

Sensor sizes to have large implications for acquisition

New sensor designs are changing the industry, but are all the changes for the better – and which compromises are worth making to take advantage of them? **David Fox** reports from the leading edge of Acquisition Innovations

Most of the exciting new cameras recently have had larger sensors, higher resolution and/or higher frame rates. Creatively, this is ideal if you want shallow depth of field and have the lenses to match, while higher resolution is always good — until you look at the additional storage and bandwidth requirements.

“High resolution, high speed, sensor size and processing can each bring benefits to the content. However, significant benefit to the viewing experience occurs when any of these factors are combined; for example, shooting at 4k x 2k resolution at 50fps progressively results in content that benefits from both image detail and also motion characteristics, to give the best possible overall experience,” says John Kelly, general manager, JVC Professional Europe.

“Sports and natural history are particular areas where high resolution content will benefit the viewer, particularly when acquired at a high progressive frame rate,” he adds.

However, “larger sensors and higher resolution do not provide really new creative benefits, they just compensate for the drawbacks of digital camera technology compared to film,” argues Michael Erkelenz, manager of P+S Technik's Digital Capture Business Unit, who sees flexible speed rates — such as those offered by its new PS-Cam X35 — as offering far more creative benefit.

“Bigger sensors also mean bigger lenses. If it's going to transition from today's HD formats to bigger sensors or higher resolution sensors, it has a major impact on the whole workflow. The rest



The need for speed: Michael Erkelenz with P+S Technik's new PS-Cam X35

of the chain is being impacted,” says Ronny Van Geel, Grass Valley's director of Product Management, Cameras. For broadcasters who have only recently invested in HD, it would require yet another wave of investment.

Acquisition Innovations

TVBEurope takes an in-depth look at the implications of the latest sensor technology and other key innovations in acquisition, including new broadcast cameras and lenses, in our Acquisition Innovation section, beginning page 26 — Fergal Ringrose



First delivery: Sony will build all 10- and 24-camera trucks for Panorama

Russia's Olympic plans

OB Focus Part II

By Philip Stevens

In these times of economic difficulty, the placement of an order for 12 outside broadcast vehicles from one customer is welcome news for the industry. And that number of trucks is what Russian production facility Panorama needs in order to fulfil its commitment to cover the Winter Olympics and Paralympics in Sochi in three years time, as well as the XXVII World Summer University Games in Kazan in 2013.

In all, coverage at 11 venues is required for Sochi, while around 30 sites are involved with the Kazan games. (Although the organisation is operating under the brand name of Panorama, the official legal name of the company is ANO Sports Broadcasting.)

For the games' coverage, Panorama is now training around 1500 television professionals to handle the various production and engineering functions of the games.

Panorama was founded as an autonomous non-profit organisation by several Russian broadcasting outlets and the RIA Novosti news agency in December 2009.



Sergey Podlesskii: “No existing station or production company had enough resources”

“On the government level it was decided that for an event like the Olympics, no existing station or production company had enough resources to make a production for international standards,” states Sergey Podlesskii, the company's CTO (head of Production Technology). “Also an idea of ‘national signal’ — a production focused on Russian athletes and emotions of Russian fans — led broadcasters to create a joint structure to produce a transmission for all Russian viewers.”

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Building a game plan

Panorama is fulfilling a commitment to cover the Winter Olympics and Paralympics in Sochi in three years time, as well as the XXVII World Summer University Games in Kazan in 2013. **Philip Stevens** talks to the production company involved and some of the key equipment suppliers about the order of 12 outside broadcast vehicles

Panorama Head of Production Technology Sergey Podlesskii says that a very detailed brief for the supply of outside broadcast vehicles was produced by the technical team at Panorama, together with experts from the Russian TV industry including three of the founders of the organisation — Channel One, VGTRK and NTV-PLUS.

“As a result of the tendering process, our main contract for OB vans was placed with ZAO, a Russian office of Sony. They have subcontracted Sony Professional Solutions Europe for 10- and 24-camera units and Broadcast Solutions in Germany for the 16-camera versions of the trucks,” says Podlesskii. “The order had to be split because of its size, the very strict delivery terms, financial conditions and responsibility.”

All of the 10-camera units were scheduled to be delivered by the end of 2011, while the bigger capacity trucks will be commissioned throughout 2012.

As Malcolm Robinson, head of Live Production Solutions at Sony Professional states, this is an extremely prestigious project for Sony. “We are pleased to be working with Panorama and integrating a fleet of vehicles which will set the standard for sports broadcasting in the CIS. We have been engaging with Panorama since November 2010 to design and deliver the required technical solutions, and this has involved close co-operation with a number of industry leading partners.”

“Both ASGB and Broadcast Solutions have been key partners to enable us to realise the customer’s visions. The vehicles are all complex technical installations and our design teams have worked closely with Panorama to ensure operational efficiency has been optimised” – Malcolm Robinson

He says that one of the major areas has also been the consideration of the look and feel of the vehicles. “Both coach builders ASGB and Broadcast Solutions have been key partners to enable us to realise the customer’s visions. The vehicles are all complex technical installations and our design teams have worked closely with Panorama to ensure operational efficiency has been optimised.”

“Although there are minor differences in terms of scale for



Camera control: Main cameras are mix of HDC-1500R and HDC-3300R, with HDCU-3300 and HDCU-1500 CCUs

some of the equipment installed in the trucks, our team tried to keep unified solutions for the whole fleet,” declares Podlesskii. “Wherever possible, we have kept the same brands across all the vehicles.”

Not surprisingly, Sony has provided a variety of equipment. This includes cameras, which are a mix of HDC-1500R and HDC-3300R cameras, with their HDCU-3300 and HDCU-1500 CCUs, the latter of which can operate on either hybrid fibre or triaxial cable. The flagship 24 camera trucks are to be equipped with the latest

HDC-2500 3G cameras. VTRs include HDCAM, PD-F1600 XDCAM VTRS, and various monitors, including BVM-E170 Grade I colour monitors using the latest OLED technology.

However, a variety of other suppliers have contributed to this huge project. For example, a number of Panorama personnel were already familiar with Snell vision mixers, so that source was asked to supply equipment for the trucks built in the UK by Sony.



All 10-camera units were scheduled to be delivered by end 2011, with bigger trucks commissioned throughout 2012

“The model that was selected was the Kahuna 360,” explains John Carter, Snell’s product manager for switchers. “This provides the ability to mix HD, SD and even single link 1080p sources in a single production and then offer multiple outputs of SD, HD and 1080p.”

Carter states that the 360 moves away from the traditional concept of fixed M/Es, resources and formats. “It provides far more keying power – in fact, up to seven sources on one mix/effect bus. These are made up of four super keyers and three linear or luma sources which we call ekeys. These ekeys are downstream of the super keyers and have been designed to bring even more graphics to an M/E.”

He goes on to say that from an operator’s perspective, the look of

the mixer is exactly the same as a traditional layout — it is in the electronics that the sources can be configured to determine which keys go on what M/E bank.

With the vision mixers coming from Snell, it made sense to purchase routers from the same manufacturer. “Our Sirius series routers are ideal for the restricted space that is found in an OB environment,” maintains Alan Smith, product manager for routers. “For this project, it was decided that the new 840 router was the ideal model.”

The Sirius 840 consists of a 576x576 frame in a 26U format. One key benefit is that no other external splitters or combiners are required. In addition, the frame includes redundant power supplies, control cards and crosspoints.

Serving the replay needs

EVS equipment will be installed in all trucks, delivered from both Sony and Broadcast Solutions. The five trucks that each accommodates 10 cameras are equipped with three XT3 servers, one XHub3 and one XF2 (removable storage systems). The XT3 is used for all stages from ingest to playout — including live editing, slow-motion replays, multi-channel playback and transfer to third-party systems.

XHub3 is a high-bandwidth media sharing network that allows multiple production and playout servers to be interconnected through a central hub offering a bandwidth of up to 1.5Gbps. The XF2 server incorporates two removable hard disk drives, and is employed where archiving and backup for storing clips, media, live feeds or any other video content is needed.

The seven vehicles that operate either 16 or 24 cameras have been supplied with greater numbers of the same equipment and systems, together with EVS’ IPDirector. Running on a Windows-based workstation, the IPDirector Suite allows ingest control, metadata management, editing and playout scheduling all to be managed from a single interface.

These larger capacity trucks will also be equipped with Final Cut Pro systems that allow media interoperability between the EVS units and the editing system. This is accomplished using EVS import/export plugin tools IP-Link (a browsing IPDirector plugin tool) and V-Drive (the EVS virtual file system allowing users to access XT3 clips from FCP interface).

In addition, the 24 camera trucks are expected to be equipped with Xedio dispatcher for ENG file reviewing, rough cut editing and import on to XT3 servers. The configuration will also include XedioCleanEdit (EVS’ NLE package) with IPLink plugin for file import on the timeline.

Following detailed testing and evaluation Oxygen DCT’s Penta series of monitors were chosen for the trucks. All monitors in the main gallery, production, and sound areas are equipped with 3G inputs and 10-bit LCD panels giving up 1.07 billion radiant colours — allowing production crew to monitor more effectively and in greater detail. The monitoring is

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compliant to EBU REC709 colour standards and upon installation each monitor underwent an additional in-situ recalibration to ensure identical colour reproduction on all sizes of monitors and in each area.

Netherlands-based Axon Digital Design has supplied the

trucks with Synapse modular processing equipment. These processors will be used for a range of applications, including the up-conversion, down-conversion and cross conversion of 3G signals. The modules will support the distribution of video and audio signals throughout the vehicles as well as the embedding and de-embedding of audio signals.

“Beyond the Games, one of the aims of our company is to contribute to the development of the production industry all over our big country”
 – *Sergey Podlesskii*

Synapse’s internal bus structure reduces the need for external cabling and further easing the technical demands on each vehicle.

In addition, Axon’s miniaturised technology will control the synchronising, legalising and keying operations within the fleet.

Finally, Axon’s SynView will form the standard multi-viewing platform on the vehicles.

“Included in the list of equipment is our new GDL200 unit,” reports Jean-Pierre Nouws, senior product manager at Axon. “This was made especially for this contract. It is a dual standard legaliser for digital signals with full frame sync capabilities.”

He continues, “The multi-viewer has been enhanced upon request of Panorama with 4:3 masking capabilities.”

Audio mixing has been entrusted to Studer Vista 9 and Yamaha DM1000VCM with MY16-AE AES/EBU interface cards alongside high specification video and monitoring equipment. Communication equipment for the trucks has come from Riedel and includes a combination of Artist, MediorNet, Partyline and RockNet units.

The training task

As mentioned earlier, training is one of the key points of the project, and Panorama felt there was a need to educate around 1,500 professionals from nine Russian regions in preparation for Sochi.

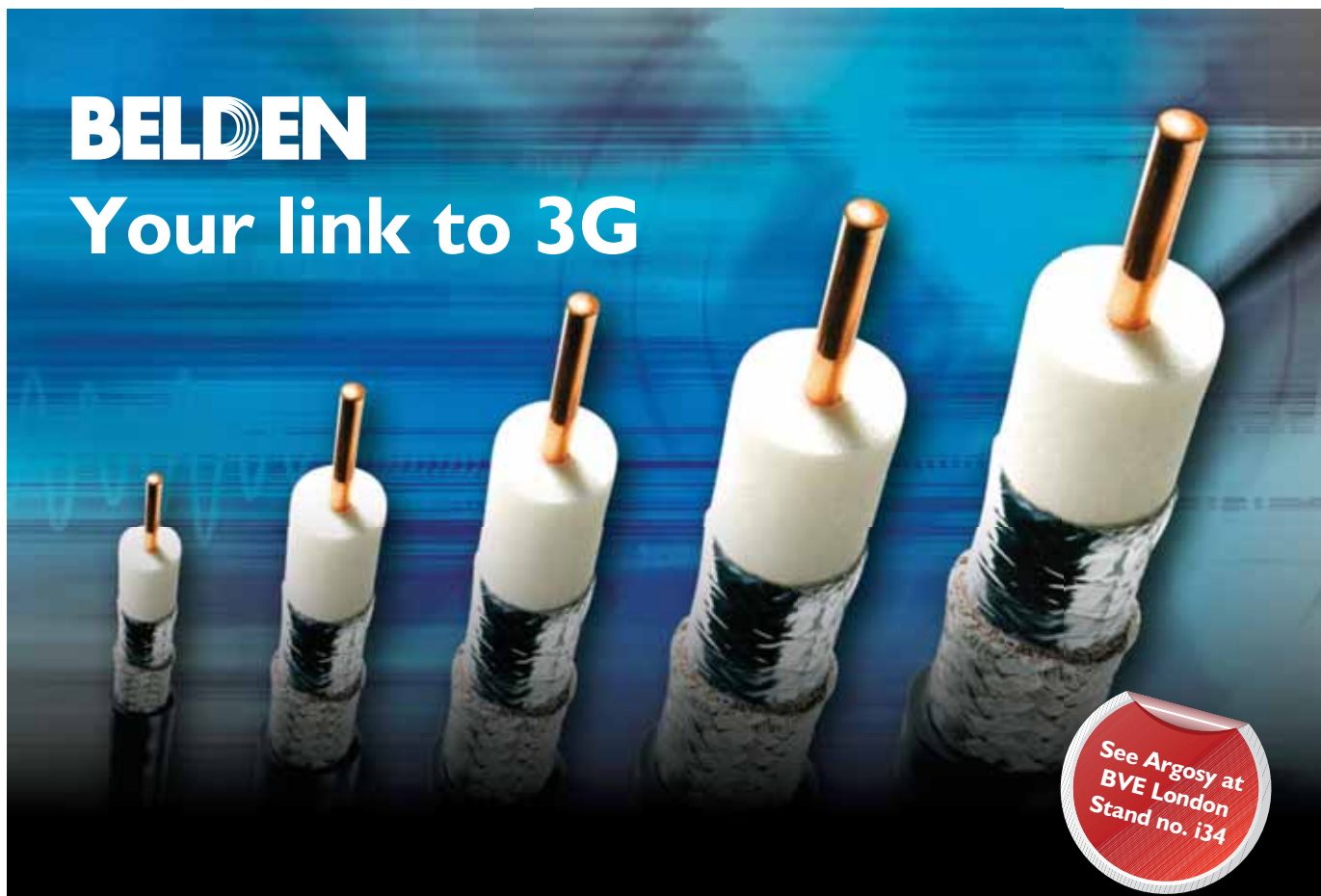
“Together with our main contractors, vendors who provide equipment for us, and leading Russian high-schools, Panorama has developed a special training programme,” explains Podlesskii. “The first phase of training started in May this year — even before our first OB vans were built.

“With the help of our suppliers, we organised a special classroom in the form of an OB-van simulator, where both technical and production specialists were trained. Now we are already running a second phase — on our own first 10-camera OB vans. Each group of students is getting both theoretical and practical classes. Test productions are performed in all different kinds of sports.”

Podlesskii admits that Panorama has a very tough task to build a huge infrastructure within a very short time. But he believes that high professionalism and motivation of the core team, along with practical support from the state and technical partners make the fulfilment of the task very realistic.

He concludes, “Beyond the Games, one of the aims of our company is to contribute to the development of the production industry all over our big country. We hope that all OB-vans operated by local teams, which are now being trained in Moscow, will continue working on future sports and cultural events in Russia and possibly outside of the country.”

- www.panoramahd.ru
- www.sony.co.uk
- www.broadcast-solutions.de
- www.oxygendct.com
- www.snellgroup.com
- www.evs.tv
- www.riedel.net
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Spec:	SMPTE 259M		SMPTE 259M(372M)			SMPTE 424M	
Application:	Component SDI		720p - 1080i (Dual Link 1080p)			1080p	
Part No.:	ft.*	m*	ft.*	m*		ft.*	m*
	380	116	110	34	40	80	24
	790	241	260	79	80	150	46
	856	261	284	87	100	170	52
	830	253	215	66	90	145	44
	1110	338	310	94	120	220	67
	1070	326	285	87	110	190	58
	1430	436	400	122	140	270	82
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