



RT Software multiple tOG-Sports case study

BSkyB cluster 3 tOG-Sports systems for maximum productivity and efficiency



Business situation

Sports is one of the key content areas for Sky, not just the production and transmission of the sporting events but also studio shows structured around the often live events. Increasingly, adding analysis graphics to video - or telestration - is a key part of the content. Sky already use tOG-Sports systems to do this both live at the game and in the studio shows. At the game they use multiple systems to insert virtual logos on the pitch and for "quick replays" such as 5th tackle and advantage lines in rugby. In the anchor shows at the studios systems are used with sports clip content, either with pre-prepared telestration graphics created by an operator before the show and / or live analysis on the video by the presenter using a touchscreen or tablet device on air in the studio.

Sky's new production facility in Brentford, England meant that many studios could potentially use tOG-Sports in live shows and although Sky had purchased multiple systems over the years, it was not sensible to dedicate one system to each studio - especially for the occasional or temporary use scenarios. Thus the decision was made to centralise resources and establish an efficient workflow for the creation of a high volume of analysis clips and a presentation capability across more studios than they had systems.

The desire was to have a solution that gave easy access to Sky's extensive library of sports content, a dedicated operator area for preparation of analysis clips, the ability to distribute graphically enhanced clips as required, an infrastructure where many studios could make use of centralised systems with minimal setup being required, and where use within any one studio was personalised to meet the specific needs of the show or the sport concerned.



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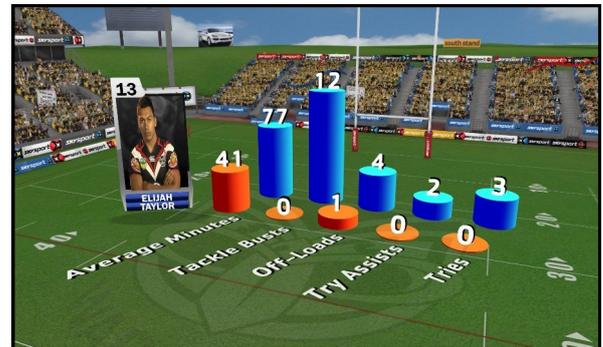
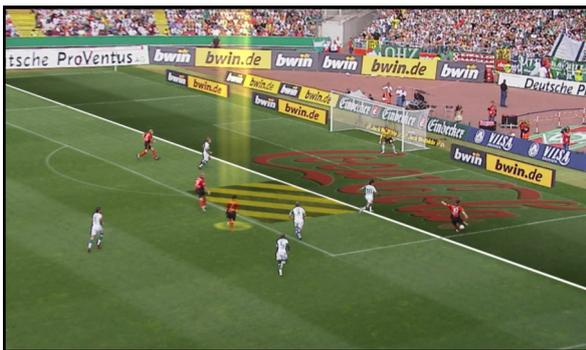
tOG-Sports Overview

tOG-Sports is a powerful and flexible sports analysis tool for broadcasters. It has three distinct usage scenarios:

- During sports events for live or near live graphics operator based graphics such as logo's on the pitch, quick replay graphics such as off-side lines and half time / full time highlight sequences.
- Live in the studio show with a presenter typically using touchscreens or tablets to select clips, control clips and add live telestration.
- Offline preparation of clip content for magazine and pre event shows.

In all cases tOG-Sports delivers "tied to pitch" graphics such as player trails, highlight tools and virtual views of the game play.

For more information on tOG Sports see <https://rtsw.co.uk/tog-sports/>



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Technical Requirement

During technical consultation sessions at Sky, it was established the main considerations and requirements for the solution centred around the following:

- Ability to source High Definition video content from a number of sources. These sources could be SDI Baseband or file based clips. These sources include:
 - Video replay systems such as EVS and Grass Valley
 - Video clip content from the Viz Ardeno MAM
 - Live VT direct from OB or Gallery
- Ability for presenters to interact live with VT content. With the ability to select specific clips from thumbnails on their chosen interface. They needed to be able to control the VT and to telestrate and present live to air.
- Ability to generate graphics live to air. Operator driven analysis and enhanced replay video content prepared during play needed to be able to be recalled from the system and played out live during sports intervals.
- Ability to generate completed graphics enhanced sequences for future playout. Sequences generated by the graphics operator using a tOG-Sports system needed to be recorded off. These were then required to be made available to an EVS operator for playout later or for ingestion into the MAM system for editing or redistribution.
- Homogenizing all tOG-Sports Systems in terms of platforms and features. A single specific installation was required across all platforms that could be dynamically configured for each individual sports requirement.
- Connecting multiple studios to the centralised tOG-Sports systems.
- Support for a range of touchscreen and tablets.
- Robust wireless network in the studio for tablet support.
- Personalisation of user interfaces for branding and functionality within specific shows and even for presenter preferences.
- Diary system so that any of the 7 studios currently requiring telestration can reserve tOG-Sports systems for live programmes.
- Training operators and users



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Solution

RT Software worked with Sky to develop a solution that addressed the technical challenges highlighted above. These can be broken down into requirements for the video solution, the presenter solution (with touchscreens and tablets being the preferred choices) and the solution for integration to the Ardendo MAM and video servers such as EVS.

Video Solution

Video integration with tOG-Sports had always been achieved using Baseband video. Utilizing the very simple Sony 9 pin control meant that RT already had basic VT control capability. Building on this RTSW set out to achieve 3 things:

- A much tighter integration with video servers such as EVS and GV. Initially this comprised of adopting Odetics as a control interface. This allowed RTSW to not only control the VT but to also obtain clip information which allows a user to browse video content resident of the video server itself - crucial for the live presenter scenario. RTSW now implements advanced integrations with both EVS (including LinX) and GV to allow such things as automatic updates and record back making the live video workflow seamless.
- The ability to play out video content from locally stored video files on the tOG-Sports system. Video replay channel availability is always at a premium given the high cost of such equipment. By implementing our own video playback system using software based video decoding meant that RTSW could - to a certain extent - circumvent the need for expensive video channels. All major broadcast formats had to be supported such as DVProHD/AVC Intra/DNxHD/XDCAM etc. The ability to seek quickly was vital to give the same functionality as provided by the VT servers. Clips could be copied down from either an EVS or direct from the MAM for local playout and record.
- The ability to record completed graphic sequences back to disk. As well as playing sequences out over baseband, it also became necessary for RTSW to provide solutions to allow clip sequences to be recorded back to disk - either locally or over high speed file shares. RTSW already had layoff capability within its software - this was extended to include the ability to record sequences for ingest back to an EVS - where an EVS operator could playout, or direct to the MAM for editing as part of a highlights package for future programs.

The last piece of this jigsaw is now being rolled out by Sky. This is the ability to negate the need for external video servers completely in the telestration chain and implement live record/playback capability with tOG-Sports itself.

The combined ability of tOG-Sports to mix file based and baseband video either on input or output means that it has succeeded in meeting the requirements of Sky for a centralised system.

It now remained to provide the means of sharing these systems across all of Sky's facilities.



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Technical Solution (cont')

Presenter Solution

There was a clear requirement to develop an easy way to augment the existing tOG-Sport operator interfaces with customisable presenter interfaces. In addition, Sky wanted to be self-sufficient in generating these so they needed to be created by designers rather than programmers. RT developed and integrated into tOG-Sports the necessary functionality, interface options and tools to facilitate this. The ability to save and recall interface layouts on a per presenter basis meant individual shows and event presenters within these shows could use the system the way they wanted.

In the studios, the systems are used across 9 different sports (boxing, football, Golf, NFL, Rugby Union & League, Speedway, Tennis and Cricket). The sports specific presenter user interfaces required for the different sports are quickly and easily selected via the standard operator interface.

Regarding touch devices, the initial requirement was for support of the ubiquitous iPad for presenter control, which was achieved using Splashtop. This has now been supplemented by a native HTML5 solution allowing any device running Chrome to connect with full functionality including video preview - vital for telestration of course! Benefits of this new approach include near zero delay and allowing multiple device connections to a single system at the same time - meaning presenters can share analysis duties and even go head to head for more interactive analysis.

Wireless connection of hand held tablets and devices was achieved using the Sky corporate WiFi network, which as standard was able to support streaming video content to tablet devices.



MAM and EVS Solution

Each of the 3 tOG-Sports system was set up with Ardendo MAM accounts and an ftp service connected via 1Gb ethernet. This effectively meant a directory on each tOG-Sports PC was seen by the MAM as a media drive, making it possible for the MAM to push clips to it irrespective of whether there is a user on the system or not. Clips are prepared and distributed to the tOG-Sports systems by APs. For situations where the clips are sent to be enhanced with telestration and returned to the MAM, the MAM watches an in-box on the tOG-Sports systems and looks for new files, when file size becomes static it simply pulls the file back.

Content is often sent to EVS replay servers in the studios for use on air. In this scenario there is the option to use either EVS IP Director and baseband or be file based and go via the MAM, which in turn publishes to EVS in studio.



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Products and Services Deployed

Products and services provided by RT Software

Systems:

3 tOG-Sports systems comprising:

- Broadcast spec HP z820
- Windows 7 Pro 64 bit operating system
- Pro version of tOG Sports
- Line and Feature tracking option
- Record to Disk option

Consultancy:

Many of the enhancements needed to achieve the solution for Sky were already in the development plans for tOG-Sports. As such the majority of the development work was included within the scope of Sky's software support agreement.

Training:

RTSW delivered training to a pool of users and operators on site.
RTSW supplied on-line accessible video tutorials.

Graphics Services:

tOG-Sports includes a wide range of analysis tools as standard, sufficient to cover most popular sports in depth. However, some of the sports covered by Sky required customisation and graphics to incorporate additional functionality as well as capturing the Sky brand. This was achieved using RT Software's design team - "RT Creative". Full graphic templating within the tOG-Sports product meant this was easily achieved with minimal work.

Services provided by Sky

Sky appointed Richard Taylor from the Graphics and Data team to handle the project. He was assisted by Brian Williamson, an EVS specialist.

Initial work was conducted in a test environment at Sky (both MAM and tOG-Sports) with support from RTSW to provide the functionality required and advice on the codecs to be used.

After appropriate testing, the solution was deployed in the production environment by the Graphics and Data team.

Future plans

It is believed further consolidation and centralisation will bring additional benefits, and as such tOG-Repository is being investigated as a tool to improve and simplify management of accounts, project and versioning. This will also provide a centralised location for the MAM to push clips to. Sky are currently starting to push the live record and playback capability of tOG-Sports in order to deliver on the promise of freeing up EVS channels in the studios.



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Conclusion, Benefits and Future Plans

The project has been a huge success, resulting in tOG-Sports being used more often across more sports.

This has been put down to a combination of acceptance by presenters who do want to have control of clip payout, efficiency with the graphics operators and the ease of use of the system as a whole.

The systems are now in heavy use - often with 100% utilisation at peak times such as weekends.

Benefits Summary

Increased production value - More of Sky's content benefits from graphical enhancement, resulting in improved storytelling and understanding for the viewers. More sports are now able to provide engaging content for their viewers, everything from Spanish football to fishing.

System cost savings - With the resources centralised and shared system utilisation rate is increased.

Infrastructure cost savings - The fit out of studios for live analysis only requires the presentation device - be it output screen, touch screen or tablet. The remote control of the tOG-Sports system allows live to air HD SDI output as normal.

Operational cost savings - tOG-Sports is an easy to use and configure system that is configured and supported by Sky's internal staff, no need for expensive consultants.

Freeing up replay server channels - tOG-Sports Live / Record playback capability means copying back to an EVS or the like, and play-out from the EVS can be avoided when required.

Quick turnaround of operator enhanced analysis graphic clips - Production requests complete with the required raw video clip can be pushed from the MAM to job queues in the centralised Operator area.

Higher quality graphics - The training combined with co-workers being grouped together has resulted in a higher level of user skills and a corresponding increase in analysis graphics quality.

Easy to set up in the studio - The configurations for setting up the presenter interfaces are simply selected from a menu.

Easy to use in the studio - It is a simple process to custom presentation screens in the studio for both look and functionality and for these to be selected and used on the day.



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