connected. To achieve this, staff developed a solution using in-house tools that allowed them to stitch the multiples images together seamlessly, resulting in high-resolution, live-action panoramas needed to digitally extend the physical sets.

Producers extended the technology and built a rig to shoot 360-degree, horizontal, high-resolution live panoramas used as backgrounds for car scenes where the director is able to create scenes by continuously moving the camera around and inside a car. Shots that would be impossible to perform on location are made possible by shooting inside a green-screen stage.

The key vendors and products for this project were Sony cameras, Fujinon and Canon lenses, and the Autodesk Flame compositing system. ■

Design team

TV Globo: Nelson Faria, dir. eng.; Francisco Lima, head R&D VFX; Gustavo Garnier, VFX designer; Taulio Mello, Flame artist; Marcelo Nicacio, Flame artist; Marcelo Matoski, sys. op.; João Gurgel, support op.; Vitor Quintella, SFX producer; Alcione Lemos, SFX technician; Paulo Salles, CAD designer

Technology at work

Autodesk: Flame compositing system, AutoCAD
Canon: HD lenses
Fujinon: HD lenses
Panasonic: HVX-200 cameras
Sony: HDW-F900 cameras

Jewish Life TV

Excellence Award category

Station automation

Submitted by

Compix Media

Design team

JLTV: Adam Blazer, COO
Newcast: Jonathan Landman, sys. integrator and consultant

Technology at work

360 Systems: Maxx multichannel video server
ProTrack TV: ProTrack traffic software
NVerzion: NControl Gold automation software
Compix Media: CynerG2 CG

Jewish Life TV (JLTV) is a young and quickly growing Los Angeles-based broadcast channel that reaches nearly 25 million viewers in the continental United States. In delivering high-quality programming to this expanding audience, JLTV faces two constant challenges: producing professional-grade presentations for its viewership and offering attractive advertising opportunities and a high level of visibility for program sponsors.

To meet these challenges, JLTV worked with systems integrator and consultant Jonathan Landman of Newcast to design and implement a facility with an emphasis on reliability and functionality at an affordable cost. One of the key requirements of the project was the ability to display information from the Web as a live ticker on the screen plus the simultaneous integration of viewer and sponsor messages into these tickers.

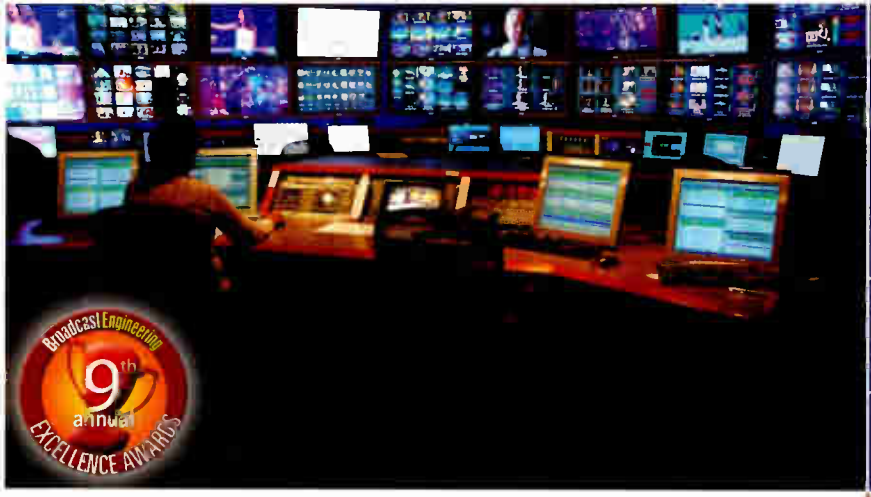
The resulting installation features the ProTrack TV scheduling traffic system and NVerzion automation system. The ProTrack system feeds the JLTV schedule to the NVerzion automation software, which then automates the control of the 360 Systems Maxx video server for continuous spot, interstitial and program playback.

NVerzion also controls Compix Media's branding, logo, ticker and text overlay system, which employs template-based branding and automates data entry to provide current, targeted graphical messaging with the polished, professional look JLTV demands.

When the system went live at the beginning of October 2009, it gave JLTV a very powerful tool for boosting ad sales and attracting new viewers. The Compix CynerG2 enables the JLTV staff to insert sponsor branding along with continuously updated news crawls at the bottom of the screen during regular programming, thereby bypassing the growing issue of viewers using DVR recording to skip interstitial, spot-based advertising. The facility is also using the CG system to insert custom messages from viewers in a secondary crawl, and this personalization of on-screen content — birthday wishes, congratulations, etc. — along with programming and sponsor-driven content helps to engage and build JLTV viewership.

The ProTrack, Compix, 360 Systems and NVerzion systems interoperate smoothly, and the short learning curve for the CG, with its easy-to-use template-based designs and drag-and-drop interface, was key in enabling rapid installation and commissioning of the system. In fact, it took just a month to install and take the system live. As a result, JLTV operators were able to add logos, create graphics and take their custom ticker information to air quickly.

By incorporating personalized and sponsored message elements into programming, JLTV is able to leverage the emerging strategies of the music and entertainment channels in attracting and retaining viewers and advertisers. The robust functionality and affordable pricing of today's broadcast technologies have empowered JLTV to take an innovative approach to marketing and sponsorship, allowing it to make an impact with viewers and compete alongside much larger broadcasters despite its youth and relatively small budget.



Broadcast Facilities Inc.

Excellence Award category

Network automation

Submitted by

OmniBus

As the largest independent West Coast provider of network origination and transmission services for 24/7 cable and broadcast networks, Broadcast Facilities Inc. (BFI), owner of the Andrita Media Center, opted for a "generational change" in the technical infrastructure of its Los Angeles facility — one that BFI was confident would revolutionize its business model.

Andrita's 106,000sq-ft multichannel HD/SD digital network origination, satellite transmission, production and post-production media facility had operated with an architecture based on big box servers with multichannel capability. This model was both expensive, because of the upfront capital commitment required to build the infrastructure for 10-channel blocks, and inflexible, because of the requirement to define and lock in the basic playout format (SD, HD, NTSC or PAL).

Andrita decided to switch to a software-dominated network origination platform based on OmniBus iTX. The new model offered standard hardware costs amounting to 20 percent of the previous hardware costs and a software overlay that resulted in a combined material reduction of the cost to originate a network. In addition, the architecture is scalable on a network-by-network basis, and all the heavy requirements for multiple sophisticated automated graphics were met by this single software application.

The first Andrita network launched on the iTX platform provided an extreme test for Andrita and OmniBus. Game Show Network (GSN) is a very graphically-sophisticated general entertainment network supported by commercials, with 12 live segments per day with viewing audience interaction. GSN has, on average, 5000 separate events on the network per day, 2000 of which are graphics events. All of these are generated by iTX, controlled by the system's automation. Andrita was able to secure GSN's launch requirements with iTX software, running on HP DL365 servers with Isilon IQ6000 Clustered Network Attached Storage.

The real proof that Andrita had successfully implemented a next-generation model was that this highly complex network launch was achieved in less than 45 days from the initial agreement to the live switchover from GSN's old facility. Andrita had to build an entirely new origination infrastructure, specific to an extremely complex application, with round-the-clock development by OmniBus to deliver the functionality required.

GSN successfully went live on Andrita's new iTX origination platform on May 18, 2009, and the broadcaster went on to launch the European movie channel Shorts HD two weeks later using the same platform.

Andrita is currently contracted to launch more than 14 24/7 channels using iTX in the next five months. It is also planning an iTX-based centralcasting facility, scaling up to 200 networks, for local broadcast TV stations. This is something that Andrita believes would not have been possible without this iTX functionality.

Design team

Andrita/BFI: Bill Tillson, pres. and COO; Tom Mikkelsen, CTO; Steve Mankowski, VP eng.; Richard Cline, VP digital media dist.; Chere E. Johnson, VP ops.; Thomas McJennett, dir. prod. eng.; Eric Wilkerson, sr. mgr. broadcast op.; Dave Radford, sr. proj. eng.
OmniBus: Andy Cooper, sys. architect; Kelly Stricker, tech. acct. mgr.; Mark Wilson: proj. mgr.; Andy Broadhurst: proj. mgr.; Joe Pistacchio: reg. sales mgr.

Technology at work

Cisco: Catalyst 4500 series 96x96 GigE switch
Front Porch Digital: DIVArchive manager
Hewlett-Packard: HP DL365 servers
Isilon: IQ6000 Clustered Network Attached Storage 16TB
OmniBus: iTX multichannel automation
Spectra Logic: T950 digital tape archive with LTO4 drives

Comcast Media Center

Excellence Award category

Network automation

Submitted by

Diversified Systems

Design team

Versus/Comcast Media Center: Paul Koopman, dir. of broadcast eng. Versus; Paul Catterson, sr. dir., broadcast eng. CMC; Lisa Gallagher, dir. of op. CMC; Rich Rivera, sr. proj. eng. CMC; Jeff Hagney, broadcast applications eng. CMC

Diversified Systems : Mark Sackett, proj. mgr.; Jacques Verdier, sr. sys. eng.; Walt Thomas, installation supervisor

Technology at work

Avid: Sundance Digital Titan automation
Avocent: KVM systems
Evertz: Digital peripherals, EQX routing switcher, MVP multiviewer, QMC MC switcher, VistaLink SNMP monitoring and control
Linear Acoustic: AEROMAX XL audio processing
Miranda: Vertigo XG graphics
Omneon: Spectrum servers
RTS/Telex: ADAM intercom
TBC Consoles: Intellitrac custom consoles and monitor wall

Versus launched as Outdoor Life Network (OLN) in 1995, rebranded to its current moniker in 2006 and has since become one of the fastest-growing sports cable networks in the country. Versus is the exclusive cable TV home of the NHL, IndyCar Series, Tour de France, World Extreme Cagefighting, Professional Bull Riders and airs college football from top conferences such as the Pac-10, Big 12 and Mountain West.

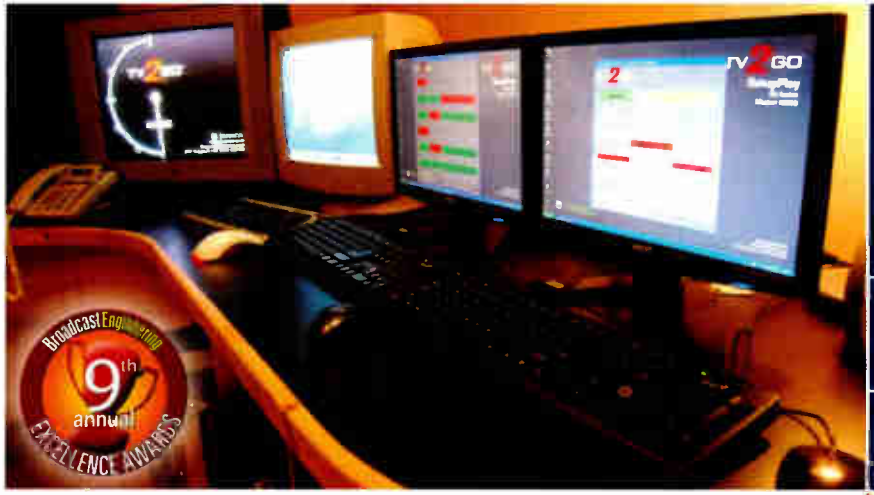
The growing demands pushed the legacy system to the limits. The broadcaster launched a shared HD channel with sister network Golf Channel in December 2007, known as Versus/Golf HD. To accommodate its own dedicated HD Channel, which launched in December 2008, Versus needed its own network operations facilities.The broadcaster, which is wholly owned by Comcast, built its new network operations center within the Comcast Media Center (CMC) in Denver. With the amount of live events rapidly increasing, it needed a network operations and transmission facility to accommodate both HD and SD playout, as well as provide for the blackout requirements of the various sports franchises.

The project had an aggressive schedule with only a few short months to design, build and cut over the master control and transmission systems within a greenfield space at CMC. After a thorough, competitive bid process, Diversified Systems was selected as the integrator for the project. Diversified was up to the challenge and brought the project in on time and on budget. Paul Koopman, vice president of engineering for Versus, says Diversified was "tremendous to work with and exceeded our expectations for the job."

The system had to tie in seamlessly with the Versus Stamford, CT, file-based production facility. Using server technology from Omneon along with automation and asset management from Avid's Sundance Digital, Diversified and the team from the CMC created an efficient and highly reliable system that leverages the workflow established in production. The flow of the space and the adjacencies of the various functions such as master control, feed coordination, ingest and media prep were primary concerns in laying out the floor plan. After several revisions, the team created an environment where the operations staff could visually monitor the aforementioned functional areas from a centralized work area without unnecessarily disrupting the operators.

Using Evertz's MVP multiviewer, EQX router and its SNMP-based control system VistaLink, faults are alarmed and brought to the attention of the operator. At a glance, supervisors have a view of all functional areas and are able to confirm all channel programming and monitor the automation rundown.

Special consideration was given to the challenges of audio up/downmixing, allowing for proper preservation of stereo, SAP, ambient sound and 5.1 surround audio information. Linear Acoustic, Evertz and Omneon provided the key devices for maintaining content in its original state and storing ingested programs in the highest quality. As an example, this allowed released programs to be provided in native HD with the best downconversion of video and audio for SD release.



Lotto Real Studios, Dom. Republic

Excellence Award category

Network automation

Submitted by

ionoco

GTECH, provider of lottery technology, brought in ionoco of Winchester, UK, to deliver a low-cost and fully-automated solution for studio production and multiregional playout of the new pan-Caribbean lottery show, "Super Lotto," broadcast in conjunction with a consortium of GTECH customers in the Caribbean.

Loto Real operates the Spanish-language lottery draw show, which takes place live in the Dominican Republic. Other Caribbean islands (Antigua, Barbados and St Maarten), partners in the draw, need to rebroadcast the show 30 minutes later with local graphic intro and outro sequences and an English audio track. Due to a limited budget and time, the process to recreate individual draw shows for each island must be as automated as possible, while ensuring it is highly secure and tamperproof.

Ionoco built a custom studio control system in the Dominican Republic, including a switching desk, three cameras (expandable to eight), a mix-wipe unit, touchscreen and ionocore computers. The system is linked to redundant TV2GO Recorder computers housed in the studio. To minimize the file size of the video, TV2GO triggers the recording system to record only the Super Lotto draw element of the program (approximately 45 seconds in length), with a short run-in and over run using both a primary and backup recorder for redundancy.

The encoded Super Lotto Draw clip is sent initially to the central FTP server via a secured VPN network. The TV2GO SetupPlay system receives this file first and sends a message to the TV2GO Play Systems in the islands, which then start their download process.

While the TV2GO Play computers are downloading the draw video, the studio technician at Crucial Productions in Barbados identifies and selects the in and out points on the recorded draw video, records the new draw audio in English and mixes down a new draw audio. Meanwhile, the draw video has already been downloaded in the islands. The SetupPlay application then completes the process by sending, via the FTP server, the new draw audio and a signed EDL configuration file to the islands. All content files, the draw video, intro/jackpot audio and draw audio are uploaded with a signature file. All local intro and outro sequences are held on the islands' ionoco Play Systems.

The TV2GO Play systems are installed at each of the islands' broadcast centers. These systems require the minimum of user input and will automatically download the relevant video, audio and configuration files from the FTP server. Once the final EDL Config File is downloaded, the system is ready to play. The Play button plays the draw with a 30in count-in clock.

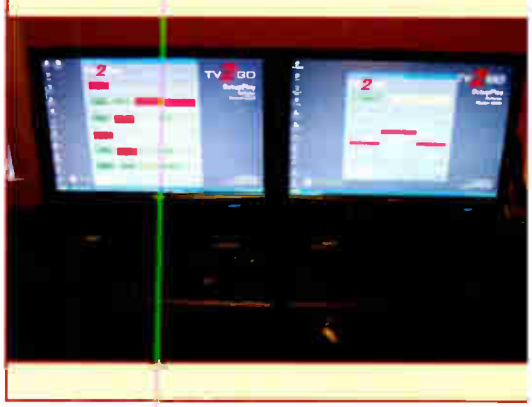
The resulting broadcast is of the same visual quality as the original transmission, providing Loto Real and its "Super Lotto" partners with a custom, low-cost, resilient system for multichannel broadcast. The system is designed to be expandable to enable other lotteries who join the "Super Lotto" consortium to broadcast the draw. ■

Design team

ionoco: Simon Ingram, concept and imaginer; Dave Barton, software design and dev.; Nick Wren, proj. mgr.

Technology at work

Eyeheight: Mix/Wipe, SQ2, loss ident
Fujinon: THX13X3 wide-angle lens
JVC: GY-HD25N camera
Kramer: 6104 SDI video dist. amplifier, SG-6005 black burst gen.; 6809HD audio embedders
NEC: 15in TouchScreen
Panasonic: 17in SDI monitor
Sonifex: RB-DS2 Audio Delay
Sony: HVR-1U video cameras



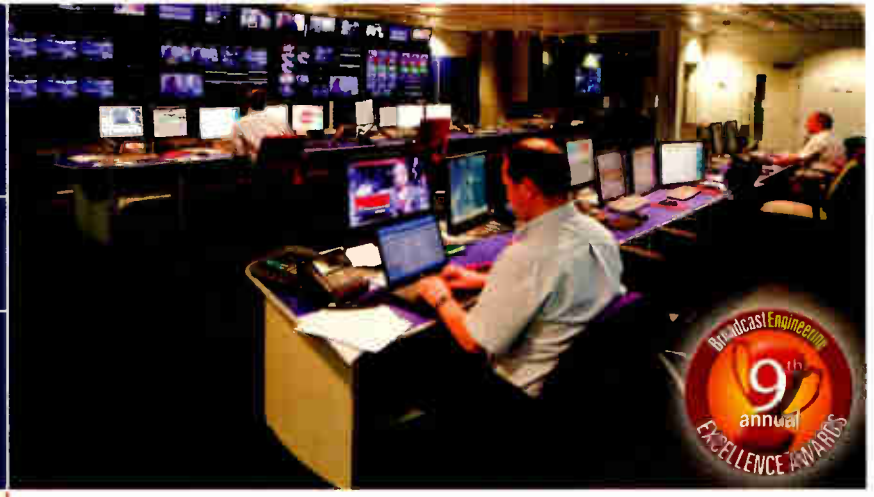
Red Bee Media

Excellence Award category

Network automation

Submitted by

TSL

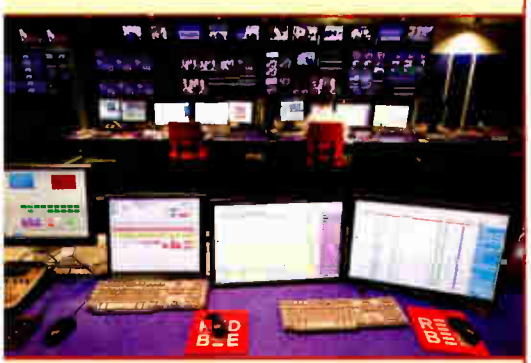


Design team

Red Bee Media: David Popper, head of implementation
Snell: Mike Eason, proj. mgr.
TSL: David Phillips, managing dir. and proj. dir.; Andy Appleyard, proj. mgr.; John Newsome, video eng., core sys.; Nigel Williams, video eng., ingest sys.; Martin Paskin, control eng.; Simon Warburton, audio eng., IPE subcontract; Jason Needham, eng.; Steve Moore, installation mgr.

Technology at work

AXON: Synapse modules
Omneon: Spectrum servers
Snell: Cygnus routing, Masterpiece master control, Morpheus automation, Quasar Ph.C upconversion



In the summer of 2009, TSL completed a major project for Red Bee Media to move the UK Channel 4's playout operations from its previous premises at Horseferry Road in London to Red Bee Media's broadcast center in White City.

As one of the last UK broadcasters to perform its own playout, Channel 4 made the decision in 2007 to outsource those functions to Red Bee Media, with the expectation to reap annual savings in the region of 10 percent to 15 percent on Channel 4's annual operations budget. Under the terms of the agreement, Red Bee Media committed to a significant capital investment in new state-of-the-art facilities at its premises in White City. Following a highly competitive tender process, TSL was chosen to design, in conjunction with Red Bee, a dedicated file-based facility that would deliver the substantial improvements to efficiency sought by Channel 4 operations by utilizing the latest technology and innovation in media management and delivery. The project also required the transfer of the entire Channel 4 operations department with library, media management, QC, playout and transcoding — all without interrupting live service.

The file-based system designed, prebuilt and installed by TSL included four Omneon Spectrum media systems, in a main and backup configuration, for playout of Channel 4, More4, Film4 and E4. The extensive playout systems experience within the TSL team enabled such a large and complex design to be realized. The system includes 20 automation playlists, driving a total of 43 transmission outputs. Channels are a mixture of SD and HD core services and are transmitted across ATT, DTT, DSAT and broadband networks. The Spectrum now delivers both SD and HD output and allows for expansion of operations and functionality as required without broadcast disruption.

Morpheus automation, HD Cygnus routing, HD Masterpiece master control and the new version of Morpheus control and monitoring were supplied by Snell. Morpheus automation allows complex sequences of events to be packaged together, instantly providing simple presentation for the Red Bee Media operator and easy manipulation within the Channel 4 schedule.

Project timetable and risk were well managed through a strategy, including a TSL off-site build. Making use of the extensive prebuild facilities at TSL's Maidenhead site, the system was running at an earlier time than would have been possible on-site, helping to expose interface issues earlier, particularly around new HD standards and ancillary data handling. Manufacturers worked on updates and fixes in parallel with Red Bee Media site preparation. The main on-site build phase was completed and handed to Red Bee Media for testing within eight weeks.

The relocation of Channel 4 playout to Red Bee Media is one of the UK's largest playout projects in recent years and has provided the broadcaster with a sophisticated facility that has vastly improved efficiency by taking advantage of the latest technical innovations that will further improve services and efficiency well into the future.

European Parliament

Excellence Award category

Newsroom technology

Submitted by

Front Porch Digital

The European Parliament (EP), a directly elected institution of the European Union since 1979, is one of the world's most powerful legislatures. The EP audiovisual unit provides broadcasting on an internal cable TV network and transmission to Europe by Satellite (EBS), the news exchange networks and to selected TV channels. It also provides video streaming on the Web and publication on FTP servers. In addition, the audiovisual unit oversees a media archive kept for the legal and historical record and for the use of members of the EP, journalists and scholars.

In 2008, directors of the EP audiovisual unit recognized that the addition of a new building, D5, to its operation created the opportunity to implement a centralized digital archive storage system. While the EP assumed its present form in 1979, its roots stretch back to 1952. The archive it has amassed chronicles a significant part of European and world history. At the time the D5 project was initiated, some of the archive was stored in digital format on a Sony data tape system. Most of the content, however, is still stored on Digital Betacam videotapes and some on Betacam SP videotape. This lack of consistency created difficulties with access and retrieval. Likewise, because videotape has a limited shelf life, preservation of some content was in jeopardy.

Implemented by the EP audiovisual unit and the professional team from Luxembourg-based Broadcasting Centre Europe (BCE), the D5 project rectifies those issues by integrating all content into a coherent, unified system based on a Sun StorageTek data tape library complemented by nearline storage from Isilon connecting to Grass Valley K2 video servers and knit together by an expanded and upgraded Front Porch Digital DIVArchive content storage management system. The archive also incorporates Front Porch Digital DIVAdirector media asset management, which enables tracking and retrieval of assets from desktop workstations. Using it, archivists index content according to flexible and programmable fields, create browse copies for archived content and restore broadcast-quality clips from tape library to video servers. The storage system has also been integrated with EP's existing Harris Invenio digital asset management system.

Key to the project has been migration of some 13,000 hours of media content from storage on videotape into the managed digital environment — an ongoing process since the autumn of 2009. To accomplish this, the audiovisual unit and BCE have deployed six Front Porch Digital SAMMA Solo systems arrayed in a cost-effective setup with legacy VTRs and interfaced to the existing Sony FlexiCart systems. SAMMA Solo is a semiautomated system that performs real-time, simultaneous encoding of content from videotape into multiple digital files, and then manages their ingest into the digital workflow.

With the migration component, EP's centralized archive becomes a first for Europe — an integrated end-to-end system that moves legacy analog video content into the digital realm. The SAMMA Solo systems are currently ahead of schedule in meeting the goal of completing migration of the 13,000-hour videotape archive to digital formats by the end of the calendar year.

Design team

BCE: Gusty Feinen, mgr. special projects
European Parliament: Stephan Rigaud, audiovisual unit, eng. department

Technology at work

Front Porch Digital: DIVArchive content storage management, DIVAdirector media asset management, SAMMA Solo file migration system
Grass Valley: K2 video servers
Isilon: Disk storage
Sun StorageTek: LTO 4 tape library

NY1 News

Excellence Award category

Newsroom technology

Submitted by

Azzurro Systems Integration

Design team

Azzurro Systems Integration: Marc Bressack, EVP, Bill McKnight, VP/ general mgr.; Scott Buchholz, dir. of eng.; Ray Bucceri, proj. mgr.; Frank Riccardelli, proj. leader
NY 1 News: Joe Truncale, VP of eng.; Gunn Isarankura, dir. of eng.; Steve Paulus, VP; Brad Shapiro, IT mgr.
Dalet: Daiva Lomsarge, proj. mgr.; Benjamin Desbois, general mgr.
Omneon: Brian Chavez, dir. of sales
TBC Consoles: Steve Struhs, sr. proj. mgr.; Jerry Hahn, president

Technology at work

Chyron: CAL Box graphics, MicroX CG
Dalet: Enterprise Edition automation
Evertz: 7800FR+8PS with VistaLINK, MVP multiviewer, QMC-2 master switcher, Topaz QT-1616H routing switcher
Grass Valley: Trac Wall Monitor Wall Tw-3T, Trinix router TRX-DV-33512
Harris: X75HD-2Ps frame syncs
Omneon: MediaDeck SMD-2211-BB, MediaDirector 2102B, MediaGrid ContentBridge, MediaGrid ContentDirector, MediaGrid ContentServer, Spectrum MediaPort
TANDBERG: E5780 MPEG-2 encoders
TBC Consoles: IntelliTrac T-26 custom console

NY1 News, Time Warner Cable's 24-hour news channel in New York City, is one of the most advanced newsgathering operations in the world. Since its debut in 1992, NY1 has won universal acclaim for its comprehensive coverage of the five boroughs.

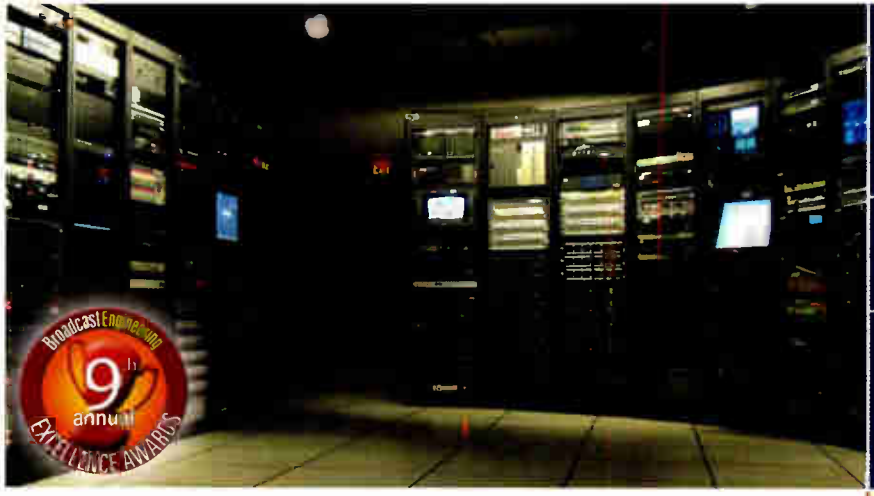
Always evolving, the station recently worked with Azzurro Systems Integration to upgrade and consolidate its master control environment. The consolidation allows the broadcaster to provide multiple distribution streams from a single master control area using three master switcher systems. All feeds are distributed in both HD and analog. HD feeds are converted to ASI streams and analog video and audio in the final stage prior to transmission. One feed carries normal NY1 News programming and is distributed to Manhattan, Bronx, Staten Island, Brooklyn and Bergen County, NJ. A second master switcher feeds a local insert to Queens, and the third system provides Spanish programming. Local ad insertion capability has been built into the system. Internal routing and distribution is accomplished via HD-SDI with embedded audio channels.

Programming for each feed is switched with an Evertz QMC-2 HD-SDI master switcher. The master switchers each control an Evertz Topaz 16 x 16 routing switcher, which provides subswitching for the program, preset, bypass and key feeds to the master switcher. Sources feeding the Topaz switchers include Omneon server ports providing inputs and outputs to and from a central storage system. The system has 16 bidirectional channels, 32 playout channels, and storage for 1250 hours of DV50 material and four audio channels. Additionally, an Omneon MediaDeck provides backup, central routing switcher outputs and additional sources. The MediaGrid active storage system provides 126TB of raw capacity using high-bandwidth content servers, 57TB of available storage with a replication factor of 2:2, and storage for 2035 hours of DV50 material and four audio channels.

A Dalet Enterprise Edition automation system controls the server systems and switching. At the core is a comprehensive MAM system that integrates a broad range of production tools to allow ingest, production, playout and archiving video content, and access to a set of NRCS functionalities. This provides a single platform and interface for logging, browsing, searching the archive, editing packages and planning distribution. Journalists can easily assemble a story that includes text, video and graphics right from their desktop.

All air signals pass through a Chyron MicroX for live insertion of lower-third graphics and full frames. Finally, the air path passes through a Chyron CAL Box for bug insertion and live tickers. All commands to all of the graphic devices are achieved by automation through TCP.

Control panels and terminals for the switchers, server systems and automation system are incorporated into a new "L" shaped TBC Consoles IntelliTrac custom console. The console has three primary operator positions each capable of switching and monitoring signals. Feeds are distributed to an Evertz MVP multiviewer system, which provides preprogrammed multiplexed monitoring layouts to each of four LCD displays.



WFTV-DT

Excellence Award category

Newsroom technology

Submitted by

Grass Valley

Design team

WFTV: John Demshock, dir. of eng.; Chip Reif, eng. mgr.; Dave Sirak, news ops. mgr.; Michael Vivona, eng. supervisor; Jennifer Kearns, sr. dir.; Tim Aldinger, dir.; Bryce Layman, eng. ops. mgr.

Technology at work

Grass Valley: Ignite HD automated production system, Kayak HD switcher, MediaFUSE content repurposing and multidistribution system

At the end of 2007, WFTV-DT, the ABC affiliate in Orlando, FL, prepared to automate the news production process. The top priority was to maintain and improve live news production. Continuing the station's longtime ratings domination of the central Florida market was, and is, a critical factor.

Tapping the experience of nine Cox Media Group sister stations already deployed, WFTV installed a Grass Valley Ignite automated news production system. It's now on the air in HD, producing all news and live-to-server content through the system. Breaking news and last-minute changes are more consistent and significantly faster to air because a single person is driving a purpose-built control room. The Ignite HD system deployed includes 3M/Es and 32 control ports, and is scalable from 24 to 96 video inputs and audio inputs. The compact control room system features an integrated Grass Valley Kayak HD video switcher, and an audio mixer simplifies traditional production techniques. External camera robotics and graphics are also integrated at the station.

WFTV also has a growing Internet presence. Its Web site is the top broadcast Web site in central Florida. Helping to maintain and grow this online lead, this year the station installed a Grass Valley MediaFUSE content repurposing and multidistribution system, which allows the staff to produce content once and have it appear both on TV and on the Internet, simultaneously when required. MediaFUSE includes a full suite of automated software tools that — since it was deployed in April 2009 — has allowed the station to increase the amount of content available on its site and interact more fully with its audience.

A significant benefit of the system becomes apparent after-hours. Producers and Ignite directors can easily post fresh video to the Web using integrated plug-ins to their NRCS. WFTV also uses Ignite with MediaFUSE to expand coverage by automatically producing extended weekend sports content exclusively to the Web. The combination of both automated production and distribution systems helps WFTV streamline the labor- and time-intensive processes of editing, encoding and streaming over the air, while simultaneously developing and transmitting long-form content for the Internet. The station can deliver existing or live content in a matter of minutes — complete with metadata, URL links and advertising categorization. The MediaFUSE system gives the station the ability to stream over-the-air shows live, complete with alternate commercial breaks while fully realizing the potential and profitability of repurposing and syndicating localized content. This system also benefits sister station WRDQ-TV, also in Orlando, as WRDQ airs several hours of live news each day using the same system.

WFTV and WRDQ maintained and then improved the technical quality of the news product with the Ignite/MediaFUSE system. These days every person-hour has to count. Now the Orlando stations better tap their most important resource — their people. A direct benefit to the news operation came when six of the staff transferred directly from production into the news department. It's a successful model many other stations are sure to follow.

Adtext, The Mill

Excellence Award category

Post & network production facilities

Submitted by

Softel

Design team

Adtext, The Mill: Miles Stormer, head of MCR and external facilities; Jem French, contractor; Tim Yeo, sr. eng ; Lance Gaunt, head of transmission; Roy Trosh, group tech. dir.
Softel: Richard Mansfield, Swift vTX product mgr., design and commissioning; Kundan Singh, sales eng.; James Fysh, software eng.; James Luckcraft, software eng.

Technology at work

Omneon: MediaDeck video servers
Softel: Swift vTX with custom user interface

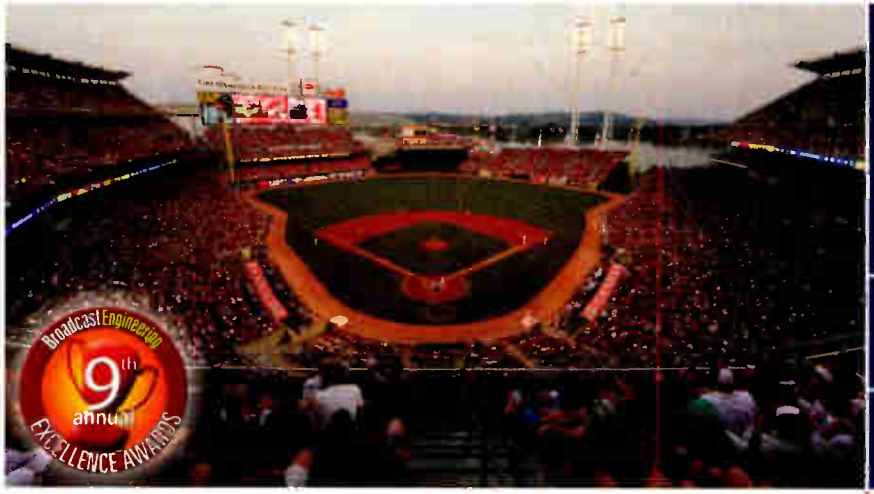
The Mill Group is an award-winning visual effects facility with offices in London, New York and Los Angeles, and owner of a subsidiary called BEAM, a global service provider specializing in the distribution and management of media content. In turn, BEAM launched Adtext, a dedicated, digitally streamlined subtitling operation that offers broadcast-quality subtitling and distribution to advertising clients as a single, combined service. Adtext works on about 90 percent of the output from the major advertising agencies. Advertisers want to be sure the message gets through to the largest audience, from the hard of hearing to people in the gym watching MTV while listening to their iPods.

The company's decision to move from a tape-based operation to a file-based workflow was made with the dual aims of streamlining the subtitling procedure, making it easier for its team while lowering operating costs, and a reduced hardware overhead. Moving from a tape-based subtitling workflow allowed Adtext to easily transport assets around the system electronically. It developed its own FTP system and started investigating subtitle encoding solutions, finding that some products appeared to do the job, but were not flexible enough in operation.

During initial discussions between Adtext and Softel, Softel rapidly produced a user interface that was exactly what Adtext had in mind. Softel's thorough project management approach, from presale to acceptance testing, allowed early delivery of the subtitling transmission system and full compliance with The Mill requirements. Softel provided full access to its development team throughout the project, easing the pressure on Adtext's in-house development team to meet its tight deadline. Softel also worked with video server supplier Omneon to ensure seamless integration. For acceptance testing, Softel created a full replica transmission path on-site, so Adtext could be sure that what was going on-air would be correct.

The result is a highly efficient and simple workflow: The agency sends the script and commercial on tape or in digital form as an MPEG-2 file. Adtext employs a fully automated digital workflow to ingest files and create a WM9 file, which is delivered automatically to the subtitler's desktop (or by e-mail for off-site freelancers). The file is then encoded by Softel's Swift vTX with subtitles in VBI. After quality control, the files move from the subtitling room to transmission via BEAM-developed software and from there to the broadcaster, all in an automated process via a Web interface. This workflow reduces machine control input, leaving the subtitling operators to do their work uninterrupted by concerns about requesting and cuing machines, and eliminates previously cumbersome processes.

The effect on Adtext's productivity and responsiveness to clients is significant, increasing turnaround speed by about 50 percent. Adtext can call up off-site freelancers on short notice, and they can get to work straight away. Additionally, the solution enables Adtext to offer its clients a modern, fully digital automated file-based process, with receipt or delivery at any time.



Great American Ball Park

Excellence Award category

Post & network production facilities

Submitted by

EditShare

The Cincinnati Reds' Great American Ball Park features a huge scoreboard display and hundreds of LED and fascia boards throughout the stadium. The in-house production team's goal was to build a new control and production facility to maximize the fan experience while improving the workflow for producing HD videos, highlights, player profiles and more. A centralized storage solution from EditShare integrated with software from Dixon Sports Computing and EVS servers delivered the winning combination for the Reds.

The Reds' production manager Dave Storm looked for a system that would offer short- and long-term benefits and make it easy to capture the best shots and create packages for stadium display while streamlining media management. Because the production unit acts as a full-service agency, producing TV ads for sponsors, fan events, community outreach videos and in-game stadium coverage, Storm wanted to centralize the management of both media and metadata, which includes every play of each game. He also wanted to allow multiple editors to work simultaneously on the same media and projects. Working with Cutting Edge Audio and Video Group of San Francisco, the Reds acquired a 40TB EditShare Storage series server to facilitate the group's media sharing.

The system is connected via 10GigE to an HP ProCurve network switch. Five editors working on Apple Final Cut Pro workstations are connected to the switch via GigE for simultaneous media access. The storage servers are fully compatible with industry-standard editing and compositing tools, and editors can freely share media regardless of size or format. EditShare also enables project sharing for the Final Cut editors with user management tools designed specifically for real-time collaboration in post and broadcast workflows.

The integration among EditShare, Dixon Sports Computing and EVS servers give the Reds a complete media management package with metadata cross-referencing capabilities. Typically, games are being recorded by EVS from six different ISO camera positions. During each game, a logger using Dixon's logging interface monitors in-house time code to match it to particular events (player, pitcher, ball counts, etc). Roster and statistical information from the Reds' DakStats scoring system is automatically incorporated into the Dixon logger. Working in tandem, EVS operators identify the best angles on key plays by marking the time code ins and outs. All metadata becomes part of the Reds' Hilite Database and is made available to Final Cut Pro editors, who create the instant replay videos from subclips generated from the database in the EVS system. All subclips are automatically rewrapped in QuickTime and moved to the EditShare system to be used for highlight packages and additional post-production projects.

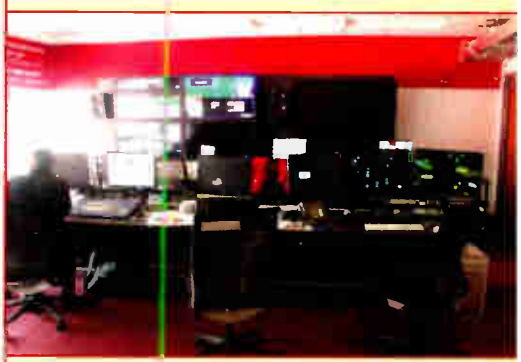
EditShare has proven to be a powerful workflow engine for the Reds. The RAID 5 configuration of the system provides the production team with additional data security and the ability to work quickly and in teams, while simultaneously using different applications.

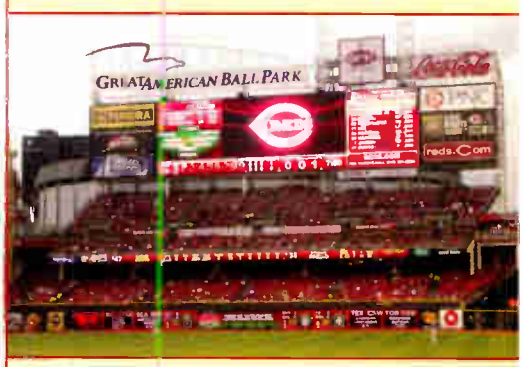
Design team

Cincinnati Reds: Dave Storm, prod. mgr.
Cutting Edge: Brian Botel, Sig Knapstad
Dixon Sports Computing: Brad Wille

Technology at work

Apple: Final Cut Pro editors
Dixon Sports Computing: Hilite management software
EditShare: Storage series
EVS: XT[2] servers, XFile
Hewlett-Packard: ProCurve switch





Dome Productions

Excellence Award category

Post & network production facilities

Submitted by

AZCAR

Design team

AZCAR: Matthew Brown, proj. mgr.; Patrick Gordon, installation supervisor; Ryan Heidendahl, lead eng.; Ricardo Romero, CAD and documentation; Gord Rickard, fabrication mgr.
Dome Productions: Mary Ellen Carlyle, sr. VP and general mgr.; Mike Johnson, dir. of eng.; Derrick Whittington, design and tech. support

Technology at work

Abekas: MX dual twin-channel DVE
Calrec: Sigma audio mixing deck with Bluefin
Canon: XJ86x9.5 and XJ72x9.5 lenses
Chyron: HyperX2 SD/HD CG
Crown: CTs-4200 amplifiers
Dolby: DP570 audio tool, DP563 surround encoder, E 571 encoders and 572 decoders, LM100 loudness monitor
Evertz: EQX26 routing, VIP-X multi-image viewer
EVS: XT[2] LSM servers
Grass Valley: Kalypso HD 4M/E switcher
Harris: TVM waveform measurement, X75 frame syncs
JBL: Speakers
RTS: Adam 128 x 128 intercom
Sony: BVM A14 QC displays, HDC-1500R 1080i/720p/24p cameras, HDCAM SRW-5500 and HDW-M2000 VTR
TV Logic: LVM control room displays
Ward Beck: AMS8-1AM monitors
Wohler: AMP2 audio monitors

When it comes to the mobile production market, keeping up with technology and being ready to address the future is an ongoing technical and economic challenge. Today, it is clear that for the sports entertainment world, customer demand is for HD. Dome Productions has been steadily and progressively adding to its complement of HD production vehicles. With the commissioning of Thunder, its fifth HD truck, Dome put its considerable knowledge gained through many years of experience to good use in a design, which became the foundation for the construction and implementation that AZCAR provided.

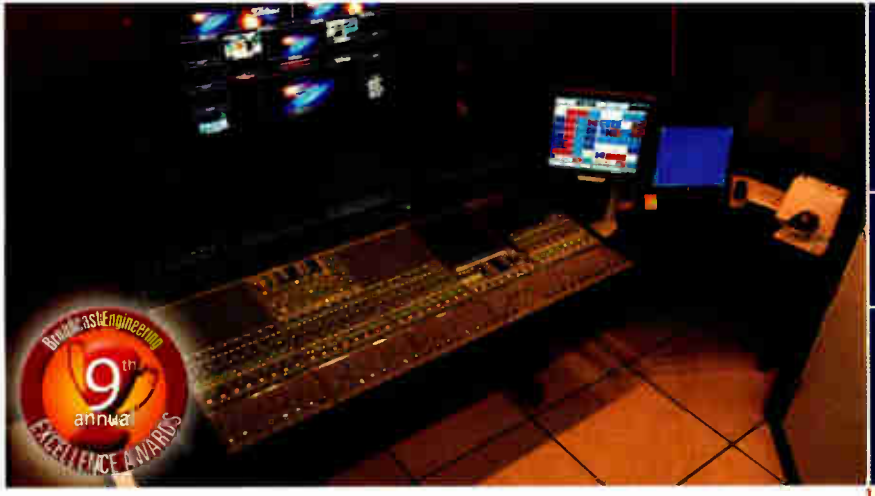
Selecting the proper mix of equipment to yield the greatest functionality goes hand in hand with keeping the vehicle's gross weight under control. Striking the right balance can be a difficult and sometimes compromising task. To achieve the right mix, Thunder made extensive use of fiber optics to not only carry multiple signals on a single cable but also to reduce the weight.

Traditionally, Dome's internal engineering group had designed and integrated everything in-house; however, timelines being what they were and internal resources already stretched, it was time to take a slightly different approach. Dome Productions has been at the forefront of HD mobile production vehicle advancement in Canada. AZCAR is a leader in HD broadcast system integration and production and was chosen for this project because it could dovetail with Dome's internal resources and bring complementary management, experience and engineering expertise to the project.

With a 3-D eye to the future, Dome invested in the technologies that could take it to 1080p60, the format necessary for live stereoscopic 3-D productions when its clients see the need. This included the installation of an Evertz EQX 3Gb/s router (288 x 180 HD/SD SDI video with 128 x 128 AES audio) and a cable infrastructure that was capable of handling the bandwidth and return loss characteristics of a 4.25GHz signal parameter. Ten switchable Sony HDC-1500R cameras in both hard and soft configurations allow for addressing the flexibility that sports and entertainment venue operations require. Sixteen channels provided by an EVS XT[2] LSM server complement Sony HDCAM and Sony SR high-bandwidth digital video recorders. Sound is managed with numerous Dolby E and surround encoder/decoder products, with surround mixing on a Calrec Sigma mixing deck with Bluefin, a 320-channel processor system capable of 8 x 5.1 surround, stereo or mono audio groups.

The Grass Valley Kalypso HD 4M/E production switcher, Abekas Dveous/MX dual-channel DVE and Chyron HyperX2 SD/HD graphics CG make up video production. A complement of audio support equipment includes the RTS Adam intercom, Wohler AMP2 audio monitors, Ward Beck AMS8-1AM monitors, Crown CTs-4200 amplifiers and JBL loud speakers.

The 53ft trailer features a 41ft by 5ft expando section that provides ample room for the three-deck production center and the 25ft-long transmission and video support area. Thunder's first production was for MLB, which aired May 12, 2009.



Golf Channel

Excellence Award category

Post & network production facilities

Submitted by

Solid State Logic

With the move to an HD video infrastructure well on its way to completion, Golf Channel, distributor of golf-related programming to more than 120 million households worldwide, needed to address the increased demands of stereo audio production. Golf Channel provides separate mixes for the domestic mass control feed as well as the international mass control feed that services Golf Channel's vast world market.

With three different audio control rooms, the challenge was to match the capabilities of Production Control 1 (PC 1) and Production Control 2 (PC 2) to create a synergistic production environment with shared resources, thereby streamlining the rigorous production schedules. Production Control 3 (PC 3) was then left for less rigorous capture situations, like voice-overs, to add an American touch to international golf tournaments. The strategy to closely match PC 1 and PC 2 also influenced the decision to upgrade the physical design for both audio control rooms and Studio A and Studio B without missing a stroke or live interview and thereby completing the changeover to HD.

Golf Channel produces many shows including news and analysis programs such as "Golf Central," "Grey Goose 19th Hole" and "The Approach with Callaway Golf," and entertainment programs such as "Golf in America," "Big Break Disney Golf," "The Haney Project" and "Top 10," to name a few. With a breakneck production schedule, it made sense for both Studio A and Studio B to handle the production of any show live to air, whereas in the past, Studio B and PC 2 were used for programs that were taped and edited for future airing.

The challenge was successfully met by Golf Channel staff and Georgia-based Ingenious Electronics as systems integrators. PC 3 and Studio C were upgraded first, with a Yamaha DM1000 digital console, because any voice-over sessions could be easily handled by PC 1 or PC 2. Because Golf Channel already had a Solid State Logic C100 console in PC 1, the logical choice was to upgrade PC 2 with a new Solid State Logic C100 HD-S. This decision served several purposes. The new console presented session engineers with consistent console topology, functionality and program recall settings between PC 1 and PC 2. This meant there would be no programming downtime for the redesign plan. The physical upgrade of PC 1 and Studio B was accomplished first with PC 2 and Studio A taking on the duties for both Studio A and Studio B programming. Once complete, the focus shifted to a physical upgrade of PC 2 and Studio A with PC 1 and Studio B taking on production duties.

The two consoles now share resources through an SSL MORSE router with two dual MADI cards, further streamlining the production flow between studios and delivering embedding and de-embedding options to both consoles. When possible, audio sources are brought into PC 1 and PC 2 via AES with Evertz EQX, Avid AirSpeed ingest and playout servers and a number of decks brought in through the MORSE de-embedder cards.

Design team

Golf Channel: Bob Van Deering, tech. management; Jason Miller, signal flow eng.; Greg Fox, proj. eng.
Ingenious Electronics: David Mitchell, on-site eng.; Darrell Powell, installation supervisor; Harry Neil, installer; Chuck Street, installer

Technology at work

Abekas: MIRA server
Avid: HD AirSpeeds
Chyron: CGs/sound effects
Clear-Com: Matrix intercom
Denon: CD player
DPA: 4077 lavalier mic
Electro Voice: 635 mic
ENCO: DAD music server
Evertz: Converters, EQX router, MVP system via a Clarity Bobcat LCD monitor
EVS: Multi-Cam systems
Fostex: 6301B cue monitor
Gentner: Telephone hybrid system
Grass Valley: Apex AES routing switcher
JBL: 4010 speakers
Lectrosonic: 400 series digital hybrid mics with venue sys.
Mackie: 824 monitors
Roland: MA-12C cue monitor
Sanken: COS-11 lavalier mics
Sennheiser: 416 mic, ew 300 mic, MKE2 lavalier mic, MKH 60 mic
Solid State Logic: C100 HD-S digital console, C100 digital console, MORSE router, StageBox remote I/O
Sony: DigiBeta VTR, HDCAM camcorder, IMX recorder, XDCAM
Telos: Telephone hybrid system
Tram: TR50 lavalier mic
Yamaha: DM1000 digital console

Major League Baseball

Excellence Award category

Post & network production facilities

Submitted by

The Systems Group

Design team

The Systems Group: Scott Griffin, principal - VP, eng. and tech.; Belinda Binkley, exec. proj. mgr.; Jim Tome, sr. sys. eng.
MLB Network: Mark Haden, VP – eng. and IT; Tab Butler, dir. - media management; Mark Henry, dir. broadcast IT

Technology at work

Apple: Final Cut Pro
Autodesk: Flame special effects software, Inferno compositing software
Calrec: Hydra audio networking, Omega audio console
Cisco: Routers
Evertz: Router, modular gear, Quartz router and master control
Front Porch Digital: SL8500 storage archive
Grass Valley: Aurora production suite, K2 HD servers, SAN
Hitachi: Encoders
Miranda: Multiviewer
NTT Electronics: Encoders
NVISION: Router
Omneon: Servers
Pro-Bel: Automation
Riedel: Intercom
Sharp: 108in monitor, LCD monitors
Sony: 42in displays, HDC-1450 cameras, MVS-8000G HD switcher
Sun Microsystems: StorageTek SL8500
Telestream: FlipFactory video transcoding and workflow automation
Vinten: Artemis stabilized camera system, Quattro pedestals
Vizrt: FX 3D graphics

Veteran systems integrator The Systems Group (TSG) has been involved in its share of major facility builds, but few projects compare to the scope, complexity and practical implementation regarding its design and installation of the new MLB HD production and distribution facility in Secaucus, NJ. The facility is home to the new MLB Network and MLB Productions, where content is ingested, edited and distributed.

A TSG team, led by Scott Griffin, began in August 2008 to replace a former 24-hour cable news operation with a complete HD sports network. TSG's 40-person team mobilized to get on the air by January 2009. This was no small feat, as the technology of dozens of equipment vendors had to be rapidly evaluated and selected to seamlessly integrate into a dependable and cohesive facility.

MLB engaged CBT Systems of San Diego, CA, to guide the initial design requirements and oversee the implementation plan. TSG was engaged as the project systems integrator. While TSG progressed through design detailing, MLB built up its engineering team, which eventually joined with TSG and CBT to guide the project to completion.

The facility features two control rooms with Sony production switchers, Miranda multiviewers on Sony 42in displays, Calrec audio consoles, 10 Apple FCPs and 15 Grass Valley Auroras and K2 HD servers, two Fairlight sweetening rooms and two large studios. The Apple XSan for MLB Productions, and all of the other SANs, use a Front Porch Digital SL8500 storage archive.

This project's challenges were to implement a file-based HD workflow within a facility that was originally designed as a linear SD plant. File formats and MXF compatibility between the various SANs was a major issue. Another challenge was making the EVS communicate with an XSan and the Aurora system. This allowed thousands of low-res proxy clips to be available to anyone on the network at the touch of a button. All three systems also send files to Omneon air servers.

TSG's Griffin called the multilayered infrastructure "unprecedented." It was one of the most demanding projects he has been involved in, but also the most rewarding.

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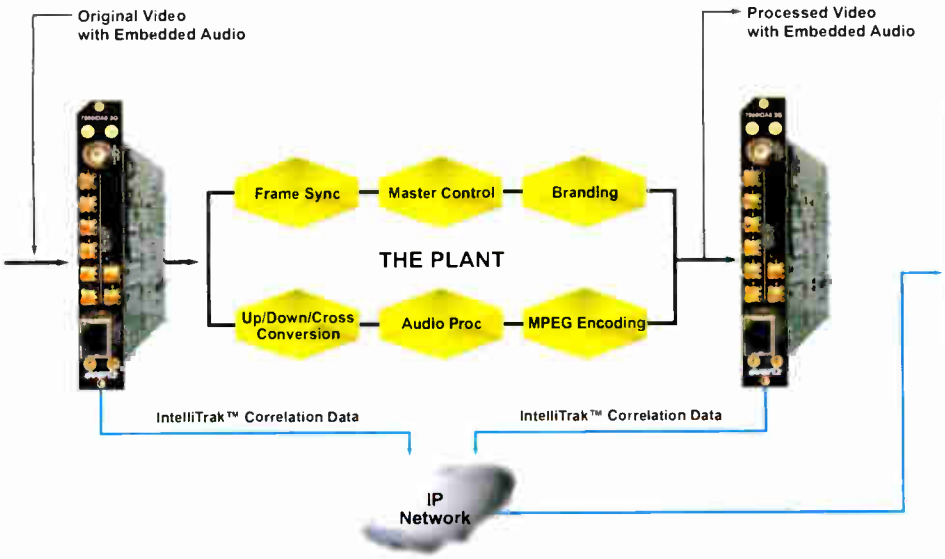

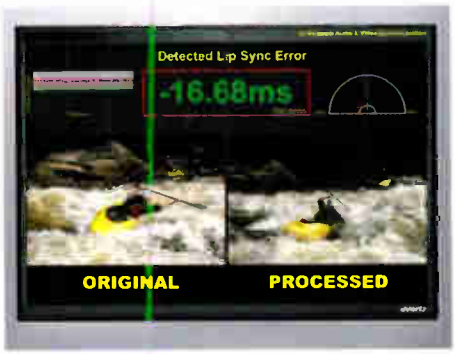

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