# Processing Golf

By KIERAN RIVERS

Founded over 20 years ago, Australia-based Virtual Spectator International has been specialising in sports broadcast for the past twelve years. We have developed custom solutions with proprietary technologies that have been used throughout Australia, Europe, and the Americas by most of the top tier broadcasters for premier sporting events such as the PGA Tour, Wimbledon, World Rally Championship, Volvo Ocean Race, America's Cup, Ashes cricket series, The King Edward VII Gold Cup, and The Melbourne Cup.

We specialise in providing cutting-edge broadcasting products that have been tailored specifically to client requirements. These technologies include sports-specific telestrators, character generators, virtual advertising systems, virtual line systems, virtual sets, and virtual reality visualisation tools. Our sport management and data capture technologies provide interactive sports data, statistics, and graphics to both broadcast television and the Internet.

Our Golf Vision system is a turnkey 3D golf course visualisation tool used to help show course contour and shot placement during a televised golf tournament. Meticulous land surveys of each course are undertaken, and life-like 3D landscapes put the viewer where the golfer is.

The shots we can visualise would be impossible from a traditional camera. We can show the viewer some of the difficult shots a player has to make; such as a deep bunker shot where you can't even see the top of the flag.

Golf Vision and our other systems are built on our proprietary "Fishticker" render engine. Fishticker is Virtual Spectator's core graphics render technology. It is used in our range of products including bespoke character generators, telestrator and virtual set products.

Fishticker harnesses AMD's SDI-Link technology via integration with Bluefish444's SDK for low latency transfer between AMD's FirePro V7900 SDI GPU and Bluefish444's Epoch 2K Horizon. The reduced latency between the two devices ensures highly detailed broadcast quality graphics are developed to their full potential and output over HD SDI by Bluefish444. The quality, speed and price offered by this card combination made it an easy choice when we were deciding which hardware we would support.

In the past, we required specialist hardware with a high specialist price-tag to give us the grunt we needed to produce cutting edge products. The Bluefish444/AMD card combination has the power of the high end hardware that we had previously purchased, but at a more reasonable price.

This is a huge advantage. Our broadcast clients find it easier to include our products in their production budgets, now that the hardware component is a lot less expensive.

We have worked with Bluefish444 for more than six years now and like the ease of integration with their SDK. The adoption of AMD's SDI-Link via the Bluefish444 SDK was almost seamless.

We utilise many features of Bluefish444 hardware such as full duplex for simultaneous capture/playback and multi-channel HD SDI I/O. The addition of onboard hardware scaling is also a great feature. It allows lower bandwidth requirements for windowed video frames as the full frame doesn't need to be passed to the GPU for scaling.

These features, working in conjunction with AMD's FirePro V7900 SDI GPU via AMD SDI-Link, have enabled Virtual Spectator to develop more complex accelerated real time graphics for live broadcast as either 2D/3D over HD SDI. This is a significant benefit to broadcasters. 📹

**Kieran Rivers is Chief Operating Officer of Virtual Spectator International.**

**Contact: www.bluefish444.com**



## FIBRE CONVERTERS

New at NAB from Miranda was LUMO, a high-density electrical-to-optical and optical-to-electrical converter series. LUMO packs 36 I/Os into a 1RU frame, and boasts a very low impact block when compared with other standalone converters – the modular design enables each converter to be serviced while the unit remains in operation. The unit also includes dual redundant power supplies and frame controller with dual redundant IP-connections that can be used for comprehensive system monitoring and frame health alarming. LUMO uses the same SMPTE-compliant fibre SFP modules that are found on all 3 Gbps products in the Miranda portfolio. Available in regular 1310nm and CWDM wavelengths. When married with Miranda's optical CWDM mux/demux, 2 fibre cables can now carry 36 3Gbps signals. **www.miranda.com**

## 3 GBPS TOUGH BATTERY CONVERTERS

Blackmagic Design has announced two new Battery Converters that include the latest 3 Gbps SDI technology for the highest broadcast quality conversion and are available in two models, Battery Converter SDI to HDMI and HDMI to SDI, priced at US$295. Both feature a built in lithium polymer battery for more than 2 hours of operation. Similar to Mini Converter Heavy Duty converters, Battery Converter is made from aircraft grade aluminium. The units feature an LED indicator that displays the remaining battery level and can be recharged from any 12V source, even while in use.

Battery Converter SDI to HDMI is perfect for monitoring at live events and Battery Converter HDMI to SDI is ideal for connecting low cost HDMI cameras or computers into ATEM live production switchers. It is an ideal alternative to the Blackmagic Design ATEM Camera Converter when longer distances are not required between cameras and the switcher and customers need a lower cost alternative based on regular copper SDI connections. **www.blackmagic-design.com**