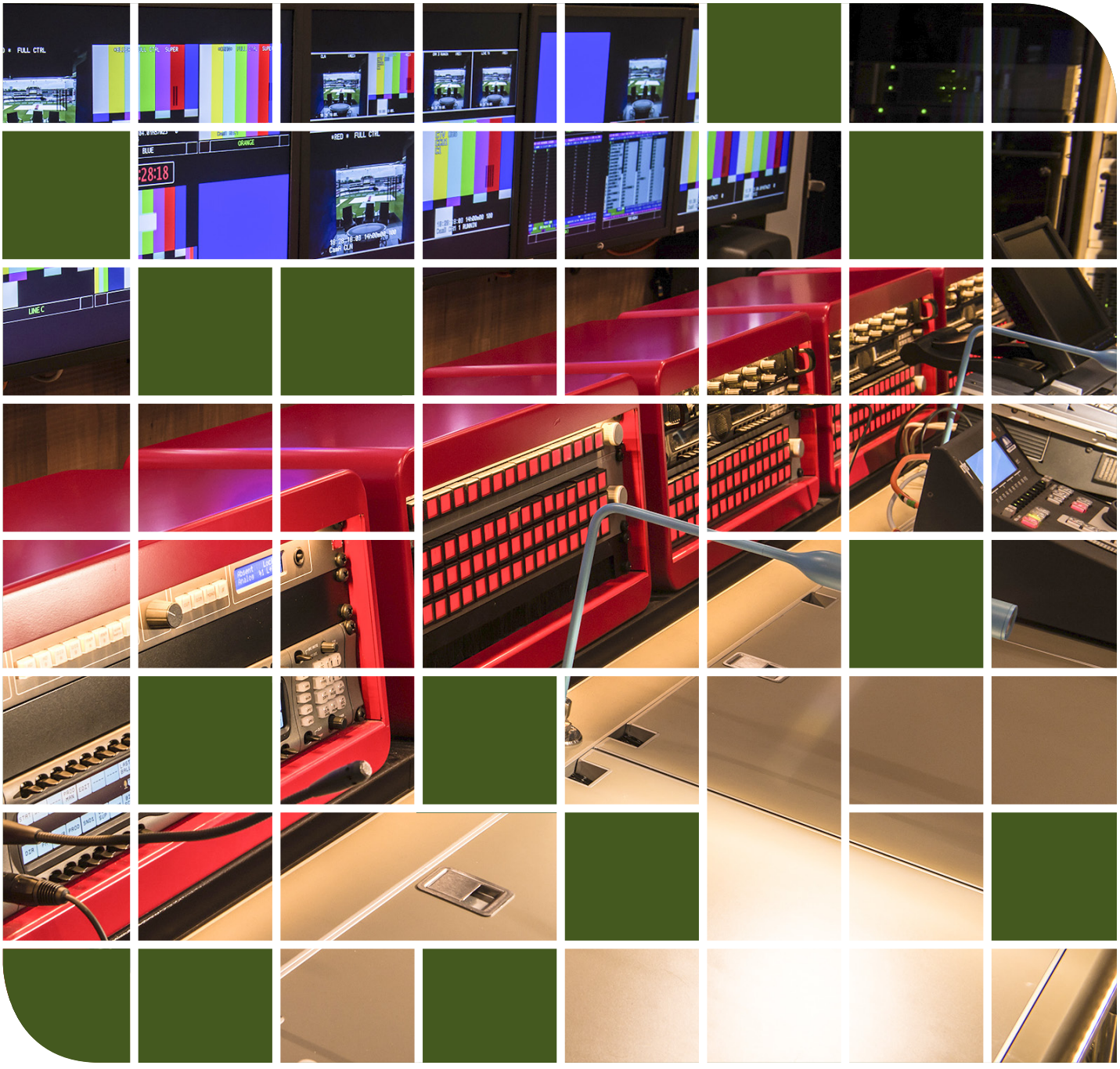
AXON
THE HEART OF BROADCAST

# CEREBRUM | CASE STUDY

## CTV OUTSIDE BROADCASTS - OB11



# AXON LINKS TOGETHER ALL MAIN BROADCAST EQUIPMENT IN CTV'S OB11

When CTV (part of the Euro Media Group of companies) commenced the design of OB11 to work on the renewed Sky Sports cricket contract they turned to Axon for help, not only with the 3Gb/s-capable signal conversion equipment but also the control of the whole production workflow. OB11 can support up to 28-cameras and accommodate 34 production staff. The unit also boasts a Sony MVS800X production switcher, Calrec Hydra audio console, EVS Slow-mo recorders, RTS intercom and Image Communications routers.

CTV were looking for a unified solution for router control UMD and Tally management to provide a simple, reliable and familiar interface to control its most complex hybrid routing system with which the staff and freelance engineers can quickly and easily make daily changes.

CASE STUDY

***"CTV chose Cerebrum as we wanted to develop a fully functional and versatile ground up control system with a trusted partner for our state of the art flagship unit, OB11."***

**Hamish Greig**
Technical Director
at CTV Outside Broadcasts

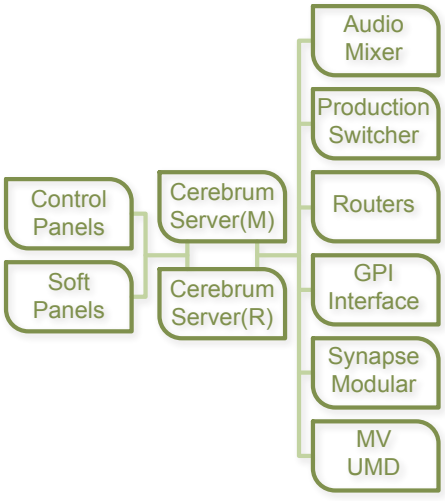
## THE SOLUTION: SIGNAL PROCESSING

Axon have previously supplied signal distribution and processing equipment for other vehicles in the CTV OB fleet and, once again, CTV chose Axon as the supplier of interfacing equipment for its flagship vehicle.
OB11 is designed to be fully capable of operating 3Gb/s SDI throughout, the Synapse modular interface system has over ninety 3Gb/s signal processing cards covering every major function making the system an idea fit for this project. Axon supplied CTV with in excess of 120 processing module housed in 11 frames for use on OB11.

The Sky Sports cricket contract called for the OB vehicle to be able to be upgraded for Ultra-High Definition production in the future. Synapse 4K converters share the same hardware form-factor as other Synapse modules and can be installed in the existing frames and thereby providing an easy upgrade path to UHD operation.

## THE SOLUTION: CONTROL AND MONITORING

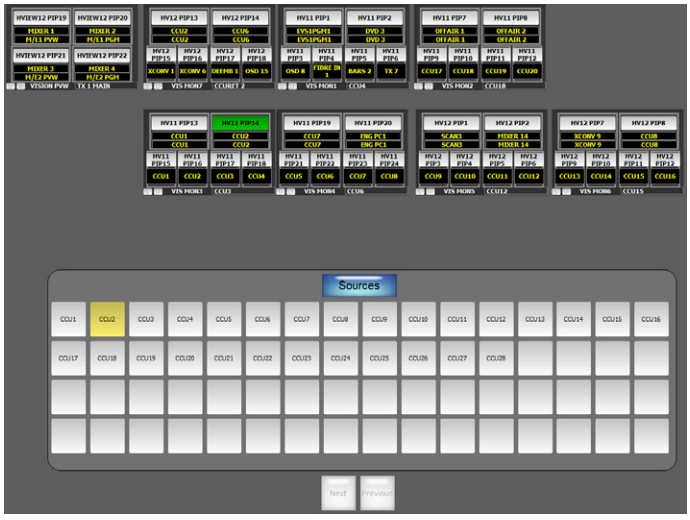
Live production and especially OB vehicles require an "always on" monitoring and control system, providing comprehensive system management and at the same time, ease of operation. The fully-resilient Axon Cerebrum system is at the heart of OB11 linking together the main broadcast equipment including the production switcher, routers, audio desk, camera control units, multiviewers and monitors.




***Cerebrum system block diagram***

The interface with the operator is provided by easily customized, user-friendly, hardware and software based control panels. In addition to the 35 hardware control panels OB11 is also fitted with a number of screen

based panels providing advanced graphical based control of source assignment to multiviewer and general routing control.




***Vision monitor source router control***

Communication between broadcast equipment on OB11 is primarily via Ethernet but three Axon GCP4848 1RU GPI units provide interfacing to equipment that requires closure type connections such as the Tally interface on camera control units (CCU) and also the joystick push-down on camera remote control panels (RCP).

## SIGNAL ROUTING BY CEREBRUM ROUTEMASTER

Signal routing on OB11 is supplied by various Imagine Communications (Harris) units. Control of these is provided by the RouteMaster module within Cerebrum. RouteMaster handles all router control and monitoring. It also handles the naming and I/O associations for all sources and destinations.

The hybrid-video router's internal audio TDM cross-point system has been redefined within Cerebrum and is presented to the operators as 8 discreet audio "levels" rather than a single large, and potentially confusing, level thereby reducing the potential for erroneous routing. Cerebrum can combine sources across multiple physical routers into a single source association and route this to outputs across multiple routers which operator sees as a single destination name thereby ensuring the audio, video, control and timecode signals are all correctly routed without the operator having to individually control many routers.

Sometimes the default names given to router sources and destinations do not provide sufficient information to the operator about the signal or might require changing for a particular production.
An example of this is replacing a camera's number

(CAM1) with the operator's name (JOHN) or the location of the camera (PIT-LANE). Cerebrum allows 10 Alternative Mnemonics for each router level, source or destination and these can be displayed on UMDs or within the button on the hardware control panels. The following table is a part of the configuraion showing the alternative mnemonics for OB11's Cross converters.

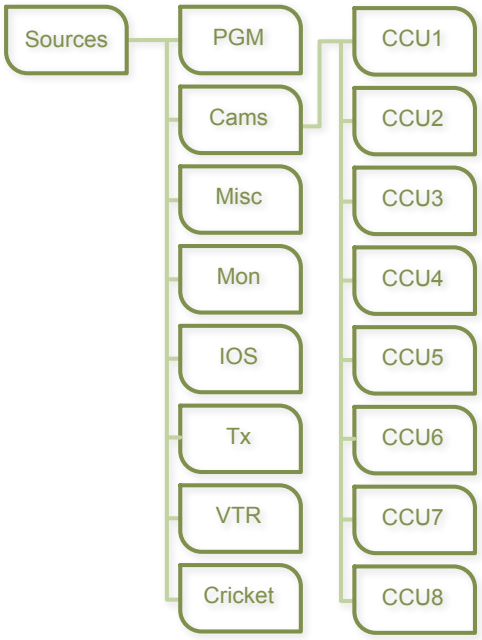
| Mnemonic | UMD Name | Button Name |
|---|---|---|
| XCONV1 | STUMP 1 | STUMP 1 |
| XCONV2 | STUMP 2 | STUMP 2 |
| XCONV3 | REVERSE | REVERSE |
| XCONV4 | HATCAM 1 | HAT 1 |
| XCONV5 | HATCAM 2 | HAT 2 |
| XCONV6 | BEAUTY | BEAUTY |
| XCONV7 | CROSS CONVERT-7 | XCONV\n7 |
| XCONV8 | CROSS-CONVERT-8 | XCONV\n8 |
| XCONV9 | LINE A | LINE A |
| XCONV10 | LINE B | LINE B |
| XCONV11 | LINE C | LINE C |
| XCONV12 | LINE D | LINE D |

Cerebrum controls the text that is displayed in OB11's (up to) 416 multiviewer windows .The Program and Preset monitors are a special case and use a facility called Ultimate Source where Cerebrum determines the source at the start of the production signal path and displays this name.

## DRAMATIC REDUCTION OF WORKLOAD ACHIEVED WITH CEREBRUM CATEGORIES

OB vehicle configurations are rarely static, with traditional router control systems changing the router's setup may necessitate editing a large number of control panels. Cerebrum dramatically reduces this workload by using a feature called Categories where sources, destinations and even other categories can be grouped together. Now when a change is made to a router the category can be edited and the change automatically reflected on the appropriate control panels.

These categories are then used to form a hierarchical navigation "tree" leading to easy source and destination selection.




***Category configuration***

The Category function is widely used in the panel designs on OB11 make the vehicle both flexible and very easy to change without the risk of control panels not showing correct items

CTV have included a Cricket category. This groups together all of the sources, or destinations, that play a major part in the current production and in doing so guide the operators to make faster and more accurate routing decisions.

## RECALL ALL THE SETTINGS FOR RAPID DEPLOYMENT

OB vehicles need to be capable of rapid deployment once they arrive at the location of the production, Cerebrum allows the operators to very quickly recall all of the system's settings including device setups, signal routes, router mnemonics and UMD settings. Cerebrum also offers the facility to partially restore settings, this would allow, for instance, the device settings from one production to be used alongside routing configurations from another.

It is sometimes necessary to take a snap-shot of the current routing setup during a production and recall some or all of this at a later stage. This is useful if a production has a normal mode of operation but is required to produce special programme segments and then quickly return to the normal production mode. An example of this would be recording interviews during a reak in a cricket match.

***"At CTV we selected the Cerebrum control system due to the seamless integration with our Synapse equipment, Axon's proactive drive to develop interfaces for our chosen 3rd party devices and the proven attentive customer service."***

**Richard Morton**
Vision Engineer
at CTV Outside Broadcasts

## INBUILT TALLY AND UMD MANAGEMENT

The custom Cerebrum soft panels designed for OB11 includes a Save and Restore screen allowing the operator to save up to 20 presets each recording the current video routes and/or the UMD names.


***Save and Restore interface***

In traditionally designed OB vehicles the Tally and UMD system might be separate from the router controller. Cerebrum has inbuilt Tally and UMD management providing a very tight integration between routing, production switcher status, GPI interfaces Tally lights and UMDs.

In OB11 Cerebrum uses the signal status information from received from the production switcher, router and from the GPI interfaces to determine which source is currently on-air and generate a red tally on the related multiviewer displays and, if appropriate, on cameras and other devices.

Cerebrum has up to 32 levels of Tally available and the OB11 installation used another level to light a green Tally to indicate the source that is selected on the switcher's Preset bus.

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