

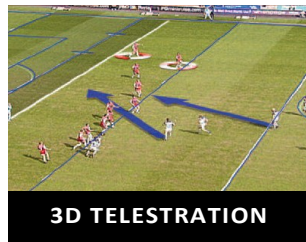


software

# tOG Sports



STUDIO USE



3D TELESTRATION



ON-PITCH GRAPHICS



BESPOKE SPECIALS



## tOG Sports - real-time 3d sports telestration and VR stadium graphics

Sports broadcasting is driving the success of television channels all over the world. From the early application of graphics on-screen there has been a steady technical development in the inclusion of graphics to enhance the viewer experience. A growing number of premium sports broadcasters have adopted tOG Sports as the latest step in this progression.

tOG Sports is RT Software's system for sports telestration and virtual reality graphics applied in stadiums and on playing surfaces. It is a simple to use 2d/3d screen writing application that provides comprehensive overlay and tied to pitch graphics for sports highlighting and annotation. For 3d tied to pitch graphics it can use image based line tracking or alternatively feedback from encoded heads. It also contains a complete VT control interface to remote video sources such as EVS or DoReMi for creating quick replay graphics such as "off sides" and more complex graphics using key-frames. It may be controlled directly using a mouse and keyboard, or connected to one or two touch screens for multi input analysis. In addition, tOG Sports uses the same render engine as all our other 3d render products and as such, graphics may be added or changed using tOG Edit to allow branding and customization.

### KEY FEATURES

#### tOG Sports Studio

*Entry level functionality includes:*

- Easy to use 2d Graphic overlays such as lines and arrows
- Customisable per user graphics menus
- Keyframe 2d tools such as magnifyer
- Multi screen control with support for up to 2 touch screens
- Full VT control for control of external video source.
- Virtual stadium for formation and pre match tactics
- Linear keyed or fill and key output
- Support for SD and option for HD

#### tOG Sports Live

*All studio functionality, plus:*

- User defined 'pseudo' cameras for 3d graphic placement on still shots.
- Quick and easy live or near live 10m circle and 3d offside graphics
- Telestrate archive footage.
- Playout specials created using separately supplied tOG Edit license
- Software chroma or segment keyer
- Option for dual video in
- SD and HD (hardware dependant)
- Upgrade to allow use of encoded heads

#### tOG Sports Pro

*All live functionality, plus:*

- Line tracking based VR graphics
- Supports up to 5 cameras with line based VR graphics
- Creates keyframed 3d on pitch graphics such as player trails
- Switch to virtual stadium views with full integrity
- Save/recall graphics to disk in Analysis mode
- Playout graphics live or lay off to disk for NLE
- Support for encoded heads



## tOG SPORTS INTERFACE

tOG Sports is split into three distinct products. There is an entry level 2d system, a pseudo 3d system with option for an encoded head and line tracking based system. All three products utilise the same intuitive, user friendly interface.



The graphics operator screen



### Live Presenter Telestration

The first area of the tOG Sports interface is intended primarily for live presenter telestration. This interface is designed to be output as VGA to a touch screen at either 1024 x 768 resolution or 1366 x 768. The lower resolution provides a preview screen and a fully customizable, per user button palette for graphic selection. The higher resolution option adds comprehensive VTR control.

presenter allowing full control over VT playback.

### Operator Control

The rest of the tOG Sports interface is primarily for more advanced graphics operator control. It provides setup interfaces for chroma keying, video formats, graphic appearance and button menu customization. It also contains a graphics stack and playback controls for extended analysis. This means that an operator can monitor and control the application at the same time as presenters use a touch screen for live telestration.



### Powerful VTR Control

On screen VTR control consists of play, pause, stop, fast forward, fast reverse, shuttle, jog and slow-mo bar. By default it is available to the graphics operator and use of a 1366 x 768 touch screen makes it available to the

### Custom Graphics

tOG Sports contains a comprehensive library of popular telestration graphics.





## tOG SPORTS STUDIO

**tOG Sports Studio is RT Software's entry level product for touch screen controlled sports telestration. It is a 2d system and provides a comprehensive set of graphics through an easy to use interface.**



### Simplicity of Use

Control which graphics appear on the touch screen button pages for every user that has access to the system - so the presenters have access to just the tools that they are comfortable with.

### VT Control

With a 1366 x 768 touch screen, presenters can cue up clips and pause, stop or slo-mo all through the same interface.

### Virtual Stadiums

In addition to live VT graphics, there is also support for virtual stadiums with player models allowing pre match graphics for tactical analysis. These are fully interactive and players may be positioned and moved live on air.

### Minimal Set-Up

There is no keying to setup and no tracking since it is a 2d overlay system.

### Database

Details such as player names can be stored in tOG Sport's database for quick error free retrieval.

### Keyframing

Even though this is a 2d tool, graphics such as the magnifier and player circle can be keyframed and used extremely effectively

on clips.

### Predefined Graphics

tOG Sports Studio has a comprehensive set of predefined graphics. You can change attributes such as two tone colour, size and thickness.

- Two tone colour small and large circles for home/away/neutral
- Two tone colour possession circles for home/away/neutral
- Two tone colour arrows for home/away/neutral
- Two tone colour lines for home/away/neutral
- Resizable circle
- Curved line/arrow
- Freehand line/arrow
- 4 point shaded zone (can show offsides) and drag shaded zone
- Magnifier
- Highlight circle
- Stadium zoom with 5 customisable preset camera views
- Player name button
- 3d Player
- Player circle with text
- Freeform Text
- 2d Formation

## KEY FEATURES



Sports Studio

- 2D screen overlays graphics.
- Multi screen control including support for up to 2 touch screens.
- Customisable, per user graphic button palette.
- Full VT control for pause, fwd, rev, play shuttle, jog and slo-mo
- Support for SD with option for HD
- Linear keyed or fill and key output
- Virtual stadium for graphics such as pre match tactics
- Comprehensive graphics included





## tOG SPORTS LIVE

**tOG Sports Live takes all the functionality of the Studio version and adds static pseudo VR cameras for 3d on pitch graphics.**



**Upgrade to an encoded head to create professional live stadium graphics.**

### Pseudo' Cameras

These allow the addition of 3d graphics onto playing surfaces without the need for any VR equipment or line tracking VR technology. The functional limitation is that the graphic can only be applied on a freeze frame - not on rolling video unless completely locked off.

There is no limit to the amount of pseudo cameras, and as most sports usually make use of repetitive shots this can be a very quick and easy to use tool once set up.

### Software Keyers

tOG Sports Live has 2 onboard software keyers (chroma and segment) to provide pitch keying under nearly all circumstances. Both have a simple interface with the ability to pick keying colours. Even key over multi coloured surfaces. Graphics may be designed for both background or foreground keying at the same time with no loss of transparency.

### Dual Video Operation

With dual video in use one feed for

telestration and the other for onscreen display, for example as a source for a virtual jumbotron graphic.

### Quick Live Graphic Turnaround

Rewind to the event, click and place the graphic, hit 'Restart' and play to air. An experienced operator can do this in under 8 seconds which means that an annotated event can ready for first replay.

### Build a Graphics Sequence

Quickly and easily build a sequence including predefined virtual stadium moves, auto rewind to the start with a user defined pre-roll and play back to air, with pauses - all in seconds.

### Playout Custom Graphics

Create new custom graphics on a tOG Edit license / system (not supplied) or edit existing ones for channel branding and sponsorship purposes.

### Optional Encoded PTZ Head Tracking

Add an encoded head such as Vinten or MoSys. We include a simple process to align the virtual model with the live

## KEY FEATURES



Sports Live

- User defined 'pseudo' cameras for guaranteed 3D tied to pitch graphics on freeze frames and static camera shots
- Quick and easy 4 click offside in 3D (<10sec)
- Add encoded head support for 3D tied to pitch graphics on live video with camera moves
- Linear keyed or fill and key output
- Chroma keyer and Segment keyer
- Virtual stadium for graphics such as pre match tactics
- Support HD included as standard
- Simple 2 click graphic select and place for most graphics
- Dual video in (hardware dependant)
- All the functionality of tOG-Sports Studio
- All graphics included in Pro are supplied, but many need an encoded head to work and some are not suited to live use.



## tOG SPORTS PRO

**tOG Sports Pro builds on the features in the Studio and Live versions with line tracking based VR. This gives the ability to create powerful tied to pitch graphics with full integrity while VT is playing / camera is moving.**

**Can be used live, near to live and to create clips for half time, full time and studio shows.**



### Line Tracking Technology

tOG Sports Pro includes image based line tracking technology that allows tied to pitch graphics without the use of addition hardware (encoded heads). Configure up to 5 cameras that may be calibrated ahead of time using a simple pitch model and takes about 5 minutes per camera. This means that graphics can be tied to the pitch and be in shot while the camera moves, resulting in powerful graphics such as player trails, logo's on the pitch and speed/distance information.

### Graphic Sequences

Rapidly save and restore graphic sequences - vital for half time and full time analysis. Once a sequence is saved, simply recall it, the graphics are reloaded, the VT device will auto spool to the correct time code start and it is ready to play. If required, re-edit the sequence for last minute changes.

### Load Clips from Disk

Load clips stored on disk, particularly useful when building sequences for highlight shows or sports news channels. Directly import clips from video storage, annotate them and then record them back to disk for inclusion in later edits.

### Build Custom Graphics

As with tOG Sports Live, add a tOG Edit license to build custom graphics or edit existing ones for channel branding. New graphics can be assigned to new buttons using the button editor or dropped into the custom graphic browser on the main interface.

### Predefined Graphics

tOG Sports Pro has a comprehensive set of predefined graphics :

- All the graphics included in Studio – but option to tie to pitch
- Pitch logos with score (\*)
- Tracked player circles and trails
- Jumbotron (\*)
- Offside left and right (\*)
- 10 yard circle (\*)
- Distance to goal left/right
- Angle to goal left/right
- 2 point distance
- 2 point speed
- Offside back Ten left/right (\*)
- 3D Formation (\*)
- Free kick
- Pitch to virtual stadium and back (\*)

## KEY FEATURES



Sports Pro

- Proven line tracking technology
- Quick and easy calibration process
- Tracking is supported on up to 5 cameras
- Save and recall sequences for analysis
- Load mpeg clips to add telestration and playout to air or lay off to disk
- Support for optional encoded head
- Telestrate archive footage
- Same features as Live and Studio





## HARWARE SPECIFICATION

tOG Sports is a software solution operating on industry standard IT hardware and operating systems, with leading video and graphics cards.



### Workstations

RT Software only qualifies hardware that is proven to meet the exacting demands of live broadcast for reliability, durability and performance.

Desktop/side and rack mount systems are offered from:

Hewlett Packard.  
Dell.  
Super Micro.

Laptops are offered from:

Hewlett Packard.  
Dell.

### Graphics Sub-System

tOG solutions harness the power of Quadro GPUs made by nVidia, the world leader in visual computing technology.


### Video Sub-System


To ensure the quality of tOG rendered graphics are maintained all the way to video output, tOG solutions use the highest quality video input and output cards from DVS and nVidia.


### More Information

- See <http://www.rtsw.co.uk/hardware> for a complete hardware specification
- See <http://www.rtsw.co.uk/products> for more information on our other tech-


## About RT Software

 **Provides real-time 3D graphics solutions** for all on air requirements including VR studios, sports, news, elections, entertainment and academia.


 **Founded in 2004** and privately funded, its award winning founders had spent many years working for the Computer Graphics department at the BBC.

 **Based in London** in the United Kingdom. The company operates globally through a network of trained value added resellers.

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 **Through one of our local resellers**  
Our resellers are tOG-3D trained to provide you with local support. Please see the partners page on our web site.