KRONO MAV AUDIOVISUAL ENGINEERING

3D LIVE EVENTS:

IN3D LIVE TECHNOLOGY

SEPTEMBER 2011

KRONO MAV AUDIOVISUAL ENGINEERING

R&D Projects adapted to the real needs of the Broadcast industry

Kronomav has developed the whole technology needed for broadcasting live 3D events (HD 1080i/p):

- Full range of Stereoscopic RIGs.
- Real time Stereoscopic Image Processor.
- 3D Immersive sound.

Besides, Kronomav has the know-how for integrating all this elements inside a live production, fitting the customer needs.

R&D Projects adapted to the real needs of the Broadcast industry

Kronomav's technology has been used for broadcasting live 3D events in Europe since May 2010:

- Tennis (Roland Garros 2011, Estoril), Soccer (Champions League & Spanish League among others), Live concerts, Surf, Cultural Events, …

The key to our success has been the permanent improvement of the technology until the current state:

- The R&D team has been working side by side with the production team during the setup and live broadcast.
- The result: "The best value for money in the market!"

Reliable technology: Roland Garros 2011

With 4 Kronomav robotized RIGs and their corresponding SIPs, working more than 8 hours a day, during 15 days, Eurosport 3D successfully broadcasted Roland Garros in 3D to 18 different countries.

As a new feature, the master camera was remotely controlled (pan, tilt, zoom and focus) by using the K2 system, also designed and manufactured by Kronomav.

To achieve this, and only 2 days before, Kronomav started the integration and tests of their SIPs inside Alfacam's HD OBTruck, converting it into a full 3D OBTruck.

OUR PRODUCTS:

Robotized RIGs

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ROBOTIZED RIGS

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SIDE BY SIDE RIG: STEREO CAM 300 v2

- Ultra High Resolution Stereoscopic Side by Side Rig.
- Designed for Live Broadcasting.
- 6 Axis Robotic System for Lenses, Separation & Convergence.
- Up to 20 kg weight per Camera. Angular Converging Resolution of 10^{-6} degrees.
- Touch Screen Display to Control all the Stereoscopic Parameters.
- Internal Remote Control for Canon / Fujinon lenses (Full Servo).
- Remote Control Performances with Ethernet, for Live Events & Studio Configurations.

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SIDE BY SIDE RIG: STEREO CAM 300 v2

- Twisting Camera Bases for quick changes and adjustments.
- Remote Units for Focus, Zoom, Parallax and Vertical Disparities Available.
- Modular Design, for Compatibility with Our Manual & Over-Under Stereoscopic Rigs.
- Interocular distances: 76 - 300 mm, with no limitations for compact lenses.
- Lenses correction done by Rig.
- Metadata is sent via Ethernet.
- It can be upgraded to a STS-300 (Beam Splitter configuration) with an optional kit.

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BEAM SPLITTER RIG: STEREO SPLIT 300

- Ultra High Resolution Stereoscopic Beam Splitter Rig.
- Designed for Live Broadcasting.
- 6 Axis Robotic System for Lenses, Separation & Convergence.
- Up to 20 kg weight per Camera. Angular Converging Resolution of 10^{-6} degrees.
- Same features as Stereo Cam 300 v2, except:
  - Interocular minimum distance 0 mm.

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KRONOMAV RIG FROM THE CAMERA OPERATOR POINT OF VIEW:

- Operation identical to that of conventional equipment.
- Camera operator only handles zoom, focus, pan and tilt.
- Standard camera handles.
- Specific handles for stereoscopy only needed while setting up the equipment.

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OUR PRODUCTS:

REAL TIME DIGITAL IMAGE PROCESSOR: SIP-300 (Stereo Image Processor)

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REAL TIME DIGITAL IMAGE PROCESSOR:
SIP-300 (Stereo Image Processor)

The core system: Nvidia GPU processor + Kronomav's 3D knowledge

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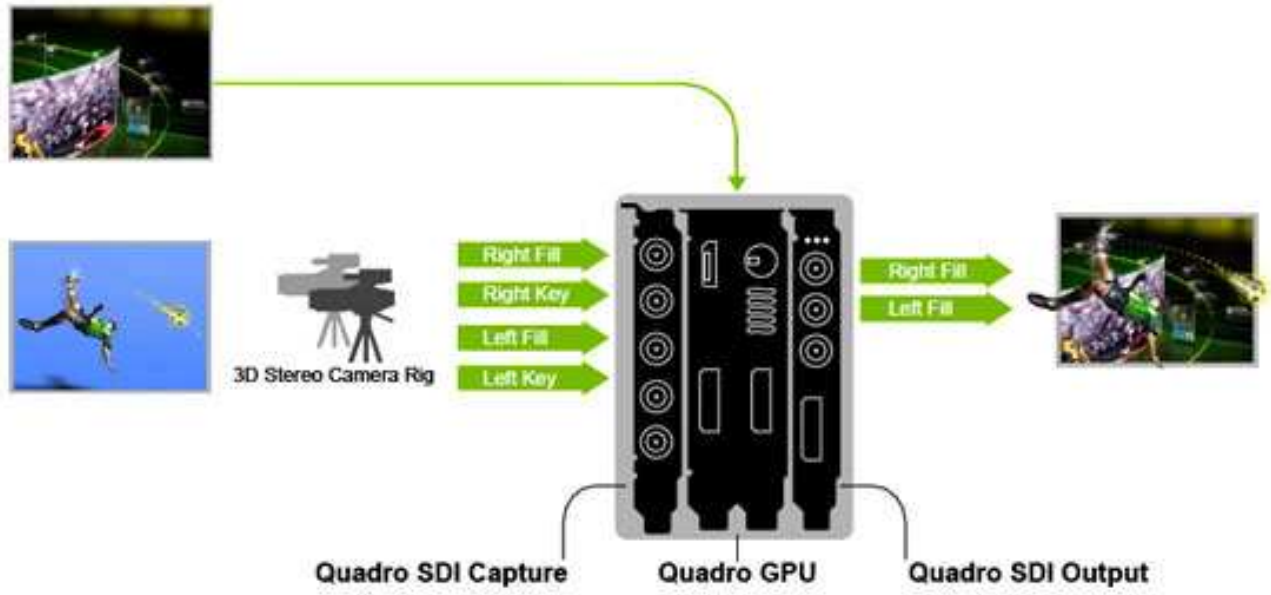
Full HD Real time Stereo Image Processor



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REAL TIME DIGITAL IMAGE PROCESSOR: SIP-300 (Stereo Image Processor)

- Real-time preview of the 2 streams of original video (left / right).
- Automated Mechanical Zoom & Focus calibration between SIP-300 & Kronomav RIGs: Real-time Lossless Zoom & Focus correction done by the RIG.
- Automated Optical axis calibration: The connection with the Rig allows setting the differences between optical axis of both lenses for posterior real-time compensation by the SIP.
- Real-time remote control from SIP-300 of the following parameters of the RIG: interdistance, convergence angle, zoom, focus, iris.
- Automatic Convergence: just by clicking on the target convergence point over the picture.

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REAL TIME DIGITAL IMAGE PROCESSOR: SIP-300 (Stereo Image Processor)

- Correction of vertical and horizontal gap between cameras.
- Elective correction of rotation & image size/zoom for both cameras.
- Display of vectorscope in real-time of both cameras.
- Display of Depth information & disparity map.
- Storage and execution of presets for all geometric correction values.
- Possibility of running the mechanical rig presets from the program, simultaneously with the execution of the presets with the geometric corrections.
- Real-time compensation for the colour parameters of both cameras.
- Connection via Ethernet of Metadata.

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OUR SIP-300 IN USE:

Reviewed in:
http://www.xataka.com/eventos/asi-es-por-dentro-la-emision-3d-en-vivo-del-roland-garros

Reviewed in:
http://nl.hardware.info/reviews/2173/roland-garros-3d-een-blik-achter-de-schermen

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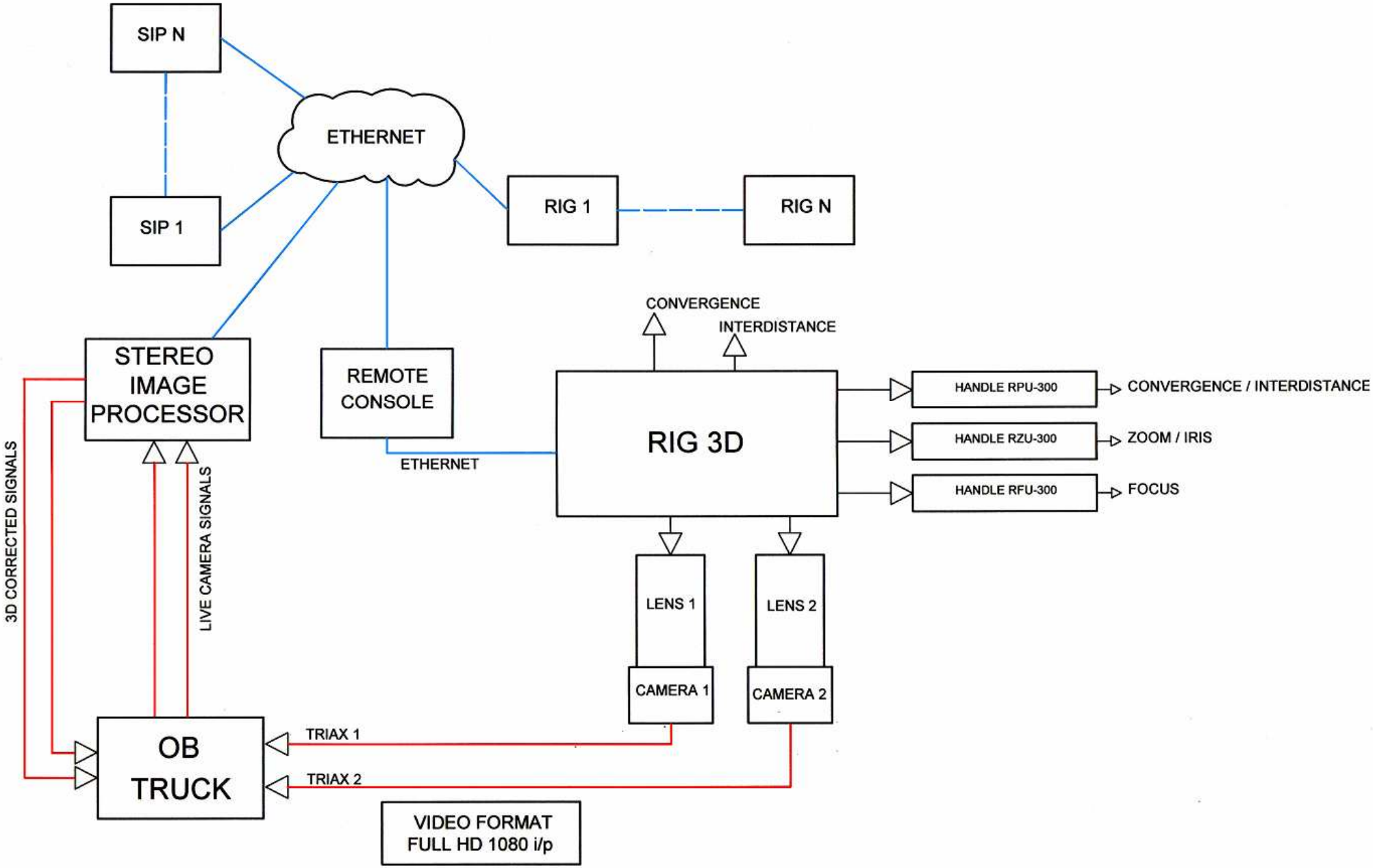
RIG + SIP: HOW DO THEY WORK?



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KRONOMAV 3D HISTORY IN PICTURES:

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FIRST TESTS:
MTV Winter Franz Ferdinand (Valencia 2009)

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SHOWS

- IBC 2009 (Amsterdam) (*)
- Broadcast 2009 (Madrid)
- CES 2010 (Las Vegas)
- NAB 2010 (Las Vegas)
- IBC 2010 (Amsterdam)
- NAB 2011 (Las Vegas)
- EXPO3D 2011 (Madrid)
- IBC 2011 (Amsterdam)

(*) The StereoRig X3 was chosen among the 50 best products at the IBC 2009

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2010. FIRST PROTOTYPE: AN AUXILIARY 3D OB VAN

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THE EVOLUTION: OUR FIRST 3D HD OB TRUCK

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INSIDE THE 3D HD OB TRUCK. MEDIALUSO - KRONOMAV

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INSIDE THE 3D HD OB TRUCK. MEDIALUSO - KRONOMAV

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SURF: RIP CURL WORLD CHAMPIONSHIP

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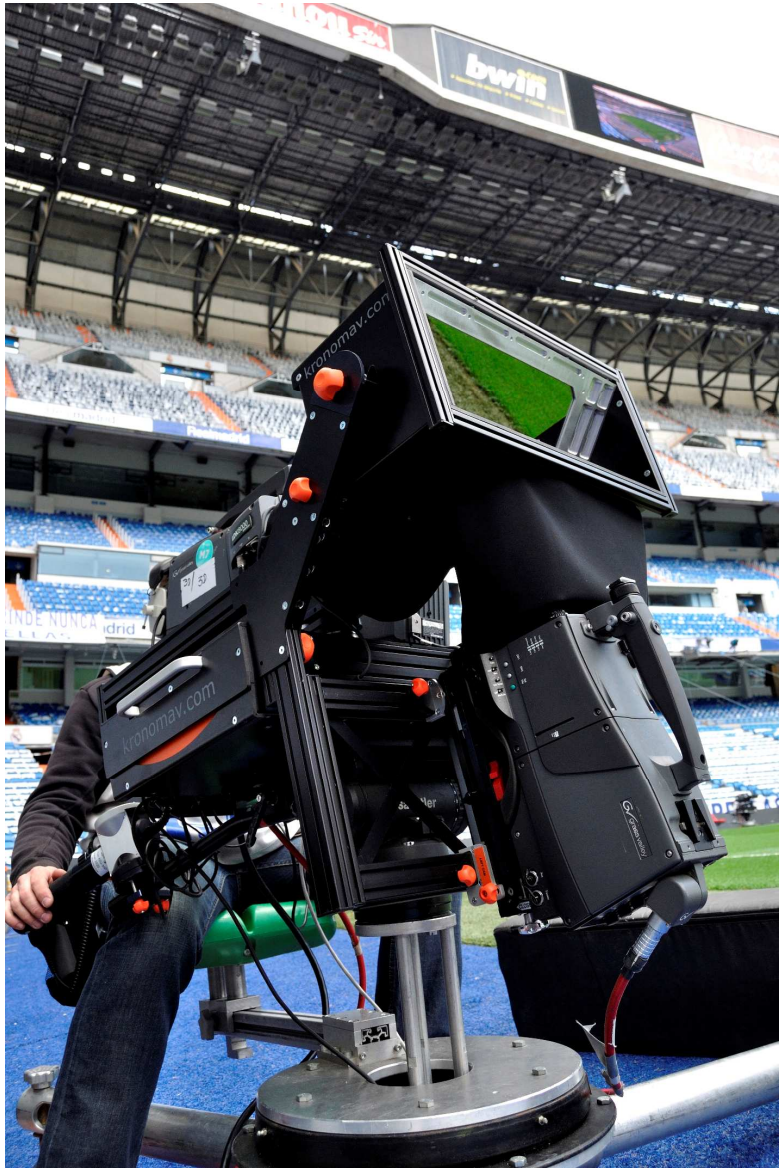
EUROPEAN SOCCER MATCHES



CHAMPIONS LEAGUE SEMIFINAL

SPANISH LIGA BBVA

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LIVE CONCERTS

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CASTELLERS

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ROLAND GARROS 2011 - ALFACAM

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ROLAND GARROS 2011
ALFACAM

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ROLAND GARROS 2011
ALFACAM

MASTER CAMERA:
PAN/TILT/ZOOM/FOCUS REMOTELY OPERATED

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ROLAND GARROS 2011 - ALFACAM

REMOTE CONTROL FOR THE MASTER CAMERA, PLACED ABOVE, BETWEEN THE PUBLIC

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ROLAND GARROS 2011 – ALFACAM: THE STEREOSCOPISTS.

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ROLAND GARROS 2011 – ALFACAM: THE DIRECTOR ROOM.

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OTHER RIG SETUPS

CANON 40x LENSES

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OTHER RIG SETUPS

FIXED RIG WITH WIDER RANGE OF INTEROCULAR

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OTHER RIG SETUPS

CUSTOM SOLUTIONS FOR ADVERTISING

CUSTOM 3D RIG WITH OUR REMOTE DOLLY

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THANK YOU!

Ramón Dolz

R&D Manager

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