REFERENCES

AEQ INTERCOM SYSTEMS

INTERCOM | AUDIO | VIDEO | COMUNICACIÓN

Index

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AFRICA

ANGOLA	TELEVISÃO PÚBLICA DE ANGOLA (TPA)	
	Televisão Pública de Angola (TPA) is an Angolan public media company created in 1973. It is based in Luanda. Commissioned to the Italian integrator ARET to develop a TV Van OB for satellite transmission (DSNG). Aret and TPA entrusted AEQ with the supply of the intercom system.	

EGYPT	WAHSH SERVICES FREE	
	The company has acquired for a TV stations in Egypt, two TB 3000 intercom matrix with 12 ports, the first unit in 2014 with CCU concentrator and TP3016 user panels, and the second one in 2016 with CCU concentrator and 4000 series panels	

EGYPT	SUEZ UNIVERSITY	
	Established in 2012, Suez University is a public higher education institution located in the city of Suez. Officially accredited and recognized by the Ministry of Higher Education, Egypt, Suez University is a coeducational higher education institution. Suez University offers courses and programs leading to officially recognized higher education degrees in Information and Communication Technology among others. The University of Suez has acquired in 2019 through the integrator Wahsh Engineering a CrossNET 40 intercom matrix with TP8116 user panels for coordination between workstations in Television Production training	

KENIA	SWITCH TV
	Broadcast Solutions, German integrator, has implemented a new HD TV studio facility in Nairobi for Kenya's TV channel, Switch TV. Switch TV required a studio with four sets including a green box, with remotely operated cameras and a newsroom and post-production system. For the implementation of this project, Broadcast Solutions trusted AEQ's Intercom solutions. The communication between the members in the production team is made possible with an AEQ Crossnet intercom system, which uses DANTE multi-channel audio. The Crossnet 64 matrix chosen incorporates 32 AoIP Dante ports, in addition to analogue and digital ports and VoIP connection for wireless user positions. The system includes 10 TP 8116 rack user panels and 2 Xbp wireless beltpacks connected through two Cisco WiFi access points. Thanks to the implementation of the latest technology and workflows, Switch TV has become one of the HD TVs in the East African region with the highest capacity to produce cutting-edge content. The integration of the project was carried out by Hungary Broadcast Solutions engineers together with the support of AEQ's after sales service.

MAURITIUS	**MAURITIUS BROADCASTING CORPORATION (MBC)**	
	The Mauritius Broadcasting Corporation (MBC) is the national public broadcaster of the Republic of Mauritius, that is the islands of Mauritius, Rodrigues and Agaléga. The headquarters of the MBC is found at Réduit, Moka and it also operates a station in Rodrigues. The MBC programs are broadcast in 12 languages, notably French, Creole, English, Hindi, Urdu, Bhojpuri, Tamil, Gujarati, Telugu, Marathi, Mandarin/Cantonese and Hakka, it provides 17 television channels in Mauritius, 4 in Rodrigues and 2 in Agaléga and 7 radio channels In 2019 it commissioned the Italian integrator ARET to build two OB Van for outdoor television production. Each OB Van has been equipped with an Intercom CrossNET 72 matrix that connects via IP to 4 TP8116 user panels. An Olympia 3 commentator unit has also been included, which communicates with the CrossNET matrix for coordination purposes and with a Netbox 32 AD terminal for live audio connectivity. It has also incorporated into each system a 6000 series concentrator to facilitate communication with camera operators through CCUs.	

SOUTH AFRICA	**TELEMEDIA**	
	Telemedia was founded in 1981 with a focus on the supply, installation and service support for radio and television broadcasting equipment in South Africa. Since then, Telemedia has evolved into a broad-based media broadcast facility providing a sophisticated and versatile product range. Its strategy to invest in infrastructure ensures that they have acquired state-of-the-art equipment in Satellite transmission, radio and television signal distribution, microwave and SNG services, studio production services to mention a few of our areas of expertise.	

The integrator company has acquired an intercom matrix TB 3000 with 12 ports in 2016, with belt packs BP5004, BP6000 and BP3004. Also rack user panels BS 3004 and concentrators for Camera CCU. The end client is a TV Station.

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AMERICAs

ARGENTINA	CUYO TV – CANAL 9	
	The Channel 9 of Mendoza, more known as Channel 9 Televida, is an Argentine open television channel affiliated to Telefe that broadcast from the city of Mendoza. Use a TB3000 intercom with 4000 series panels	

ARGENTINA	NONSTOP	
	Founded in 1983, Non Stop produces several pay-per-view TV channels, in addition to programming open TV and digital media, all done in several different countries. The company acquired before 2015 a TH5000 intercom matrix with TP4000 series user panels.	

BRASIL	CASABLANCA ON LINE	
	It's a Brazilian production company based in Sao Paulo that has mobile units equipped with mobile Uplink systems (SNGs and Flys). Casablanca Online offers the service of contribution via satellite, in which the signal can be uploaded from various points, either in Brazilian territory or anywhere in the South American cone. With a teleport located in the city of São Paulo, Casablanca Online can receive, monitor, insert graphics, narrate, record and distribute content via satellite and/or IP to any part of the world. It also has two studios for HD production, equipment to produce continuity signals and video on demand, among other services.	

In 2022 AEQ presented XPEAK as an integrated solution for intercommunication in a wide range of operational areas, including remote production

Among the first users, stands out the Brazilian production company Casablanca Online, which acquired a system composed of 10 Xpeak R user panels and a 4-line Xpeak IF interface to which they have added 3 AEQ TH02 double telephone hybrids, for remote intercommunication via mobile phone.

On 1 January 2023, the historic inauguration of Brazilian President Lula da Silva took place, and as in other major broadcasts, Casablanca OnLine was commissioned by Brazil's main private and state broadcasters to generate the signal by moving their mobile units to Brasilia, the television channels Bandeirantes, Globo, EBC, the Presidential Palace and the Courthouse.

On this occasion, Casablanca OnLine deployed its recently acquired AEQ Xpeak intercom in the Congress building and in its facilities in Sao Paulo, to coordinate the technical services with the production team in the studio, and the quality controls for delivery to the television stations receiving the signal.

The event went smoothly, with Xpeak demonstrating its flexibility to adapt to the complex workflows required for on-site production for different clients.

In addition to the Intercom system, Casablanca used its AEQ Olympia3 commentary positions to produce its own commentary for each of the TV stations that received the programme.

BRASIL	IGREJA UNIVERSAL DO REINO DE DEUS	
	The Universal Church of the Kingdom of God (IURD) is a religious organization that emerged from the church founded on July 9, 1977 by Edir Macedo in Rio de Janeiro, Brazil. The IURD is also known by the name of its television show, Stop Suffering The church has acquired 1 CrossNET 40 intercom matrix with 8000 series user panels for the coordination of its television programs.	

BRASIL	RPC FOZ DO IGUAÇU	
	RPC Foz do Iguaçu is a Brazilian television station based in Foz do Iguaçu. It belongs to the Paranaense Communication Group (GRPCOM, formerly RPC Group) and retransmits Rede Globo programming, in addition to broadcasting Paraná TV and other local RPC TV programs, generated directly from Curitiba. Its signal reaches some cities of Paraguay, as well as some points of Argentina, which are part of the border with Brazil. Operates on channel 5 (35 digital UHF). The RPC Foz do Iguaçu television acquired a few TH5000 intercom matrixes before 2014 for several cities in Brazil. These units are provided with 4 analogue (4-wires) ports for external audio sources, digital ports and IP ports. The matrixes were integrated with 4000 series panels.	

BRASIL	SISTEMA JORNAL DO COMMERCIO DE COMUNICAÇÃO	
	Sistema Jornal do Commercio de Comunicação is a Brazilian media conglomerate with headquarters in Recife, Pernambuco. In 2019 AEQ has installed an intercom system as the main communications centre of their facilities for the production of TV Jornal and TV Jornal Caruaru.	

The system includes, among other elements, a CrossNET 72 matrix, 11 TP 8116 user panels, and 4 wireless terminals Xplorer.

The integration was carried out by Line UP, the Brazilian AEQ distributor.

BRASIL	SOMPUR SAO PAULO – BANDNEWS FM SAO PAULO	
	BandNews FM São Paulo is a radio station based in the city of São Paulo. Its studios are located at the headquarters of the Bandeirantes Communication Group. In 2017, they developed an ambitious audio and communication project for their station with AEQ. Two BC 2000D audio matrix frames are interconnected by 1000-channel synchronous links that communicate with the IP network through 16 64-channel AoIP cards from each matrix. These inputs and outputs are distributed throughout the station through 32 AoIP Netbox 32 interfaces. This system shares the network with a CrossNET 168 intercom system via IP with 12 TP8116 panels, 4 TP8416, 10 virtual panel licenses for PC or Ipod and inputs for telephone and ISDN interfaces	

The Project was directed by the Technical Director of the station, Engineer Jean Pierre Zanetti

BRASIL	SUPER NOTICIA

Super Noticia FM is a Brazilian radio station based in Belo Horizonte, covering the state of Minas Gerais in the 91.7 FM band using a central 30KW transmitter. It is part of the important editorial group Sempre Editora, which is also the owner of two newspapers.

In 2017 AEQ has installed a CONEXIA intercom system as the main communications centre of the facilities.

AEQ's largest-capacity Intercom System CONEXIA has been selected to cover the intercom requirements of all working areas in the station, as on the same platform, Super Noticia obtains a professional audio router with broadcast quality (20 Hz to 20KHz and 24bits depth) and a complete Intercom system. As mentioned, all is integrated in the same platform and shares common hardware, what simplifies operation and maintenance, allowing for a complete flexibility in the system's final configuration, making it fully adaptable to the particular needs of the station, at every moment.

	Super Noticia's Technical Manager, Carlos Penido, The station has studios in three locations within the same city, three controls in the main location, a studio at Independencia and another one the Mineirao Stadium, linked by long-distance fiber optics. The technical challenge was to install intercom and exchange audio between all the studios. The central router consists on a pair of Conexia TM 8000 controllers and an AEQ BC2000D matrix chassis including redundant power supply and controller modules, as well as two backup DSPs, three Dante Audio over IP cards and several other analog and digital input/output cards for local services within the control room. The complete system has 240 ports that may be used both for Intercom services (using Dante IP protocol) or central audio routing using AES 67 standard, with the most varied audio formats: analog, AES or SPDIF digital, and even AoIP using DANTE operating in AES-67 mode against Livewire+. A TP 8116 16-key intercom panel is present at each studio, configured to operate both as IFB and coordination. The panels are routed to a bank of 10 audiocodecs for coordination with external services. Everson Franco, technical Manager of the Super Noticia project	

BRASIL	TV ASA BRANCA	
	TV Asa Branca is a Brazilian television station based in Caruaru, a city in the state of Pernambuco. It operates on channels 8 VHF and 17 UHF digital, and is affiliated with Rede Globo. The private television has acquired the intercom matrix TH 5000 before 2015 with TP 4016 user panels	

BRASIL	TV COROADOS	
	It's a television station Brazilian installed in Londrina, in the interior of Paraná . Property of the "Rede Globo".	

	The TV acquired an intercom matrix TH50000. The matrix was provided with 4 analogue (4-wires) ports for external audio. The audio source and destination are in digital ports and IP ports. The supply included TP 4016 user panels	

BRASIL	**TV PARANENSE**	
	The TV station opened in Paraná in 1960 with the name of Paranaense TV , channel 12. The TV is now property of the "Rede Globo". The TV station acquired a few intercom matrices TH50000 for different cities in the country with TP 4016 user panels	

BRASIL	**TV SOROCABA**	
	TV Sorocaba is a Brazilian television station based in Sorocaba, a city in the state of Sao Paulo. It operates on digital channel 35 UHF, and is affiliated with SBT, broadcasting its programming to Sorocaba and nearby cities. The station belongs to the Vanguard Communication System, which also includes the Vanguarda AM and Vanguarda FM radios, founded by businessman Solomon Pavlovsky. TV Sorocaba adquired in 2019 a CrossNET Intercom System. The system includes, among other elements, a CrossNET 72 matrix, 10 TP 8116 user panels, one TP 8416 user panel, and a wireless System Xplorer. The integration was carried out by Line UP, the Brazilian AEQ distributor.	

COLOMBIA	TELECARIBE	
	Telecaribe is a Colombian open television channel that broadcasts in the Caribbean region of that country from its broadcast centre located in the city of Barranquilla. The Television has acquired 1 intercom matrix CrossNET 72. With 5 wired user panels TP8116, two TP 8416 and a wireless system with 6 Xbp. The project was integrated by the AEQ´s distributor AVCom Colombia.	

COSTA RICA	MULTIMEDIOS	
	Multimedios Televisión is a Mexican open television network from Monterrey, Nuevo León. It initiated transmissions in 2017 in Costa Rica broadcasting on channel 8.1 that transmits the Costa Rican signal and 8.2 that retransmits the Multimedia plus signal. Multimedios Costa Rica has acquired 1 intercom matrix CrossNET 40. The workstations are equipped with 3 BP3004 wireless belt pack, 8 TP4016 hybrid user panels and a concentrator for camera CCUs. The project was integrated by the Company Comunicaciones Digitales de Entretenimiento SA de CV.	

ECUADOR	ECTV TELEVISION PUBLICA ECUADOR	
	Ecuador TV is the country's public TV channel. It started back in 26th October 2007 and it is the first public TV channel in Ecuador. ECTV broadcasts contents from domestic and foreign independent producers. 	

The well-known international integrator Hitachi was granted with the largest technical renewal project in the history of the channel, which has relied again on AEQ technology.

ECTV integrated a large CONEXIA system in their new facilities, as well as 3 intercom matrixes TH50000, in order to provide service to all the production centers, technical rooms and production areas of the TV.

The intercom systems counts with 34 Intercom panels in rack format, 32 wired belt packs and 23 XBP wireless belt packs, enabling nearly 100 people in 9 different TV workplaces to communicate and coordinate. The whole wireless intercom system operates in the 5 GHz WiFi band.

The complete project has been leaded by Hitachi Kokusai technical team in collaboration with Electrolab, AEQ's local partner in Ecuador. Mr. Roberto Tejero was AEQ's technical responsible for the startup, configuration and training of the whole installation.

EL SALVADOR	TELECORPORACION SALVADOREÑA (TCS)	

Telecorporación Salvadoreña (TCS) is a conglomerate of Salvadoran media founded in 1985 from the union of channels 2, 4 and 6 under the same legal partnership by Boris Eserski.

TCS has expanded its Conexia system in 2019 by adding 3 TP 8416 desktop panels, an analogue input and output card and a wireless system with 4 Xplorer belt packs.

GUYANA	NATIONAL COMMUNICATIONS NETWORK (NCN)	
	The Miami integrator has won the Tender of the National Communications Network (NCN), the state television and radio company of Guyana A complete revamp of the Networks main production center, includes the digitalization and becoming a scalable IP production platform for Television. OM Solutions in Miami led by Juan-Carlos Ortolan, was the selected company and awarded the materialisation of the project, principally for the simplicity in the approach and guaranteeing homogeneous quality in all the phases of the workflow. AEQ's IP based equipment becomes a fundamental part of this system solution. NCN were in the need to modernize and digitalizace its television production center in Georgetown. Even if functional, their old production system required to enter fully the digital era to simply workflows and production, so the modernisation was certainly emphasised when requesting bidders. 	

The scope of work consisted in the rebuilding of 2 studios: news and continuous production. Also required was to enable digital pathways to the Transmitter site. IP to analogue conversion was also included in the need, since due to the existing national signal distribution system the transmitter is still in analogue. The idea is that the transition will be quick and easy once the Transmitter is substituted for a Digital Terrestrial System, thus eventually dismantled.

To keep everything in the production network consistent, An OB van was required to be re-fitted for IP Technology. Also, it was required to consider the need to seamlessly connect and share audio with the NCN Radio Network. Further, the NCN Radio Network counts on a huge collection of audio tracks and archives that should be readily available at the Television.

The last part of the scope of work was to take advantage and convert into useful an important number of fiber connections with government institutions.

The heart of the Video production is a Router Ross NK Series and the infrastructure counts on the Ross openGear, AJA and Cobalt solutions.

Production and Technical coordination is handled with the AEQ Crossnet Intercom based on a 72 Port Matrix using Dante AoIP Connectivity.

The TOC and OB Van of the station are equipped with TP 8116 User Panels and for the News, Production and Master Control, the TP8416 Desktop User panels were deployed. A simple BS3004 base station user panel is used for the communications with the distant TX tower and is using narrow data bandwidth VoIP communication.
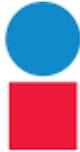

Also, for the Vision operators TP8116 panels were installed for communications and KROMA by AEQ Series LM8018 serves as shading monitors. These monitors are featuring SFP modules for fiber link IP SMPTE 2022 video.

For the Sets/Studios, very straight-forward 4W Interfaces were deployed, wired to the Atterotech wall plates, thus part of the AoIP Network and allowing for both communications and IFB's for floor managers and presenters.

The client's technical consultancy was carried out by the engineer Devon Roberts and the Technical Direction was under the command of Mr. Bharrat Seokumar.

HONDURAS	**LIM COMUNICACIONES - HUMBERTO LAITANO**	
	Lim Comunicaciones is a leading distribution and integration company in Honduras for broadcast technology. The company has acquired in 2017 one intercom matrix CrossNET 40 with 8 TP4016 user panels, 3 belt packs BP3004 and two concentrators for camera CCUs	

MÉXICO	**CLARO SPORTS**	
	Claro Sports is a Latin American television channel of Mexican origin and is owned by América Móvil, which bases its programming on sports. Claro Sports had a very successful operation of the Olympic Games in Rio de Janeiro which was the one and only official broadcaster. Claro Sports used a full bandwidth AEQ ConeXia intercom system with DANTE™ AoIP multi-channel networking simultaneously and on the same BC2000D matrix platform and that assured a perfect coordination between Claro Sports' talents at the commentary positions of the different venues and technical personnel both in Rio and Mexico. The IBC installations also counted on 10 Intercom user-panels Kroma TP8116 series from AEQ connected through a DANTE™ multi-channel AoIP Network. Further, the ConeXia Intercom system was equipped with analogue 4-wire interfaces to connect a total of 42 intercom devices such as CCU's, Belt-packs and dedicated IFB's. For control and mixing of the International Sound packages delivered by OBS in MADI format with the Spanish Language Commentary audio, Claro Sports used an AEQ ARENA digital console with 15 motorized faders and capability of up to 9 pages. A multi-channel DANTE™ AoIP network was installed to link the mixing console with the main Audio Matrix and the ConeXia Intercom System, including the TP8116 User Panels installed in the	

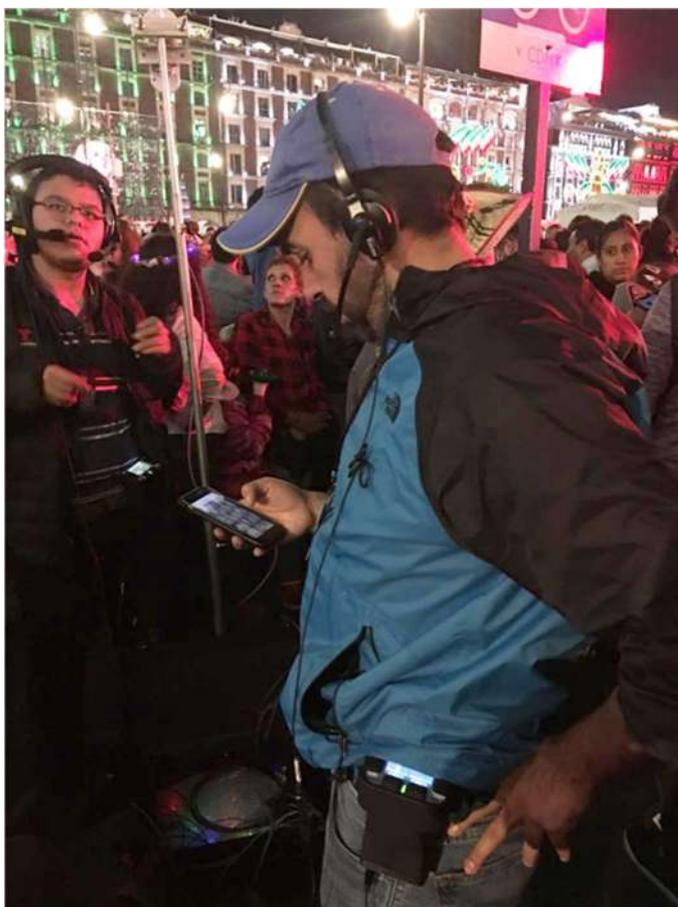|		
	Continuity control and the two live TV sets of Claro Sports at the IBC and their studio in the Olympic Park. For the nex Summer Olympic Games in Tokio 2020, they will use again the same infrastructure, plus 6 offtube cabins with audio consoles Capitol and specific recording cabins with Netbox4MH,vía Dante. 	
MEXICO	**GRUPO IMAGEN PUEBLA**	
	Imagen Televisión is a Mexican open television commercial chain. It is owned by Grupo Imagen. Since August 2019, it is the seventh national television network in Mexico, with coverage of 51.6% of the Mexican territory. The company has acquired in 2019 an Xplorer Wireless Intercom System for its studios in Puebla as an expansion of its current system. 	
MEXICO	**MULTIMEDIOS**	
	Multimedios Televisión is a Mexican open television network from Monterrey, Nuevo León. The chain has local broadcasting stations in the states of Tamaulipas, San Luis Potosí, Coahuila, Sonora, Durango, Guanajuato, Mexico City, Monclova, Puebla de Zaragoza, Ciudad Juárez, Durango, Guadalajara and Chihuahua in Mexico, as well as in the states of Texas, Utah and California in the United States.	

	The company has acquired 6 intercom matrixes CrossNET 72 installed in Mexico city and other local stations and a CONEXIA in the central station in Monterrey. In the nearly future, all Crossnet systems will be interconnected vía Dante (where the IT infrastructure allows) or vía codec AEQ.	

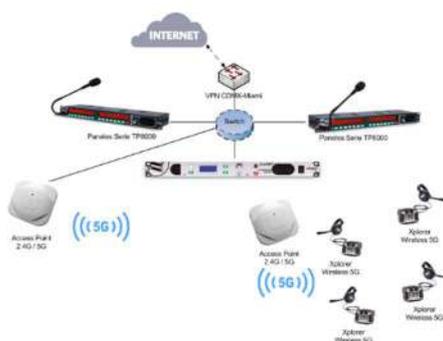| MEXICO	SECUOYA – RIOT MEXICO	
	Grupo Secuoya is a leading Spanish company in the creation, production and distribution of audiovisual and digital content. The company has production facilities in Colombia, Chile, Peru, Mexico and the United States, as well as having an executive presence throughout the Spanish national territory. Secuoya has acquired for Riot Mexico, a leader company in Esports entertainment, a CrossNET 72 matrix for the main arena, 16 TP 8116 user panels, 9 Xplorer wireless belt packs with two multiple chargers and 4 WiFi access points. Two 6 to 1 concentrators were also supplied for communication with camera operators and intercommunication with audio consoles vía Dante and 4wired interfaces. Here are some important highlights about this project: - IP Intercom Panel using Dante Protocol. In the same way, an Allen&Heat audio console has been installed, to be able to share intercom audio and cabin sound, so more AoIP audio sources can be integrated in the future. - Wireless Beltpack integration through 5G Wireless general-purpose network installed in the room. The service coverage includes the operation areas, theater, backstage, main stage and reception lobby. - The integration of Intercom licenses in Smartphone mobile devices, tablets or similar is planned, in order	

	to access the Intercom system from any geographical area, as simple additional panels. • The integration was performed using Sequoya staff. The engineering heads were Walter Gómez and Rodrigo Cotiart, supported by AEQ-KROMA Mexico Manager Engineer Cesar Reyna, and, from Madrid headquarters, by Roberto Tejero, product Manager and the rest of Customer Service staff.	

MEXICO	TELEMUNDO	
	Telemundo (formerly **NetSpan**) is an American Spanish-language terrestrial television network owned by Comcast through NBCUniversal. It is the second-largest provider of Spanish-language content in US, with programming syndicated worldwide to more than 100 countries in over 35 languages. Telemundo has a large audience and an important operating base in Mexico Telemundo has a TH5000 for locations intercommunication, migrating to Crossnet in 2018. In 2019 Telemundo use AEQ Xplorer wireless intercom to broadcast "El Grito" from Mexico. Xplorer successfully provided Telemundo communications during the broadcasting of "El Grito" ceremony at the Zócalo, gathering tens of thousands people Every September 15th in the evening, the Government of the United Mexican States organizes a public ceremony to commemorate the Mexican Independence at the Zócalo Capitalino square, located in the historic centre of Mexico City. This square, considered the world second largest central place, occupies a rectangle area of approx 46,800 square meters. El Grito event congregates an estimated 130,000 people. To cover this event, Telemundo México, with Gerald Malpartida as the Head of Broadcast engineering, used the new AEQ Xplorer for the communications to Miami, FL - USA. To achieve that, its engineering staff deployed a technological infrastructure that, despite the large amount of people present, allowed securing bidirectional audio service for the communications between the reporters located in the Zócalo square with the Miami HQs, through high-quality links. Telemundo's neuralgic communications centre at the Zócalo was implemented at the top floor of a building known as the "Jewellery Centre", located in the front area of the central square. From this point, was established a VPN link with the central headquarters in Miami and providing connectivity with the studios in Mexico.	

Once the VPN connection was established, AEQ matrix, placed in Mexico, operated with TP8000-series user panels to communicate with the field correspondents and the Miami intercom system. The Xplorer beltpacks were principally used to receive IFB from Miami and were connected to the matrix through two access points located in the Zócalo square.

It is worth mentioning that using only two access points could give service to 4 Xplorer units with 5G technology and providing high quality audio and low delay. The system was able to cover almost entirely the total square area:

Technical staff and reporters could easily move in field, thanks to the "roaming" function that the Xplorer pack offers.

Also, a full duplex Audio link for backup purposes was established using a Phoenix Venus 3 and Phoenix Alio IP audiocodecs: the portable codec was deployed at the Zócalo square to provide service to the personnel located there.

PERÚ	CONGRESO DE LA REPUBLICA – TELEFONICA	
	The Congress of the Republic of Peru has its own television to record official events and generate the institutional signal to deliver to television operators interested in the events that take place there. The Spanish integrator Telefonica Servicios Audiovisuales (TSA) has installed one intercom matrix in Peru in the CONGRESO DE LA REPUBLICA TV. The CrossNET matrix was provided with TP 8116 user panels and six Xbp wireless user panels. The installation was supervised by Mr Armando Patroni, Technical Chief of the Congreso de la República. 	

UNITED STATES	2022 WORLD GAMES	
	The 2022 World Games were an international multi-sport event held from July 7 to 17, 2022, in Birmingham, Alabama, United States. They were the 11th World Games, a multi-sport event featuring disciplines of Olympic sports and other competitions that are not currently contested at the Olympic Games; the Games featured 3,600 athletes competing in 206 medal events over 30 sports.	The World Games 2022 BIRMINGHAM, USA
	ISB (International Sports Broadcasting) relies on AEQ technology for the production of the 2022 World Games.	
	The production company ISB produced the television signal and were also in charge for selling the worldwide broadcasting rights. Close cooperation with the Olympic Channel also ensured that stories of the Games were transmitted to all parts of the world.	
	ISB deployed AEQ's AoIP CrossNet Intercom System for the technical coordination and for the Commentary Audio a combination of the AEQ Olympia 3 AoIP Commentary Units and portable IP AudioCodecs Phoenix ALIO were used. Additionally the Olympic Channel in Madrid were using the AEQ VENUS 3 IP Codecs with local AoIP for the commentary program audio and coordination with commentators in Birmingham.	
	AEQ Crossnet is a compact, intercom matrix with IP connectivity, based on Dante technology, compatible with the new AES 67 standard, carrying high quality audio suitable for broadcast. It also has high quality balanced analogue audio inputs and outputs and includes support for Kroma's legacy IP panels and interfaces with compressed audio, and for Kroma panels with digital audio link.	

AEQ Olympia 3 represents a breakthrough in Commentary Systems, providing greater flexibility and adaptability to different event sizes. This way, Olympia 3 has been designed to suit large events with hundreds of commentary positions at the same venue, as well as more modest installations where it may operate as a stand-alone unit or in an OB Van linked to an AoIP Intercom System.

UNITED STATES	NPR / BBC
	NPR and BBC Radio "simulcasted" on BBC World Service, Radio 4, 5Live, BBC Local Radio and partner stations for a continuous 12 hour "America Decides 2016" Election Special programme, with an estimated audience of 250 million listeners. Additional output on Radio 4 and World Service was also broadcasted before and after the election special. BBC Production Operations provided temporary broadcast facilities in Washington D.C for the broadcasts consisting of two fully featured broadcast studios on different floors and the ability to receive and route more than 30 contribution circuits from the entire country. All audio was distributed and routed throughout the facility using the Dante™ AoIP network protocol using multiple vendors' equipment, connected by simple CAT5e cable, Ethernet switches and fibre optic links between several floors. If we compare analogue based systems used in previous years, with the new AoIP distribution , the result is: a dramaticall reduction of hardware and manpower needed plus a huge reduction in required kit to be freighted. This solution brings a huge saving in hardware and transport costs.

Matthew Page of BBC Production Operations: "Engineering and Production staff needed to talk to presenters, contributors and each other quickly and easily. Using the AEQ CrossNET [intercom] matrix and AEQ TP8000 user panels we were able to create the 80+ IFBs and many 4-wire intercom circuits we required without having to plug in any extra copper audio cable, we just needed to connect the matrix and panels to the audio network with a few CAT5e cables."

The main studio had 16 switch able outside sources - each with a mix-minus IFB feedback, plus 7 talent and guest positions – each one provided with "talkback" sent from production studio. The second studio had 10 switch able outside sources and 4 talent / guest positions.

UNITED STATES	UNIVISTA	

The UnivistaTV internet television channel was launched about a year ago and is located in the city of Hialeah, Florida. Broadcasts began on May 20, 2020, an important date for the Cuban community.

This digital platform was built entirely on Digital and IP technology, two studios with a Master Control and Remote Transmissions from anywhere in the area of Miami by using IP Production over SRT.

The project engineering and equipment supply was commissioned by the channel to OM Solutions led by Juan Carlos Ortolan in Miami.

Since the equipment chosen was entirely Digital and IP for both Video and Audio the selection of an Intercom System fell naturally on a 72-Port AEQ CrossNet with 12 TP8116 Rack Panels for the consoles in the Production Master Control, Vision Control, Audio Control and Graphics as well as 4 TP8416 desktop panels for the directors and spotters.

Complementing the Intercom System and for technicians and personnel on the move, on set and other areas, the new AEQ Xplorer wireless beltpacks are also an integer part of the Intercom System. The Xplorer is using WiFi technology and with operational autonomy of up to 20 hours at full capacity. This becomes important when "cascading" live recording sessions and there is no time to change batteries or recharge.

The entire system is integrated into the channels' AoIP flow and allows signals to be shared between the different contribution, intercom production and coordination systems. Specifically, the audio present in the AEQ Crossnet intercom matrix, coming from its ports and panels is also available on the Dante AoIP Network and any other equipment connected to it like for example the Allen & Heat SQ7 audio console, and could be broadcasted if so required.

For technicians and personnel on the move, on set and other areas, the new AEQ Xplorer beltpacks were chosen, with WiFi technology and with autonomy of up to 20 hours at full capacity. This becomes important when linking live recordings and there is no time to change batteries or recharge.

In order to have the interactivity of the audience and also to be able to handle outside broadcast coordination, an AEQ SYSTEL IP16 talk-show and multi-conference system was installed with connectivity for multi-channel AoIP networks. For call control and live coordination, the installation was completed with 3 SystelSet + Handset and control in a single device.

The system is connected to the Univista TV corporate switchboard, which allows interconnection with all areas of the channel, both technical and administrative.

The distribution of audio signals between the Crossnet matrix, the audio console, the audio of the Systel IP 16 talk show and multi-conference system, and the wired intercom user panels, is relying entirely on AoIP multi-channel network connectivity with Dante/AES67 protocol.

The Xplorer wireless Intercom beltpacks/userpanels are using VoIP connectivity with the AEQ /KROMA protocol.

The Stations voice lines and the Systel IP 16 talk-show and multi-conference system including the Systelset+ user terminals are operating with SIP based protocol VoIP in HD Voice quality.

The entire project, with installation, configuration, commissioning and training, was led by OM Solutions Juan Carlos Ortolan and his technical team in collaboration with Peter Howarth, Account manager for special markets at AEQ and its Support Services at the Madrid HQ that worked remotely to complete the execution of the project.

UNITED STATES	WGENTV
	WGEN-TV (GENTV), the independent channel of Miami, part of the Caracol Televisión Group, the international television network, with locally produced news, entertainment programs, soap operas and other programs that they have been developed for the different Latin American audience of South Florida. In 2014, they were installed two intercom systems in two different television studios in Florida, each system based on a 48-port Kroma-AEQ TH 5048 matrix. The first user panels ever used in the system, were the TP4016. The systems have been growing and recently upgrated with TP8116 and TP8416 panels, improving the performance of the system until the full capacity of the matrix.

URUGUAY	RIDEL
	The company acquired 1 intercom matrix TH5000 in 2014 and it was installed in an OBVan with TP 4016 user panels

ASIA

AZERBAIJAN	**AFFA ASSOCIATION OF FOOTBALL FEDERATIONS OF AZERBAIJAN**	
	Video Assistant Referee (VAR) systems has become a very popular solution for many football federations all around the world. More and more leagues and associations are delploying VAR systems to ensure more fair play and acurate refereeing decisions. The Association of Football Federations of Azerbaijan (AFFA) understood the advantages of this solution and decided to implement a VAR system in 2022 designed and delivered by Broadcast Solutions. The initial system consists of three Video Assistant Referee Video Operation Rooms (VAR-VOR) permanently installed in the stadium in Baku, completed by a mobile VAR system in a 3.5t transporter. Recently, Broadcast Solutions has delivered another mobile VAR unit to AFFA. By deployinh the project's first phase, the AFFA (Association of Football Federations of Azerbaijan) has been officially certified by FIFA VAR. The combination of a fixed VAR-VOR solution and a mobile VAR system became necessary to connect venues that are too far away from the VAR hub in Baku or do not have a dedicated fibre optic connection to the nationwide VAR system. AFFA can now be even more flexible in meeting the league's requirements with the second mobile VAR system.	

Elkhan Samadov, President of the Azerbaijan Professional Football League, said: "We are pleased to have even more VAR systems at our disposal to ensure that all future matches are conducted as fairly and comprehensibly as possible

BANGLADESH	RTV BANGLADESH

RTV is a satellite television channel broadcast from Bangladesh. It was launched on 26 December 2005. The broadcaster has installed a TH5024 Intercom System with 8 TP3016 stationary rackmounted panels, 6 BP3004 belt packs and a concentrator for CCU in 2016 after 10 year satisfactory experience with previous Kroma analogue intercom systems.
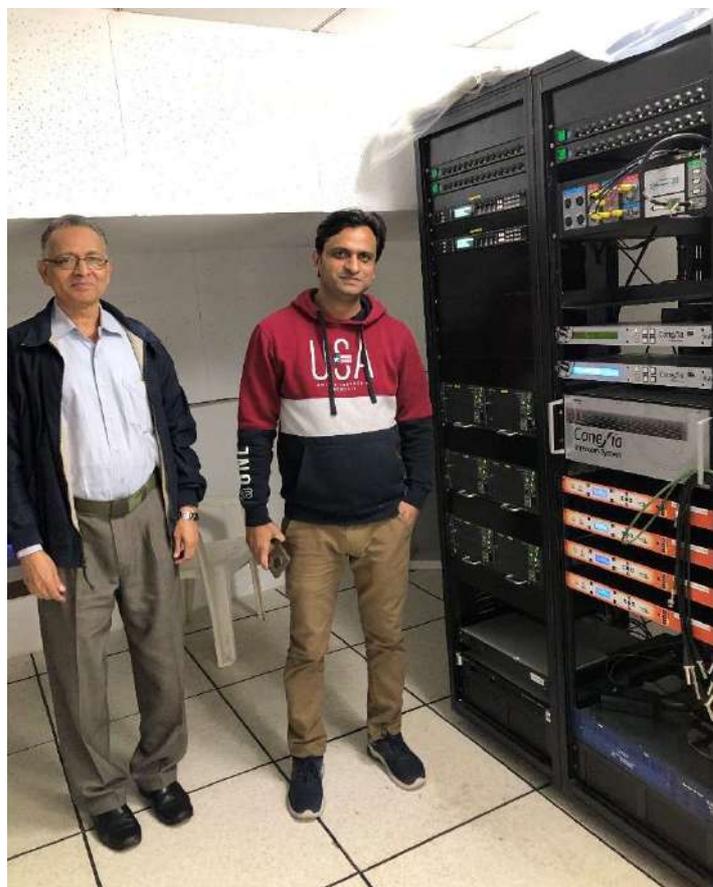

The system was delivered and installed by the integrator Benchmark Broadcast Systems. Based in Singapore – and several offices in Bangkok, Chennai, Delhi, Dhaka, Kuala Lumpur and Manila – Benchmark Broadcast is speccialized in design, installation and commissioning TV Stations and channels all across Asia.

INDIA	ABP NEWS	
	ABP News is an Indian Hindi news channel owned by ABP Group. Legacy KROMA TELECOM Analogue and Digital Intercom Systems are working in ABP News channel in the cities of Kolkata and Ahmedabad.	

INDIA	DOORDARSHAN	
	Doordarshan is India's public television company, built on public broadcaster Prasar Bharati. It manages television channels at a national, regional and local level in open signal, cable and satellite platforms, which makes it one of the largest television networks in the world. In New Delhi it has its two main production centers: • DD News is the production center of the Doordarshan National News Channel, it is the only 24-hour terrestrial television news channel in India. • CPC is a production center for General Programs with 4 studios A, B, C and D. In both centers a new digital intercom system was needed to communicate in each studio the producer and director with the cameras, manager and studio assistant, presenters, lighting technicians, sound technicians, CCU, and general center services such as VCR, graphics, etc. During 2021, with the travel restrictions imposed by the COVID-19 pandemic, Doordarshan, AEQ and Falcon had to carry out the	

entire manufacturing, installation, acceptance, commissioning and training process remotely between Madrid (Spain) and the two centers in New Delhi (India).

AEQ located in its Madrid offices an Intercom platform equivalent to the one sent, with the CONEXIA matrix, panels, beltpacks, concentrators, etc. In this way, and thanks to the means of remote control of the equipment and video conferences, the AEQ technical staff was able to carry out the necessary tasks for start-up and training from Madrid. AEQ's Crossmapper real-time control and configuration program allowed real-time control and supervision from Madrid of the operations in Delhi.

Design requirements

This Project arises from a need to provide a flexible and reliable intercom system for the DD News and CPC centers in Delhi. In mid-2020, the public tender was published, which was answered by the main international companies in the sector.

Doordarshan DD especially prioritized robustness and reliability over any other functionality. The CONEXIA system configured by AEQ was fully adjusted to the functional needs of both centers.

The AEQ intercom system has great configuration flexibility. Even though the AEQ intercom system usually uses high quality Dante combined AoIP connectivity with G722 / G711 for low bit rate transmissions, due to an express requirement of system design, for reasons of simplicity of configuration and maintenance, DD preferred the digital connection. point-to-point for the wired panels in rack format and point-to-point high-quality analog connection for the rest of the wired and wireless beltpacks and CCUs (intercom hubs with camera operators).

Also by design requirement, the widest redundancy was installed, so that most of the possible causes of failure do not prevent the global operation of the entire system, and very few causes can cause very localized interruptions that affect only very small parts of the system and never to complete sub-systems.

Thus, intercom and matrix controllers were supplied with redundant and hot-swappable elements that allow any intervention in the system without the need to stop the operation.

In elements where there is no redundancy such as individual connections to panels, beltpacks and cameras, audio distribution equipment, etc. AEQ proposed a configuration in which destinations are distributed among the largest possible number of cards in the CONEXIA matrix. In this way, an unlikely

failure of a CONEXIA matrix card would only affect part of the subsystems and never one completely.

Despite all the complexity of the system required, Doordarshan's AEQ CONEXIA intercom is easily operated and controlled from the intercom system panels. By pressing the corresponding buttons, authorized persons can contact the destinations and groups that should receive each message. The panels have mechanisms to give the highest quality and security to communications: noise gate, dynamic and equalization process, recording of the last message, etc.

The DELHI CPC System

The heart of the system is the CONEXIA intercom matrix, responsible for the distribution of audio signals between the wired user panels TP8116 in rack format, BP 3004 in wired beltpack format, as well as the Xplorer wireless user terminals based on Wi-Fi technology , and CE 6000 X01 hubs for cameras.

• Common areas have 6 TP8116 panels

• Studio A and B have 4 TP8116 panels and a TP8116+EP8116 set as a 32-key panel. In the studio, the Floor Managers and Presenters are equipped with two Xplorer wireless terminals with two WIFI access points, two wired beltpacks and two camera hubs.

• Studio C has 1 TP8116 panel, a TP8116+EP8116 set as a 32-key panel, two Xplorer wireless terminals with two access points and a wired beltpack.

• Studio D has 3 TP8116 panels, a TP8116+EP8116 set as a 32-key panel, an Xplorer wireless terminal with two access points and a wired beltpack, and two camera hubs.

The DD NEWS system

The heart of the system is also a CONEXIA intercom matrix, responsible for the distribution of audio signals between the wired user panels TP8116 in rack format, BP 3004 in wired beltpack format, as well as the Xplorer wireless user terminals based on Wi-Fi technology, and CE 6000 X01 concentrators for cameras.

The different user panels are distributed between the general technical area and the L, S, CB-1 and PRES studios. STUDIO.

• Common areas have 8 TP8116 panels.

• Studio L has 5 TP8116 panels, a TP8116+EP8116 set as a 32-key panel for the Producer. In the studio, the Floor Managers and Presenters are equipped with two Xplorer wireless terminals with WIFI access points, two wired beltpacks and two camera hubs.

• Studio S, CB1 and PRESS, each have 4 TP8116 user panels, a TP8116+EP8116 set as a 32-key user panel for the Producer, two Xplorer wireless terminals with two access points, two wired beltpacks and two camera hubs.

Supply, Installations, Commissioning and Training

Once the supply was confirmed by Doordarshan, AEQ had to manufacture the equipment during the first part of 2021.

Despite the complications due to the supply of components since the Covid19 pandemic, AEQ was able to supply all the equipment in a record period of 4 months. Once the merchandise was shipped, during the months of September and October of the year 2021, the rest of the process was carried out with the client Doordarshan.

The installation, configuration, commissioning and training was led from Madrid by the AEQ technical team and coordinated by our local distributor in India Falcon Broadcast Solutions.

Thanks to the programming, control and supervision advantages of the AEQ Crossmapper program, all these tasks could be carried out using simple and common tools in these cases such as the Anydesk program.

Once the entire system was up and running, two two-day remote training courses were conducted for DD News and CPC staff. In this way Doordarshan staff were trained to program and maintain the system requiring very little support from AEQ.

On behalf of AEQ, Mr. Roberto Tejero, as the technical manager of the Project, said "Throughout these hard months we have carried out important configuration and distance training tasks, but it is the first time that we have developed a Project of this

magnitude without traveling. This opens up a new way of working that will allow us to solve it if any problem arises as if it occurred in a station in Madrid. Their eyes will be our eyes and their hands will be ours, and the solutions will be the same as if we were to move".

INDIA	ESPN

Sony ESPN is an Indian sports pay channel which is a joint venture between ESPN Inc. and Sony Pictures Networks India, it was the second sports television channel launched by the company after Sony Six, providing and producing content such as cricket, football, tennis, NBA basketball, badminton, field hockey, golf, rugby union and Formula E .

In 2018, a Kroma by AEQ Intercom system were installed in Mumbai studios. The system features a TB3012 matrix with TP8416 panels and a Systel IP 4 in order to manage the VoIP telephone lines.

INDIA	UTTAR PRADESH TV NEWS - BHARAT SAMACHAR TV	भारत समाचार
	UP NEWS – BSTV is a leading 24-hour Hindi-language regional news channel and it´s currently the flagship asset of Bharat Samachar TV founded by well-known TV personality Mr. Brajesh Misra. BSTV has acquired an Intercom Party-Line System Easynet with 5 stationary panels and 6 belt packs. The local integrator RNINE delivered and installed the system.	

INDIA	MAA TV	maa
	Star Maa is an Indian pay channel based in Hyderabad, Telangana. This privet broadcaster is owned by Star India, a subsidiary of The Walt Disney Company India. Legacy KROMA TELECOM Analogue and Digital Intercom Systems are working in MAA TV channel in Hyderabad.	

INDIA	NTV	N1
	NTV is an Indian regional Telugu news channel launched on 30 August 2007 along with South India's first devotional channel Bhakti TV by Rachana Television Private Limited (RTPL). It is known as South India's first devotional channel. Legacy KROMA TELECOM Analogue and Digital Intercom Systems are working in NTV channel in Hyderabad.	

INDIA	SAI PRASAD MEDIA	saiprasad GROUP OF COMPANIES
	Prasad Studios and Prasad Film Labs are motion picture host production studios based in Hyderabad, India, founded by Prasad Group in 1956. This group is the largest chain of post production facilities in India with a total of 12 OBVans located in all the major film production centres of India Legacy KROMA TELECOM Analogue and Digital Intercom Systems are working in Sai Prasad Media in the city of Noida	

INDIA	TV5 NEWS	
	TV5 NEWS is a 24-hours Telugu-language news channel in India The broadcaster has installed a TH5000 intercom matrix with 24 ports and 13 TP3016 stationary user panels among 4 BP 3004 belt packs. This system was installed in 2017 at Hyderabad after more than 10 years satisfactory experience with previous Kroma digital intercom systems. The integration was carried out by the local integrator Rana Broadcasting Private Limited 	TV5

INDIA	TV9	
	TV9 is an Indian satellite television news network that provides 24-hours news coverage in Telugu language. TV9 was started in 2004 and is owned by Associated Broadcasting Company Private	TV9

	Limited (ABCL) which has seven television stations in different languages in India. Legacy KROMA TELECOM Analogue and Digital Intercom Systems are working in TV9 channel in Hyderabad.	

INDIA	V6 NEWS	
	V6 News is an Indian Telugu-language cable news and current affairs television channel in the Indian State of Telangana.The 24-hours channel is journalist-driven, with a tagline News as it is. It targets over 120 million Telugu people in India and overseas. V6 NEWS has installed 1 intercom matrix at Hyderabad. The unit was provided with 4 analogue (4-wires) ports for external audio sources, digital ports and IP ports.	

THAILAND	RS TV	
	RS is a Thai Leading entertainment company. Current business of RS features: Music Business, Show Business and Media Business such as Radio and Television. Within TV the broadcaster offers 1 Digital Free TV "Channel 8", the first run drama and the popular variety show and 4 leading satellite TV channels. At the end of 2019, RS has acquired for its television production centre in Bangkok, an Intercom System based on a CrossNET 104 AoIP matrix, TP8116 rack user panels, 3 TP8416 desktop user panels, 6 Xplorer wireless terminals, and 3 Netbox 8 interfaces for analogue and digital audio.	

The integration has been carried out by the local integrator North Star Equipment CO Ltd with the support of AEQ technical services.

VIETNAM	HO CHI MINH CITY STADIUM (Thong Nhat)	

Thống Nhất Stadium or Reunification Stadium is a multi-purpose stadium located in Ho Chi Minh City in Vietnam and is mainly used for soccer and athletics. The stadium opened in 1960 with acapacity for 25,000 people.

The Ho Chi Minh City FC and Xuan Thanh Saigon FC clubs of the V-League play their matches here.

EMTV PTE from Singapore delivered and installed 1 intercom matrix CrossNET **104** at the stadium of Ho Chi Minh city in Vietnam. The intercom system is integrated in an Audio over IP network with other AEQ Dante capable equipment like **AEQ Olympia 3** Commentary Unit and **AEQ Netbox 4 MH**. All these equipment provide Commentary Facilities and Voice injection systems interconnected with other Dante AoIP facilities at the

	stadium. This AoIP installation gives place to one of the more modern audio and video infrastructures for venues.

VIETNAM	**VINH PHÚC YEN PROVINCE RADIO AND TV STATION**	
	Vĩnh Yên is the city capital of Vĩnh Phúc Province, in the Red River Delta region of northern Vietnam. The population is over 76,000 people. Vinh Phuc Radio and Television Station is a non-business unit of Vinh Phuc People's Committee, functioning as a press agency of the Party Committee and Provincial Government; Vinh Phuc Radio and Television Station is under the state management of the press, transmission and broadcasting of the Ministry of Information and Communications. The Vietnamese integrator Broadcasting Development JS Company has developed a Project to set up the studios of Vinh Phuc Radio and Television Station that serves the province. The television set incorporates among other AoIP and AEQ communications equipment, such as a Capitol console and a Netbox 8 interface as well as communications equipment such as Mercury, an Intercom system for TV production. The Easynet intercom system operates in part-line mode based on a BS 3004 user terminal in the realization control, 5 BP 3004 beltpacks and an 6000 intercom audio hub for cameras,	

EUROPE

ALBANIA	RTV	
	Euro news is a European pay news network, based in Lyon, France. The network aims to cover world news from a pan-European perspective. In 2018 The Greek integrator Ariston has installed a TH5012 matrix for Euro news Albania with three TP 8116 user panels and two Xbp wireless beltpacks.	euronews.

ANDORRA	RTVA	
	Ràdio i Televisió d'Andorra, AKA RTVA, is the public broadcasting company of the Principality of Andorra. It was founded in 2000 and currently manages a television channel, two radio stations and a website. RTVA is a member of the European Broadcasting Union since 2003 In 2018, RTVA acquired a CrossNET 72 matrix, 10 TP8116 panels, 4 Xbp beltpacks and a 4-key base stations BS3004. They also installed two virtual panel licenses as PC applications. The installation, totally IP, was integrated by NRD Multimedia, official distributor of AEQ with headquarters in Barcelona.	RTVA

BELARUS	MINSK STADIUM	
	The Sport Broadcaster ISB was appointed as the Host Broadcaster for the Minsk 2019 2nd European Games and operations in Belarus are currently underway. Mr Esteban Galán, Head of Technical Operations at ISB, explains that the deployment of technical resources for the Broadcasting involve, among other things, AoIP Network interfaces, Intercom Systems, Audiocodecs and Commentary Units for the Audio and communications, and Broadcast Monitors for the production control. The intercom system deployed by ISB is an AEQ CrossNET system with Multi-channel AoIP with broadcast quality audio for the communication channels. A total of around 45 User panels have been installed, most of them in the IBC and a few at the most important competition venues. The Dante Network allows for the to carry IFB's originating from basically any point in the network and can be anything from International Sound to Mixed zone feeds or Commentary Guides for the Off Tubes.	

CYPRUS	SIGMA TV	
	Sigma TV is a commercial network in Cyprus. It is a private channel and is currently the first-rated channel in Cyprus. In 2018, the Greek integrator Ariston has installed in the Cypriot television station Sigma TV an intercom system with CrossNET 40 matrix, 3 TP8116 user panels and a Venus 3 audio codec to coordinate the external links	

FINLAND	TV 7

TV7 started broadcasting in December 2003. The TV7 Channels are Christian content and provides services in Finland, Estonia and Sweden as well as a daily production in Israel.

The Television has acquired 1 intercom matrix CrossNET 72, including some TP8116 user panels and wireless terminals Xbp. They were installed by our dealer LIGHTHOUSE NETWORL LTD at the city of Helsinki.

The Company is constantly seeking to optimise operations. Otsi Salminen, Sound Engineer at the station and its Technical Manager, Juhani Ojares, were struggling with the Intercom and IFB system of the Station until they came across the AoIP DanteTM Intercom Matrix from AEQ. They immediately saw the potential and took the decision to acquire a 72 Port System with user panels and Wireless Belt-packs.

The possibility to interconnect the User Panels and the remainder of the Audio equipment of the station makes the flexibility in terms of monitoring IFB sources and communications almost limitless and allows for the production to become really flexible and dynamic.

The System is deployed throughout the stations three sets and one Chroma-key. The Station has been aiming to partly automate the sets so as to have the personnel to focus on the actual production rather than the technology. This is where the AoIP networking capabilities of the Intercom Matrix and associate panels become really useful. The true plug-and-play nature of the DanteTM AoIP system makes it really easy to add, remove or modify any of the signals available in the Intercom System.

FRANCE	EUROCOM	

As an importer, distributor and system integrator in the world of radio and TV in France and abroad, Eurocom Broadcast is one of the leaders in its market and has become the key contact for all radio and TV -related projects. The strong points are equipment solutions, engineering, project management and the realization of turnkey studios. Based in Ile de France, the availability of its collaborators makes it possible to intervene everywhere in France and in the world.

At the end of 2019, they acquired a matrix-free Xplorer wireless intercom system for a customer in France, with three wireless terminals working in a 4-channel Party-Line mode. It is operating in combination with three BS3004 rack user panels of the Easynet system.

FRANCE	FAVORIZ PRODUCTIONS

Favoriz Productions is a French company specialized in audiovisual production, founded in 2010, which has the resources and technical solutions of high quality equipment for the highest demands of live production.

Favoriz Productions operates in a state-of-the-art technical environment to provide with advice, experience and solutions adapted to the design and creation of all audiovisual projects for both TV and companies, through the practice of permanent technological monitoring. Its catalogue of solutions includes mobile production units, broadcasting equipment, drones, cranes and the most complete technical equipment for all types of productions.

Its central studios are equipped with AEQ's CROSSNET intercom system, consisting of a central matrix and TP8000 series panels. Specifically the CROSSNET 72 model that connects via AoIP with TP 8116 rack panels. It also uses analogue circuits to connect in bidirectional audio with camera operators.

The TP 8000 user panels series incorporated in the system have been designed to achieve the high level of broadcast compatible audio quality that CrossNET digital matrix technology allows. Audio is digitalised and processed at 24-bit 48 kHz, giving a bandwidth of 20 Hz to 20 kHz and negligible levels of distortion and noise. In addition, the ease of installation has also been taken into consideration, which is why they incorporate a redundant IP port that handles high quality audio in DANTE format, compatible with the AES 67 standard. The audio is digitally processed to cancel the acoustic echo and automatically level the voice power and speaking habits of each operator. The acoustics have been carefully studied to achieve the best intelligibility and natural sound.

FRANCE	TELEMEDIA	
	Telemedia Group offers innovative solutions in France and around the world in several key telecommunication sectors and in particular VoIP. The company has acquired 1 intercom matrix CrossNET 72 installed in Paris.	

GERMANY	BROADCAST SOLUTIONS	
	Broadcast Solutions is one of the leading European broadcast system integrators. Based in Bingen, Germany, it works globally, with branches in 14 countries and more than 200 employees. Broadcast Solutions offers innovative and sustainable solutions for the broadcast and media industry. They plan and implement projects and solutions that cover the entire value chain of the broadcast and media industry.	

Its OB Van, studio and broadcast facilities, units for satellite communication, and products for controlling complex broadcast workflows are used around the world.
One of its most current specialties are Video Assistant Referee systems (VAR)

In 2022 and 2023 they have incorporated CrossNET intercom systems in their fixed systems and mobile VAR units.

Over the last years, Video Assistant Referee (VAR) systems has become a very popular solution for many football federations all around the world. More and more leagues and associations are deploying VAR systems to ensure more fair play and acurate refereeing decisions.

Among others, the Association of Football Federations of Azerbaijan (AFFA) understood the advantages of this solution and decided to implement a VAR system in 2022 designed and delivered by Broadcast Solutions.
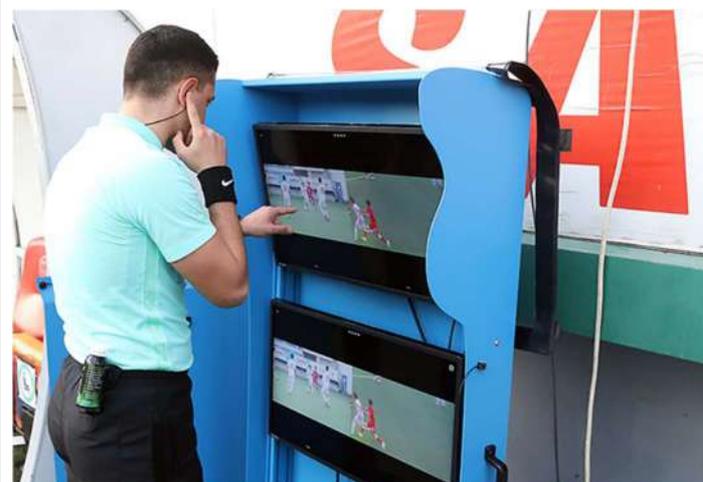

The initial system consists of three Video Assistant Referee Video Operation Rooms (VAR-VOR) permanently installed in the stadium in Baku, completed by a mobile VAR system in a 3.5t transporter. Recently, Broadcast Solutions has delivered another mobile VAR unit to AFFA.

By deploying the project's first phase, the AFFA (Association of Football Federations of Azerbaijan) has been officially certified by FIFA VAR.

The combination of a fixed VAR-VOR solution and a mobile VAR system became necessary to connect venues that are too far away from the VAR hub in Baku or do not have a dedicated fibre optic connection to the nationwide VAR system. AFFA can now be even more flexible in meeting the league's requirements with the second mobile VAR system.

The VAR van, now handed over to AFFA, has been realised as a van with a total weight less than 3.5 tonnes, in order to ensure unrestricted driving availability. Three workstations are available in the van for a video referee, a video referee assistant and a replay operator."

Furthermore, the "Review Area" system consisting of a flight case, monitors, an AEQ TP8116 Intercom user panel and a stage box, which is placed on the sidelines of the football ground. With this solution, the referee is able to review certain scenes and also communicate with the video referee in the van.

AEQ equipment is installed in both locations to distribute the audio signals and intercom communications.

The equipment in the OBVan consists of an AEQ CrossNET intercom matrix and three AEQ TP8116 intercom user panels.

CrossNET is a compact, one rack unit high intercom matrix with basic IP connectivity, based on Dante™ technology, compatible

with the AES67 standard, carrying high-quality audio suitable for broadcast. It also has high-quality balanced analog audio inputs and outputs.

In each room, three AEQ TP8116 intercom user panels have been installed. These are 1UR User panels with 16 programmable keys on 4 different pages. They have individual volume control for each communication crosspoint, DSP and ECO canceller. Apart from these features, TP8116 panels offer by default dual AoIP Dante / AES67 port, a VoIP port, a Digital port and an analog port. Each panel has 2 graphic displays, with the possibility of up to two lines of text for each key, a third line indicating the audio level at the crossing point.
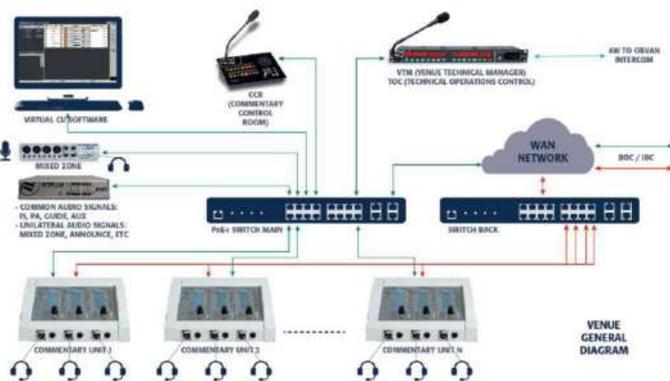
The replay operator uses EVS' Xeebra multi-camera review system, which is equipped with AI technology to automatically calibrate the field of play and create a real-time virtual offside line (VOL). The EVS Xeebra system is provided to process up to eight video signals per match.

For the routing solution, both partners opted for KUMO systems from AJA. Radio systems with headsets from Vokkero are used for communication between the referees on the field and the video referees.

GERMANY- UK	2018 EUROPEAN CHAMPIONSHIPS	
	The EUROPEAN CHAMPIONSHIPS 2018 took place during the first 10 days of August 2018. The first edition of the European Championships was held on two different main locations: Glasgow and Berlin, including 16 different venues, amongst them the Berlin Olympic Stadium. A Kroma by AEQ IP Intercom System was been installed to cover the event's technical and production coordination requirements, offering 104x104 input and output ports. It was been deployed across the different venues in Scotland and Germany, as well as at the Broadcast Operation Centres in Glasgow and Berlin. This Intercom system was expanded whenever required, using Netbox 4MH interfaces, that were already available at the venues, or even using Olympia 3 commentary units that demonstrated great flexibility to cover unexpected audio and communication routing needs.	

The control rooms at BOC and IBC were provided with rack-mounted TP8116 panels, just the same as in the venues' TOCs, which were located either outside the building or in mobile units.

General venue schematic diagram

On the other hand, desktop TP8416 panels were installed in the CCR and other particular places. Even some Olympia 3 Commentary Units were configured so its first channel could be used as an intercom panel during the start-up phase. 40 intercom panels were installed in total: 21 TP8416 (table-top) and 19 TP8116 (rack-mount). Among them, the 29 panels in UK venues were connected to the matrix using Dante AoIP, while the 11 panels deployed at the IBC and venues in Berlin -located more than 1000km away from the matrix (installed in Glasgow)-, were connected to it using VoIP circuits, occupying little bandwidth and being less sensitive to network delays.

In order to integrate the event's coordination general Intercom System with the particular ones provided by third-parties, installed by the organization or the Right holders themselves at each TOC or mobile units in the different venues, 32 bridges were established, using 4-wire ports integrated in the Dante network, either from Netbox interfaces or using the second AoIP port provided by a user intercom panel, thus converting the 4-wire analogue circuits into bi-directional AoIP channels that were incorporated to the matrix just as additional intercom panels. This way, among the 16 existing venues, 12 of them, located within 100km, were connected by Dante AoIP, while the IBC at Berlin and its three venues, located more than 1000km away, and were linked by VoIP.

Each IBC/BOC included 7 panels coordinating both the operation of the rest of venues and that of the incorporated one. 3 of them were used by the VTM (Venue Technical Manager), while the rest were used by the BVM (Broadcast Venue Manager) and the personnel in charge of the produced video quality control (Production Quality Control). The rest of venues were provided

with 1 to 3 panels, plus a maximum of two more 4-wire communications, depending on the broadcast complexity of the sports competitions taking place there.

Kroma by AEQ Intercom System panels can be configured in a totally flexible way, so pressing of each key unchains a customized wide range of actions in order to ease the coordination of any event.

This way, all IBC/BOC panels at both locations could communicate with each other (any panel could talk to others within its local venue, but additionally any panel at the IBC/BOC at one location could talk to others at the other location). - In the rest of venues, each panel could talk to the rest of panels within the same venue and call to any panel at IBC/BOC. - On the other hand, any panel at IBC/BOC could establish communication with any panel in any venue and with the 4-wire ports installing in all mobile units. - 4-wire ports in the mobile units entered in IFB mode to all BVM (Broadcast Venue Manager) panels at IBC/BOC, so when the microphone of the connected device was open, all panels could hear it simultaneously. - Additionally, specific and/or temporary programmings were made according to the needs of each covered event. - All communications were programmed in Push To Talk mode

GREECE	ALTER EGO TV	
	The Greek multimedia group Alter Ego, one of the leading in their country, in 2019 launched the One Channel television. Through Ariston, AEQ's distributor in Greece, they acquired an intercom system to coordinate four workstations equipped with TP 8116 user panel through a TH5024 matrix	

ITALY	ARET	
	Aret Video And Audio Engineering Srl was founded in 1976. The company's line of business includes the manufacturing of radio and television broadcasting and communications equipment. It is the largest integrator of studios and mobile television units in Italy and serves customers on several continents. ARET regularly uses intercom systems for its projects and also video monitors and other AEQ equipment	

For example : Intercom System for 6 HD Cameras DSNG OB Van with uplink system, with TH 5000 hybrid intercom matrix and TP 4116 user panels from Kroma by AEQ

ITALY	ITALIAN PRESIDENTIAL HOUSE TV STUDIOS	
	  There is a TV Station in the Presidential House in Italy. This TV Station was installed by ARET and includes an AEQ Intercom System, with CrossNET matrix and TP 8000 user panels.	

ITALY	RAI	
	Rai is the public broadcasting company in Italy. RAI currently manages 11 radio stations, 13 television channels, audiovisual production centres, multimedia services, broadcasting and advertising sales among other fields. RAI has its main production centre in Rome and the second, with large capacity, in Milan. In 2016 ARET, audio and video engineering specialise in turnkey projects and OB vans, acquired 1 intercom matrix CONEXIA for the Italian broadcaster RAI, for their Milano regional offices.	

The system is based on a modular Conexia matrix with dual controller and source, 5 multi-purpose digital cards, a linker, 40 analogue inputs and outputs, and two MADI links. 12 TP8116 user panels with 16 keys and another 3 with expansion up to 32 keys are incorporated.

LITHUANIA	THE NATIONAL OPERA OF LITHUANIA	

The National Opera and Ballet Theatre of Lithuania is located in Vilnius, the country's capital. It was built in 1974.

It is quite a polyvalent building, due to its design and size (with up to 7 usable floors). It contains a main stage with capacity for up to 1700 spectators -including the stalls and galleries-, as well as many auxiliary stages for smaller events or rehearsals, and a very large technical space for assembly, illumination, sets, tailoring, dressing rooms, etc, as corresponds to the main Opera Theatre in the country.

Back in 2016, the theatre's technical management decided to carry out a complex and ambitious technical renovation of the installations. AEQ CONEXIA intercom system was selected to implement the main internal intercom system of the building.
The system provided includes 53 desktop and rack-mount intercom panels with 24, 16 or 4 keys (depending on their location), as well as 20 AEQ XPLORER wireless belt packs and all the required network infrastructure such as IP switches, routers, WiFi access points and enough antennas to guarantee coverage in such a large building. The deployment of a large network with up to 50 access points was required to provide 100% WiFi coverage and centralized management of all the belt packs.
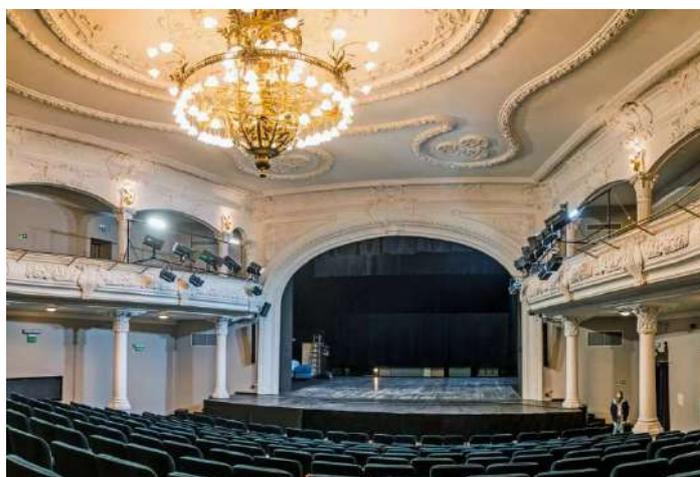
	The complete project was coordinated with AVSystems-Lituania technical manager, Paul Egidijus, in coordination with AEQ-KROMA central services in Madrid, leaded by chief engineers Mario Rodríguez and Roberto Tejero	

POLAND	MOSIR PULAWY PAVILION	
	The multi-function Mosir Pulawy pavilion is an important sports arena in the Polish region of Wlostowice, at the country East, and was built in 2020. With a cost above 10 million euro, it offers capacity for more than 4400 spectators. AEQ CROSSNET intercom system was selected among the numerous systems taking part in the audio-visual system of an installation of this level. It was used with TP 8000 user panels, connected via AoIP using AES67-Dante protocol. In order to ease operators' tasks (who, due to their jobs, need to move freely around the building while remaining properly communicated), the provided AEQ CROSSNET system counts with XPLORER wireless belt packs. In order to finish AEQ technology deployment in the Mosir Pulawy pavilion, the AEQ OLYMPIA3 was integrated as part of its operating platform. It can be used as an isolated workplace for the journalists who are following the events held in this venue, or integrated with CROSSNET as one more intercom panel. In both cases, the audio produced has the highest quality, thanks to the ES67 / Dante IP connectivity included in the unit. The complete project, including its installation, configuration, start-up and training has been leaded by the technical staff of AEQ local distributor Tommex, in tight collaboration with AEQ central technical services in Madrid, who remotely collaborated in order to complete the project's execution during the pandemics.	

POLAND	NOWY W ZABRZU THEATER

Teatr Nowy W Zabrzu, a historic institution founded in 1959, is part of the Zabrze municipality in Poland. This theatre carries out a great cultural and educational work for the last 60 years. In view of the need to close due to the pandemic, it has been subjected to a deep renovation. In this way, the technical facilities have been upgraded. All type of performances or events now need to comply with strict security anti-covid measures. From a technical point of view, the new sound system and the stage direction system, are now closely related.

One of the most important new features in the main hall is the highest sound quality, due to a new ultra-compact loudspeaker system delivered with array or line source grouping. The system allows a wide range of control of the sound diffusion area, both on the horizontal and vertical axis.

The stage manager's system

The other major technical innovation in the theatre is a new stage direction system based on AEQ solutions. The heart of the system is the intercom matrix AEQ CROSSNET 72, which is responsible for the audio signal distribution between the rack-mounted TP8116 and desktop user panels TP8416, as well as the Wi-Fi based wireless beltpacks AEQ XPLORER.

It also interfaces with the room sound system matrix, and a live audio desk, since the audio from the intercom matrix and IP panels is of the highest quality for broadcasting in the room, and can be used not only for audience paging, but also to broadcast, for example, narration or voice over.

Audio signal distribution between the AEQ Crossnet, the audio matrix and the intercom user panels using Dante IP audio protocol. The wireless panels communicate with the system via VoIP protocol. The Yamaha matrix is responsible in the system

for the distribution of messages from the stage manager's system, the stage action microphones and an RCF automatic message player for automatic announcements to the stage and backstage and dressing rooms.

An Audio Input/Output Terminal has been added to the Dante network model AEQ Netbox 4 MH, with mic/line inputs and headphone line outputs. This terminal allows audio to be sent and received from the IP network, and to be managed through the intercom matrix or the room sound system. In this way, it is possible to record for the press, listen to the stage sound, or add some voice or music into the system from a workstation outside the show control desk.

All the audiopaths are managed by the intercom system panels. By pressing the proper key, the stage manager can communicate with other workers o users, activate the buzzer, turn on the "SILENCE" signs, send a manual or automatic message to the hall or activate the stage action listening system. Working comfort is ensured by the integrated displays in the panels and illuminated keys in several colours. All devices are connected via dedicated LAN network.

This workflow has been designed based on the great flexibility of AEQ's intercom systems. Originally developed with television production in mind, they have a great capacity for more scenarios like stage productions, OB Vans or Live Shows. Dozens of commands with different types can be programmed on each key of each intercom user panel to carry out several tasks.

The Nowy Theatre spokesperson said: "We are very pleased that the Teatr Nowy W Zabrzu is equipped with modern sound and stage systems. We hope that the audience attending organised performances and other cultural events will be able to enjoy sound of the highest quality and clarity".

	AEQ's Sales Manager for the country, Mr Sergey Alekseev confirms: "within the company we are very proud to have participated in this important project, to have been able to integrate our intercom systems with the Yamaha matrix and sound reinforcement equipment into a final flexible and efficient IP theatre system". The entire project, including installation, configuration, commissioning and training has been led by the technical team of Tommex, local distributor of AEQ in collaboration with the central technical services of AEQ in Madrid, who worked remotely during the pandemic to complete the execution of the project. The SMT company in Katowice was responsible for the commissioning of the systems.	

POLAND	TELEWIZJA REPUBLIKA	
	The private television TELEWIZJA REPUBLIKA was created in 2012. A few years later, in 2016 technical management decided to acquire the TB3004 and TH5012 intercom matrices to give flexibility to their intercommunications system. The matrices were installed by our distributor DTS ST. LUBINSKI SP.	REPUBLIKA

POLAND	ZAMOŚĆ CULTURE HOUSE	
	The building of the Zamość Culture House in Poland (Zamojski Domu Kultury) after over half a century since its creation, was thoroughly modernized. The first stage consisted in modernization of the interior of the object and covered mostly the auditorium (main events hall) and its surroundings, among others the balcony was created, the total capacity of seats was increased and is currently 413, there were installed also new seats (armchairs), new lightning and also new advanced and modern sound system. The offcial opening of the modernized auditorium had place at the beginning of September 2021 involving participation of town and regional authorities.	TOMMEX dźwięk to my!

Sound system of the auditorium

The stage sound system of the event hall was designed based on CODA Audio loudspeakers. The system is powered by Linus10C and Linus14 connected with the transmission system based on Dante network by digital inputs AES/EBU. Also with Yamaha RIVAGE PM3.

Intercom System

The auditorium was equipped with advanced intercom system and stage direction system based on AEQ solutions.

The heart of the system is the intercom matrix CrossNET 40, which is responsible for the audio signal distribution between the rack-mounted TP8116 and desktop user panels TP8416, as well as the Wi-Fi based wireless beltpacks AEQ XPLORER and can be used not only for audience paging but also to broadcast for example, narration or voice over.

The system enables communication between stage of sound and lightning engineer, stage manager and wireless modules, that in connection with access point can be used individually

during external events with utilisation of the mobil sound system.

The Project has been developed by the integrator Tommex, official distributor of AEQ

PORTUGAL	CORREIO DA MANHÃ TV- CMTV	

The newspaper "Correio da Manhã" belongs to the Cofina group that launched a general content TV channel in March 2013 called CMTV. This channel is available on the "Meo" platform. The channel is also present in Angola and Mozambique through Pay-per-View platforms and is very successful.

When CMTV was expanding its technical facilities they acquired an AEQ-KROMA CONEXIA. The CONEXIA is replacing the TH5000 matrix since CMTV want to use the new system not only as a regular intercom system but also as a global audio solution for their operations.

Further, the fact that CONEXIA is compatible with all KROMA branded intercom terminals and links made it possible to re-use 100% of the old panels from the TH5000 matrix including the GSM and telephone interfaces.

One thing that should be emphasized with this expansion of CMTV's technical installation, is the replacement of the traditional belt-packs with virtual panels compatible with Android or iOS platforms. The virtual panels are operating on a WiFi network configured with managed access points allowing for the terminals to move freely, or "roam" around the building with seamless transfers between the access points, ensuring the uninterrupted audio communication.

In 2019 they updated their system by converting it to IP, sharing the Conexia router for intercom and broadcast audio. They have

expanded the number of user panels with 4 new TP8116 and two TP8416. They have also incorporated a SystelSet IP VoIP System with two SystelSet + terminals and a Systel IP16 core for the coordination of outdoor events.

The entire project has been piloted by the technicians in charge of Correio da Mañha, Mr. Ricardo Lima, and Mr. Ricardo Matias in collaboration with the AEQ's technical team leaded by the engineer Mr. Mario Rodriguez. The integration has been carried out by the Portuguese Company DEC Imagem

PORTUGAL	MEDIA BURST SERVIÇOS EMPRESAS IURY TV	
	The Portuguese integrator Media Burst Serviços Empresas, of the audiovisual group Mediapro has developed a mobile television unit for HURI TV, in Seville, Spain. For technical intercommunication, a CrossNET 72 matrix has been installed, with 5 TP 8116 rack panels and 2 TP 8416 desktop panels	

PORTUGAL	ETIC	
	ETIC is a company dedicated to training in new technologies in Portugal. They have film and television courses of different formats and content. In 2018 they acquired an Intercom matrix CrossNET 40, to which 3 TP8116 panels, 2 Xbp belt packs and a concentrator for camera CCUs have been connected. Apart from the regular production, the system is also used for the technical coordination of the people involved in the internal training sessions of the TV Channel.The integration was carried out by the Company DEC Imagem.	

PORTUGAL	TSF RADIO NOTICIAS	

TSF is a Portuguese radio station that produces a newscast every half an hour. It counts on a great network of international correspondents. TSF FM covers all of Portugal.

This station has very specific technical requirements, due to the mainly informative nature of its contents.

So when TSF's new Program Production Centre engineering planning was started, a system combining both technologies was proposed not having to surrender the advantages of any of these: an intercom system serving Editorial Office and News Production has been built on Dante-based AoIP network, and this is linked to a redundant TDM bus-based matrix combining and organizing the production studios and radio broadcasting circuits.

The main elements in the new Technical Centre are two AoIP-connected matrixes: 104 intercom matrix, and AEQ BC-2000C TDM-bus based matrix for audio switching and distribution with AoIP interfaces, as well as AEQ NETBOX 32 audio interface devices.

The intercom system is installed on virtually all the technical rooms: controls, studios, technical center, booths and also on the editorial rooms. That's why it required a dedicated installation.

This system includes 64 AoIP channels. It also has inputs and outputs in analogue and other formats. The signaling protocol used and the ability to easily create flexible summing and/or distributing audio routes, allows the system to be used as a complementary infrastructure for audio transport. This acquires special relevance when recording news chronicles, interviews and outside broadcasts.

RUSSIA	LOGOS TV	

The production company of Logos TV, with its headquarters in Moscow, has as its main line of business, the leasing of equipment for recording television programmes, sports competitions, concerts and events, etc. It also provides technical staff for all types of media productions.

To serve the entire Russian territory, Logos TV has OB Vans deployed throughout the country. Actually this production company already had a KROMA intercom system, composed by the TB3020 matrix, with analogue and digital ports integrated into these units. After checking its operation for years, the Russian broadcaster now has decided to update its intercommunications with AEQ, this time acquiring the CROSSNET matrix and the TP8000 user panels.

Vidau is AEQ dealer in the area and responsible for the installation, recommended to Logos TV the incorporation of the compact CROSSNET matrix, in its 72-port version, but easily expandable in the future to 168. Unlike the TB3020 matrix, this matrix already has analogue, digital and multi-channel IP audio interconnection functions over Dante-AES67 proto.

The TP8000 user panels installed are both in rackable format, model TP8116 and desktop model TP8416. Both models have 16 programmable keys on 4 different pages. It has individual volume control for each communication point and ECO canceller. It has a double AoIP Dante™ port, a VoIP port, a Digital port and an analogue port. Thanks to the implementation of an internal DSP with great processing power, the user can carry out advanced configurations for each panel. (Click here to know more)

The combination of the CROSSNET matrix and the TP 8000 user panels via digital links creates an ideal system for portable installations as well as for small and medium sized installations. In this particular case, Logos TV carries out its productions in complete safety with all the equipment installed in flycases, which are easy to transport and change according to the needs of the technical deployment.

This is why the CROSSNET solution turned out to be the most comfortable for them due to its flexibility, easy handling and that it fits perfectly into the operation of a portable studio.

Logos TV regularly rents out this portable studio to several of its clients. This means that the configuration software has to be very easy to use and intuitive. Crossmapper meets these requirements perfectly and also fulfils the function of monitoring and control. As the Logos TV managers commented, "The Crossmapper SW has a very user-friendly interface and it is very easy for our customers to learn how to work with it." (Click here to know more)

RUSSIA	TV-START	

TV START is a Russian television production company with a broad technical base. It offers any service or infrastructure for broadcasting, such as rental of equipment for a complete television production, or live broadcast of any event through a complete and capable human team.

Headquartered in Moscow, TV-START can offer their services in any region of Russia, CIS countries or Central and East Europe. In addition, using fly pack equipment, they can produce events on different continents and far away countries.

Mr. Antón Shirokov, TVSTART's COO, has taken a moment in the middle of a production to speak with us. He describes his equipment and activity to us: "We have five OB Van, four of them with satellite connection, with teleport connection, twelve commentator positions, 80 independent lines of communication with the uplink to send the signal to satellite. Apart from event production, we are also dedicated to broadcasting different television channels. Specifically, we provide this service to five TV channels from our own production center. We have known AEQ for a long time, the first equipment we acquired from AEQ was a commentator unit or CU".

TV START observed wide technical advantages in AEQ's intercom systems and the company's management included them in their 2021 technology upgrade plans, in which they built a static studio and a new OB Van.

The flexibility of the TP8000 panels in terms of connectivity - via IP audio, point-to-point digital links, and IP voice with low bit rate, are key features for TV-START. The wide processing capacity of the panels (parametric eq, filters, noise gate, compressor, expander, and limiter) that acoustically adapts them to any user and work style, it is also highly valued by users.

The Intercom solution picked for the studio is based on an AEQ Crossnet 72 intercom matrix, used for the distribution of audio signals. Also, four TP8116 wired user panels in rack format with 16 keys and four pages, for the control gallery and two TP8416 (desktop version), with the same keyboard to program

communications, plus an additional telephone type keyboard, for executive management and production office workplaces.

Each of these user panels incorporates a high-quality audio input and output, suitable for broadcasting. The matrix's analog, digital and AoIP inputs and outputs are also of high quality. This allows the intercom infrastructure to be used for routing broadcast audio.

The TV START studio solution also has two BS 3004 user terminals with 4 keys and connectivity exclusively for low bit rate networks. TVSTART is using these panels in remote locations, connected by VoIP.

About this system he tells us:

And this year we have incorporated an intercom in our production center, which includes the Central Control Room, with communications with the OB Van and centralization of the audio from the CUs, engineerin, and all kinds of central services.

The choice was made on the basis of looking for a cost-effective solution: One that offered the best benefits, within a medium-limited budget. One of the key decision-making factors has been the fact that the system works in AoIP Dante format - our CUs that are in the central control room are connected by Dante. Today we consider this decision to be the best we could make".

The second intercom system, placed in the OB Van, includes the same Crossnet 72 intercom matrix used for audio signals distribution between camera operators (using a six-to-one concentrator for analog intercommunication) and seven TP8116 wired rackmounted user panels, for the different directors and technical operators inside the vehicle. The two systems are fully operational to the full satisfaction of users.

About this system Mr. Shirokov has told us:

The second intercom system is in our last 8 camera OB Van. The requirements were the same: communication with the camera

and control operators, communication with the different panels within OBvan itself, and with third-party equipment.

We really like working with AEQ - we like AEQ quality and the relationship with its professionals. The equipment comply with everything that is required. Both technical and commercial feedback are great. We hope to do more projects with AEQ in the future ".

RUSSIA	VGTRK (RUSSIAN NATIONAL TELEVISION AND RADIO)	

The All-Russia State Television and Radio Broadcasting Company, in short VGTRK (Russian: ВГТРК) which operates many television and radio channels in 53 of Russia's languages.

The broadcasting of the All-Russia TV and radio channels is located in Moscow, and also via the regional transmitting centres of the Russian Television and Radio Broadcasting Network forming the terrestrial transmitting network. TV and radio channels from Moscow are delivered to the regions via satellite and terrestrial communication channels.

AEQ has equipped most of the consoles and communications equipment of the radio studios in Moscow and the other regional and provincial stations of VGTRK

In 2014, the client acquired a redundant Intercom Conexia system for coordination between the studies and technical areas of the radio in Moscow. The installation has 51 user panels for TP4016 rack, one TP5024, 20 TP4216 desktop, and two linkers.

| RUSSIA | YAMAL-REGION TV STATION - DNK CORPORATION | |

DNK Corporation was founded in 1993. Currently the scope of the company activity includes projects for specialized system integration such as equipping the television and film studios, the creation of audiovisual systems for sports, education, culture and art, and other structures, OB Vans production, satellite stations, special lighting systems, broadcast automation systems, TV production and broadcasting, cable and other switching products.

A complete Mobile Unit has been built for the Yamal-Region broadcasting company. All the equipment has been assembled in

flight cases to be able to cover an event outside its facilities quickly and efficiently. The system is intended to record sporting events, press conferences, concerts and theatrical performances. The device allows live streaming streaming through its internet channel.

The basic requisite of this customer was the delivery time. In September 2019, the client established the task of designing and supplying the complete system. DNK was able to supply the equipment so that on October 27, the channel was already covering the Russian Men's Volleyball Championship.

Therefore, the system was designed and put into operation in less than two months, although generally the implementation of such projects takes 3 to 4 months.

The core of the mobile and television production system is the 4K video mixer and all communications are centralized in an AEQ CrossNET matrix and TP8116 panels.

SLOVENIAL   DVBPRO

The company DVB d.o.o., which was founded in 2007, has succeeded to thoroughly revolutionize the mobile production on the Slovenian market. With professional and dedicated attitude to each client, with own experienced team and modern technological equipment, DVB guarantee for high quality services.

In 2019, DVB commissioned the Italian integrator ARET to build its mobile unit No. 2. It is equipped with 6 Sony cameras and a Yamha QL1 audio console.

It incorporates an intercom matrix CrossNET 72 that communicates via IP Dante with the Yamaha console, with 8 TP8116 panels and with an Olympia 3 commentator unit, among other components.

SPAIN	13 TV

TRECE is a Spanish open television channel. Its main contents go through the classic cinema, TV soaps, the programs of own production and those of religious foreign production of KW TV, Popular TV and CTV.

It belongs to the Radio Popular group, along with the radio stations COPE, Rock FM, Cadena 100 and MegaStar FM.

Spanish TV station TRECE renewed its image, moved to new facilities located in Madrid, and expanding their installations, now composed by two studios and a central TV control. That's why they acquired new AEQ CONEXIA matrix to perform the studios' audio and intercom management.

CONEXIA covers Intercom and broadcast audio within the same hardware. It is a redundant and modular audio matrix simultaneously managing audio for broadcast and 4-wire intercom circuits. The included switching and processing capability sums more than 300 inputs and outputs.

14 series-4000 intercom user panels are reused and connected by digital link, while the new 16 series-8000 panels are connected to AoIP circuits, with better voice clarity provided by their new acoustical design and audio processing, which includes dynamics, equalization and feedback control.

Also 24 matrix input and output circuits have been routed to two Systel IP 16 VoIP systems and two STRATOS audiocodecs for external intercoms.

In 2021 Trece-Television upgrades its IP Intercom Conexia system with Xplorer wireless beltpacks

OB coordination is handled by two SYSTEL-IP systems and a Stratos audiocodec.

Xplorer Wireless Intercom

 Xplorer technical intercom terminals have been incorporated into the technical coordination system. It is based on WiFi technology, which has allowed a very simple installation based on the access points of the WiFi infrastructure of the building. With the Conexia matrix it establishes through the wireless network a bidirectional channel with 7 KHz bandwidth, which gives the voice a great naturalness and intelligibility.
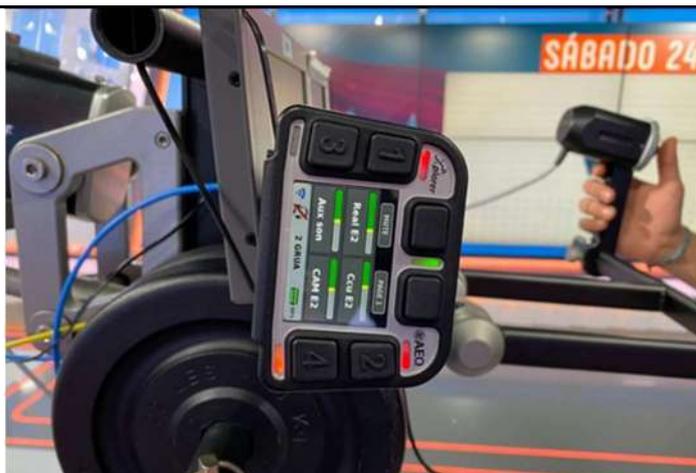
It is equipped with a user interface with 2 programmable keys, a multi-function display and 4 shortcut keys organised in pages, which can select up to 16 different destinations or functions, just like an AEQ stationary panel. In this mode, each key can activate any of the following commands: Talk, Listen, Talk&Listen, Remote One Way, Remote Both Ways, Remote Volume and Dial Call.

This gives great operational flexibility by allowing each user to communicate in the most effective way, sending messages only to those who need to receive them, receiving only the messages they need for their work, and also allowing automated functions to be executed from the terminal.

AEQ XPLORER is very comfortable for the user. Its dimensions and weight are reduced, protected from hits and splashes, it can be attached to a belt or hung from a strap, to use it as a shoulder strap. With autonomy for 20 hours of work, it can be recharged in a multiple base. It has a double assignable volume control, which can be configured, for example, to give direct access to the main speaker's level setting, differentiating it from the rest.

At TRECE TV these beltpacks are used for fully mobile workstations, such as television floor manager, directors and lighting assistants, but also to facilitate the movement of dynamic camera operators such as cranes or self-supporting cameras.

Conclusion

The technical and economic objectives that were set in the project all have been extended: the expansion of the system based on the technological update on IP protocol and the optimisation of equipment in use. In addition, the operation has been made more flexible and communication with mobile operators has been improved.

The audio and intercom system has been expanded to attend two studios and a central control, a high availability audio router has been incorporated, with ample processing capacity, controlled through a distributed multi-station application, the AoIP terminals that were already in use have been incorporated to distribute the inputs and outputs, the entire installation has been carried out unifying the audio and intercom with structured cabling over IP, the intercom system has been extended with new processed user panels with extraordinary sound quality and intelligibility, while maintaining the old panels, the external intercom system has been extended and, finally, mobile users have been provided with a system with the same features as those enjoyed by static users.

SPAIN	A.T.M. BROADCAST, S.L.	
	TM Broadcast is a Spanish company that develops activities in the audiovisual sector, such as rental of OB units and HD equipment, satellite transmission, studios in Madrid, Barcelona and Miami, editing rooms, content transfer, program distribution and integration of audiovisual systems.	

In 2018, the production house ATM Broadcast acquired one unit of CrossNET 72 intercom matrix and user panels TP8116 and TP8416 for one of their OB vans.

SPAIN	ATRESMEDIA

Antena 3 is a conglomerate of Spanish open television channels, owned by Atresmedia Corporación, Its main products are A3, La Sexta, Neox, Nova, Mega, Atreseries, Antena 3 HD and La Sexta HD, as well as Antena 3 Internacional and Ver-T

In 2015 the private Spanish group acquired a CONEXIA intercom router as a centre of communications, and desktop and rack user panels distributed in six TV studios.

The internal BC 2000D matrix is sized for 486 ports, of which 60 service wired user panels of the TP8000 series, and 30 ports service Xplorer wireless user panels

SPAIN	BAINET GROUP	
	Bainet group develops different activities within the area of communication, highlighting among them, Cinema and TV programs production. The TH5024 intercom matrix was installed in their OBVan for outside broadcasting. 	bainet grupo

SPAIN	BARÇA TV	
	Barça TV is a sports television channel entirely devoted to Barcelona Football Club. This thematic channel started broadcasting on July 27th, 1999. At this moment, Barça TV is on-air 24/7 throughout the year. Barça TV has carried out a complete renewal of their installations and Telefónica Audio-Visual Services (TSA), has trusted AEQ-KROMA once again. AEQ has provided the complete Video Monitoring solution, as well as the Communications area equipment (Intercom system,	Barça TV

Audiocodecs and Phone Hybrids). These cutting-edge devices will simplify and optimize the daily operations at Barça TV.

For intercom, the System provided is a Hybrid Intercom System, a 48-ports TH5048, natively integrates different Audio formats for its sources (analog, digital and "Voice over IP"), offering great flexibility in regards to management of different signals, as well as audio from CCU's, a wide variety of user panels, wireless IP belt packs, etc. All this is integrated in a single 1U rack unit.

It is very important to highlight that the transmission of a voice signal via IP allows several locations/venues to communicate to each other via IP. For example, the production center will be able to communicate with the Mobile Unit. The matrix provided features 28 IP, 16 digital and 4 analog ports.

The TP4016 panels, with 1U 19" rack format, 16 configurable cross point keys and 4 page levels, provides the user with up to 64 configurable keys. The keyboard is a two-color backlit silicon type and can be upgraded to 32 keys if the customer so requires.

Also, a wireless belt pack system based on 5GHz WiFi technology has been provided

SPAIN	BETEVE

Betevé (formerly known as Barcelona Televisió) is a public local TV channel, oriented to the metropolitan area of Barcelona (Catalonia, Spain).

During Betevé's latest technological upgrade, the Technical Management of the channel decided to go for the KROMA by AEQ CONEXIA intercom system, including the new TP8000-series panels, allowing for professional audio quality over IP networks.

CONEXIA intercom system has capacity for up to 1024x1024 audio cross points, with modular cards architecture. But what really makes CONEXIA special is the possibility to integrate Intercom and Broadcast audio sources into the same matrix, with 48 kHz / 24 bits sampling and a 100% redundant system.

Series-8000 user panels have been designed to achieve a high, broadcast-compliant, audio quality level allowed by CONEXIA and digital technology. Audio is digitized and processed with 24 bits at 48 kHz, providing full 20Hz to 20 kHz audio bandwidth and much reduced noise and distortion levels. Ease of installation has also been kept in mind, that's why a redundant IP port, managing audio in the international DANTE-AES67 high-quality format, is included.

The full project has been leaded by Betevé's Technical Manager, Mr. Jordi Colom, in collaboration with the technical services at AEQ Leganés headquarters and the sales support of Nacho Olivella, as Sales Manager of AEQ's Catalonia office.

A few years later, BETEBÉ decided to expand its installation including the new AEQ XPLORER wireless beltpacks.

XPLORER is more than a beltpack, it is a true wireless intercom user panel. Based on WiFi technology, it is equipped with a user interface with 4 direct access keys organized in pages, another two programmable keys, and a multifunction screen.

Wi-Fi systems with managed access points develop the "roaming" function that allows you to move freely through the entire coverage area. When working as a client of the AEQ Conexia Intercom matrix, as in betevé, each key can activate any of the following commands: Talk, Listen, Talk & Listen, Remote One Way, Remote Both Ways, Remote Volume and Dial Call. It also records and plays the final 30 seconds of the last call. In this ecosystem it can coexist, in addition to the 8000 series user panels, with terminals mounted with the Xvirtual application on iOS and Windows operating systems, such as iPad, iPhone and PC.

Mr. Jordi Colom, Technical Director of betevé said: "It works perfectly, both the Conexia and TP8000 equipment already installed and this new expansion with Xplorer wireless beltpacks, can be configured very flexibly and have great audio clarity."

AEQ XPLORER dimensions and weight are reduced, it is protected from bumps and splashes, it can be attached to a belt or hung from a strap, to be used as a shoulder strap. Its antenna is internal, with high gain, and has a battery autonomy for 20 hours of work. The internal battery is recharged in a multiple station).

SPAIN	CANAL EXTREMADURA

Canal Extremadura Television is the regional television of Extremadura, in Spain. It was created on 2005. Its facilities are located in Mérida, the region capital. In addition, it has delegations in Cáceres and Badajoz.

The TV channel has renewed their old Kroma intercom system for a new Conexia intercom system at the beginning of 2019. The system is fully redundant, with duplicate controllers and power supplies.

The system is basically IP with capacity for 192 AoIP ports compatible with audio for broadcast. However, for compatibility with panels already in use, from the previous Kroma system dated in 2005, it incorporates two 10-channel cards each for digital panels with point-to-point wiring.

It also has cards for 24 channels of analogue audio, and for connecting virtual panels, installed on an application.

19 units of 16-key TP 8116 rack format user panels have been supplied, with 7 expansion panels to add keys in the most versatile and executive coordination positions. There is also a TP 8416 desktop panel, 12 licenses for virtual panels to be installed on PCs, in or outside the building, and a Stratos dual audio codec for external communications.

The installation was carried out by Canal Extremadura engineers under the direction of Mr. Francisco Reyes after an AoIP training course taught by AEQ engineer Raul Moreta

The configuration and operational adaptation has been developed by the Director of Operations of Canal Extremadura Mr. Javier Ramayo with the advice of the AEQ Product Manager Roberto Tejero.

AEQ operation has been coordinated by Sales Area Manager Eduardo Guerrero

SPAIN	CANAL SUR	

Canal Sur is public television channel of the Andalusian regional radio and television network.

Malaga, with more than half a million inhabitants, is the second city in Andalusia in terms of population and the center of the tourist Costa del Sol. For Canal Sur, the Territorial Delegation of Malaga is of special interest, and from its two sets, TV programms are developed on a regular basis, as well as being the headquarters of the thematic content distribution channel, so it has always been aware of the need to update its technical equipment.

To coordinate the Center's productions, Canal Sur decided to install a new Intercom System, with IP technology, to which all Canal Sur installations are migrating.

The heart of the system is the AEQ Crossnet 72 Intercom matrix, responsible for the distribution of audio signals between 12 TP8116 user panels in rack format, two of them with expansion panels up to 32 physical keys (128 virtual) and two TP8416, in desktop format, as well as two wireless user terminals based on Wi-Fi technology, Xplorer to provide service to users who develop their activity on the move, and three CE 6000X1 analogue concentrators to coordinate the cameramen.

The Intercom panels of the TP8000 and Xplorer series have several technical mechanisms for perfect intelligibility, in particular an echo canceller, a complete built-in audio processing system that allows parametric equalisation of the

audio band and a dynamics management that adapts to the working habits of each user by incorporating noise shaping, and a DLP dynamics adaptor with expansion, compression and limiting functions.

They also incorporate other interesting functions, such as the recording of the last message received, to prevent occasional absences from the workstation and individual adjustment of the reception level of each incoming audio circuit.

In addition, the AEQ CROSSNET matrix has additional audio inputs and outputs that can be carried by AES 67 / Dante IP audio or analogue audio to studio audio mixing consoles. As the audio from the Intercom matrix and IP panels is of the highest quality, it could eventually be used for transport or programme audio input.

AEQ CROSSNET can also extend the coordination outside the center, through audiocodec systems or IP telephony, so that the studios are coordinated with the participants in a broadcast from the venue of an event.

The distribution of audio signals between the Crossnet matrix and the Intercom user panels is via IP audio protocol. The wireless panels communicate with the system via VoIP.

Provideo is a distributor of equipment and system integrator of complete solutions for the professional audiovisual market with 30 years of experience based in Andalusia. It has been in charge of developing the entire project, with installation, configuration, commissioning and training, in collaboration with AEQ's central technical services in Madrid, who worked remotely with Provideo to complete the project.

SPAIN	CASTILLA Y LEON TELEVISION

The regional television of Castilla y León (a region in central Spain) is managed by the private company Radio Televisión de Castilla y León S.A., part of the Promecal media group. It began broadcasting in 2009 and operates two channels: La 7, with regional programming, and La 8, a channel with provincial disconnections in certain time slots.

Its main production centers are in Valladolid, where it operates two offices. In addition, it also has 10 territorial production centers located in the nine provincial capitals of the Community (Ávila, Burgos, León, Palencia, Salamanca, Segovia, Soria, Valladolid and Zamora) and in the region of El Bierzo (Ponferrada), as well as a delegation in Madrid.

On the occasion of the technological upgrade of its head office in Valladolid, an AEQ Crossnet 72 intercom system has been added to the studios, complemented with an IP talk-show system adapted to the technical coordination, the Systel IP 16, also from AEQ. The Dante IP connectivity communicates the 72x72 circuit intercom matrix with the 52x52 circuit Systel IP 16 matrix and the studio audio console, through 32 input and output circuits of each equipment.

The integration of the project has been carried out by EMCO, a leading company in audiovisual solutions in Castilla y León, which has a long history in the professional audio and video sector. They also offer a wide range of solutions and an integrated option, with a wide variety of products and services of the latest technology.

"As on many other occasions EMCO relies on AEQ products, so when we were approached with this challenge we were very pleased to provide support in both the supply and training of the equipment".

The heart of the system is the Crossnet 72 intercom matrix, responsible for the distribution of audio signals between the

Kroma by AEQ TP8116 user panels located in the control room, AEQ Xplorer with WiFi technology to coordinate the people involved in a programme moving within the studio and in the hallways, and other external users connected through the AEQ Systel IP 16 IP talk-show system.

TP8000 Intercom user panels and Xplorer series have several technical mechanisms for perfect intelligibility, in particular an echo canceller, a complete audio processing system that allows audio band equalisation and dynamics management that adapts to the working habits of each user by incorporating noise shaping, and a DLP dynamics adaptor with expansion, compression and limiting functions.

They also incorporate other interesting functions, such as the recording of the last message received, to prevent occasional absences from the workstation and individual adjustment of the reception level of each incoming audio circuit.

In addition, the matrix has additional audio inputs and outputs that are carried by Dante IP audio to the studios' sound consoles. As the audio from the intercom matrix and IP panels is of the highest quality, they can be used for transport or programme audio input.

The distribution of audio signals between the Crossnet matrix, the matrix and the Intercom user panels is via the Dante IP audio protocol and, if required, over AES 67. The wireless panels communicate with the system via VoIP.

The matrix also provides off-site coordination, via Systel IP 16, so that studios are coordinated with participants in a broadcast from the venue of an event, or from a territorial production center.

Systel IP lines go to an IP telephony operator, NetelIP, which guarantees HD service (7 kHz bandwidth) in VoIP communications with provincial stations, reporters and other stable station contacts. Thus, circuits are established in Systel

IP16 to provide return and external coordination, but also other direct circuits to the sound console to develop HD voice contributions with 7 kHz bandwidth, covering situations in which there is no better quality input channel for a report or a punctual or stable intervention from a home or any other place.

To separate these services, three Systelset+ user terminals are available. At a specific moment, each of them is assigned a part of the available lines and its operator establishes the service by generating or receiving the calls, either for external coordination or contribution, while carrying out the corresponding production work, consisting of interacting with the remote users and including or excluding them in the corresponding internal circuits to receive orders or enter the programme.

SPAIN	CEU-MADRID	
	CEU San Pablo University is a private, Catholic Spanish university, based in Madrid and with campuses in Madrid and Alcorcón. The private university has acquired one unit of CrossNET intercom matrix, with 72 ports, including TP8116 IP user panels and Xbp wireless terminals, for Television Production training at the Faculty of Humanities and Communication Sciences of the CEU San Pablo University, installed by the company BROAD SERVICE. Cesar Aguado, CEO of Broad Service has told us "The client plans to deploy a Dante network that allows him to simplify the wiring in the new building and with some audio features that until now have never been able to deploy due to the limitations of wiring distribution in the current building. The connection between Television and Radio production studios is a fact that is increasingly present in the needs of the clients The CrossNET	

	intercom matrix and the deployment of the Dante audio network intends to respond to this need that in the teaching centers are booming".	

SPAIN	CEU-VALENCIA	
	CEU Cardenal Herrera University (CEU-UCH) is a private, Catholic Spanish university, based in Valencia and campus in Moncada and Alfara del Patriarca (Valencia), Castellón de la Plana and Elche (Alicante). It was inaugurated in the 2000-2001 academic year. It belongs to the San Pablo CEU University Foundation. BROAD SERVICE has recently installed a 72 ports CrossNET intercom matrix, 4 TP8116 and 2 TP8416 user panels, two Xbp wireless terminals, for Television Production training at the Faculty of Humanities and Communication Sciences at CEU University in Valencia. The system also includes a Venus 3 IP audio codec for connection with system users outside the production centre and two Netbox 32 audio over IP terminals to facilitate remote analogue and digital audio inputs and outputs in the system. The intercom system is natively integrated into a Dante network that constitutes the audio backbone for both TV production and future audio and radio studios. This Dante network is integrated through a DANTE-MADI bridge with a hybrid broadcast video matrix with audio processing, so the intercom matrix also performs broadcast audio routing and distribution functions throughout the entire installation. Everything is interconnected and virtually any audio signal can be sent to any location in the building easily and with hardly any wiring structure. This has allowed us to find new collaborative flows between the Radio and Television studios.	

SPAIN	CANAL PARLAMENTO. PARLIAMENT OF SPAIN	
	Produced for the "Congreso de los Diputados" of Spain, Canal Parlamento is a television channel that broadcasts by satellite, cable and Internet, with a program based on the broadcast, live and deferred, of plenary sessions and Commission as well as informative production programs own. In 2018 Canal Parlamento has acquired one unit of CrossNET 72 intercom router with 3 TP 8116 rack user panels and a Camera hub terminal for its TV Production Facilities. It was installed by the company BROAD SERVICE. The intercom based on CrossNET is the principle of an installation that will grow through the deployment of a Dante IP audio network	

SPAIN	CONSORCI TELEDIGITAL MOLLET	
	Vallès Visió, the public digital television of the Vallès Oriental, is a channel managed by the Consorci Teledigital Mollet, initially integrated by 9 villages in the south of Vallès Oriental in Catalonia, Spain In 2019 Vallès Visió has acquired one unit of CrossNET 72 intercom router with TP 8116 rack user panels and two Venus 3 AoIP audio codec for its TV Production Facilities. It was installed by the company BROAD SERVICE.	

SPAIN	CROSSFIT FREAK CHALLENGE	

The best CrossFit teams recently faced each other in a closed event on 11 July 2021 from the Razzmatazz hall in Barcelona.

Nou Broadcast Service is one of the most active and innovative integrators in the Barcelona area. It was commissioned by the organization to produce and broadcast the event in four languages.

Nou Broadcast used intercom and AEQ commentary units to coordinate and stream 3 hours of event.

AEQ provided the intercom system and commentator positions. A Crossnet matrix routed the audio signals and internal coordination. The stationary workstations were based on TP8116 panels and the mobile workstations on Xplorer.

Eight stationary and 11 mobile stands were set up, as well as four commentator positions, one per language.

Audio from the commentary positions was sent over the Dante IP network to the main production console, a Yamaha QL5.

The stationary TP 8116 stations were installed at the different positions of the production control.

The Crossnet matrix and one of the AoIP switches occupied a small space in a rack of equipment next to the camera control.

The Xplorer wireless terminals were used for people on the move during the event: audiovisual producer, mobile cameras and others.

For this purpose, since the Xplorer technology is WiFi, four Cisco access points for WiFi network were installed in the work area in the room, which route the voice over IP between each Xplorer terminal and the VoIP access on the Crossnet 72 matrix. The Ethernet switches had PoE outputs to power the access points.

The Xplorer terminals are charged at charging stations. The battery lasts 20 hours, so there was no need to recharge at the event.
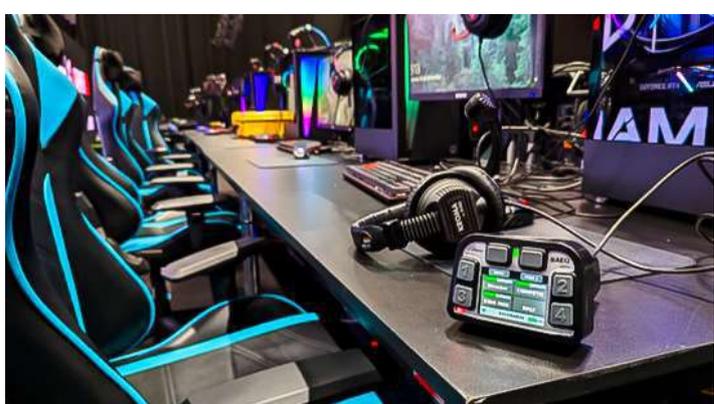
The image was taken using Sony cameras with Canon optics and the lighting was controlled with a grandMA2 console.

For the broadcast in Catalan, the audio commentary was sent to TV3 via an AEQ Phoenix Mobile audiocodec.

SPAIN	CTV	
	The audiovisual production company CTV based in Santiago de Compostela, Spain with almost 35 years of work in services and production of audiovisual content. CTV was incorporated only six months before the launching of the Galicia Television Radio Company (CRTVG) for which it carries out a lot of work.	

The company currently has 10,000 square meters of film and television studios distributed in five sets of 1,100, 1,000, 800, 600 and 200 square meters that accommodate several TVG productions, as well as the work of other producers.

In 2014, an AEQ-KROMA intercom matrix has been installed in CTV, one of the biggest production companies in Galicia.

It was installed a Conexia matrix system with cards to serve up to 30 intercom user panels and 24 analogue inputs and outputs. At the same time, there were installed 11 TP4416 user panels and 6 TP4216 user panels, a Linker interface and 4 virtual panels working on Ipod devices. An AEQ IP audio codec for external communications was also installed to provide remote connections to the system.

SPAIN	DOBLE DIEZ

Doble Diez, based in Telde, Canary Islands, is one of the most active content providers of the Canary Regional Television.

Boomerang TV, is the current owner of Doble Diez.

Boomerang TV is a conglomerate of Spanish television producers, responsible for the most popular Spanish series and owned by the French company Lagardère Studios.

Doble Diez, in 2018, installed an intercom system based on CrossNET 72 matrix, with 7 user panels for TP8116 rack and 4 Xbp wireless terminals.

Engineering and integration was developed by Broad Service SL

SPAIN	FLUGE AUDIOVISUALES, MADRID.

FLUGE AUDIOVISUALES is a company specialized in audiovisual material rental - sound, lighting and video equipment for events, festivals, theatres, musicals, tours...

GAMERGY is the most important and spectacular gamer meeting in Spain, with a great projection and repercussion in the video game community. GAMERGY 2022 was a key meeting for all gamers, fans of the world of video games and the online world, for its clear vocation to turn this space (real and virtual) into an area of interest also for companies, institutions and other initiatives that share and develop the activity in the national and international market. In this way, GAMERGY has become among all participants, attendees and players the most important event of the year for this form of gamer life, which is held every year at the IFEMA exhibition centre in Madrid at the end of the year.

For such a massive event as GAMERGY 2022, the company selected to be in charge of all the audiovisual part, vital in such a show, was *Fluge* due to its technical capacity and great prestige in the market. The technical managers of Fluge Audiovisuales decided to confirm all the Intercom and private communications system to AEQ technology, as well as the assembly and technical support of operation also to AEQ personnel present in all the phases of installation, previous start-up, and of course in all the days of GAMERGY 2022.

AEQ's rental division prepared for the event two complete intercom systems for the coordination of the production of different gaming events on the two independent stages set up for

the event. In addition, a commentary unit for casters was also integrated, which provided the audio production.

Each Intercom system is located in the production control (control room) of a stage. The largest Intercom system and commentary unit is located on stage 2 in hall 6. This hall has a main stage, called stage 1, and stage 2 or secondary stage. In addition, there is also the food-trucks and canteen area. The other Intercom system is installed on Stage 3, which is located in Hall 4 of IFEMA.

For the operation of stage 2, there was initially a configuration of 10 user panels and 6 wireless beltpacks, plus a commentary unit.

The system chosen was AEQ CROSSNET to have AoIP integration with Dante technology and other external audio sources. The wireless part consists of AEQ XPLORER beltpacks, initially estimating a couple of access points to cover the whole area needed. The beltpacks support 3 cameras, a ruler, a stage combat controller and an auxiliary.

Finally for the commentators an AEQ OLYMPIA3 digital position is used, which is also connected via Dante to the matrix. The use of IP technology throughout the assembly simplified the wiring tasks, minimised the previous hours of installation, and allowed us to offer great versatility in the operation, with infinite changes in real time to adapt to a production as agile and dynamic as the live broadcasting of video game games requires.

Meanwhile, on stage 3 at IFEMA, a slightly smaller system is deployed, where 7 panels and 3 wireless beltpacks are needed, also to a system with AEQ CROSSNET matrix.

The whole project has been coordinated by AEQ's sales manager Mr Eduardo Guerrero together with the company's product manager Mr Roberto Tejero, in collaboration with the technical services of Fluge Audiovisuales.

SPAIN	IB3, PALMA DE MALLORCA	
	IB3 is the regional radio and TV station of the Comunidad Autonoma de Baleares. It now covers all the Balear Islands from its main studios in Palma de Majorca. In 2015, IB3 acquires the CONEXIA intercom matrix as the heart of the OBvans communications. The system consists of cards for 8 analogue audio inputs and outputs and 30 user panels. They were supplied with Conexia six ruggedized Ipod with the XVirtual application, a TR7000 communications frame and 7 TP 3016 panels In 2018, it was expanded with 4 TP8116 processed panels with EP8116 expansion panel	

SPAIN	ISB	
	Founded in 1996 by Mr Manolo Romero, **ISB** has served as the host **broadcaster** for many of the world's leading**sporting** events, including seven Olympic Games, six Paralympic Games, numerous World Championships and World Cups, and continental events such as the Pan American Games. The international host broadcaster ISB has purchased an intercom system based in: a CrossNET intercom matrix with 104 ports, 20 rack user panels TP 8116 and 15 desktop user panels TP 4016. The intercom system gives service to the company in the production of sporting events.	

SPAIN	MEDIASET - TELECINCO	

Mediaset España Comunicación is a Spanish communication group created in March 1989, by the Italian company Mediaset,

Its activity focuses on the production and exhibition of television content. He currently operates the television channels Telecinco, Cuatro, Factoría de Ficción, Boing, Divinity, Energy and Be Mad,

In 2013 the private broadcaster started a Project in which until 2017 they deployed a CONEXIA intercom system to cover all their TV studios in the north of Madrid.

In Mediaset Spain, 6 different Conexia routers have been installed joined by tielines that the Crossmapper configuration application manages transparently. The objective is to give greater security to a possible failure of the equipment or operation.

- The central control has a matrix with two frames with 486 ports, of which 60 are equipped with user panels
- Studios 4 and 5 have a matrix with a frame with 140 ports, of which 51 are equipped with user panels
- Studio 6 has a matrix with a frame with 210 ports, of which 30 are equipped with user panels
- Studio 7 has a matrix with a frame with 218 ports, of which 26 are equipped with user panels
- The news studio has a matrix with a frame with 193 ports, 48 of them equipped with user panels
- Mobile unit number 5 has a matrix with a frame

SPAIN	NAVARRA TELEVISION

Navarra Television is the autonomous television channel of the region of Navarra (Northern Spain), which broadcasts general content: Its base is regional news, plus national and international information to maintain the attention of its viewers. The use of the local Basque language gives an additional attraction to the offer of this regional television.

Mr. Enrique Berián CTO of the company, has known how to technically grow the station in less than 10 years from Channel 6, a local television that was grouped with Popular TV, an entity in the same field, to a regional channel, today, significantly improving quality, always with a clear limitation of means until now, in 2021 they have been able to develop, supported by public aid, the Project to create a regional public service with native Full HD technology.

The bulk of the technological evolution has occurred in the midst of a pandemic, with hardly any staff at the station, even with the newscasters themselves at home. Technical coordination had to come from the center, and thus when

implementing the new AEQ intercom based on a Crossnet 72 matrix, it had to be complemented with an IP telephony system adapted to technical coordination, Systel IP 16, also from AEQ. Dante IP connectivity communicates the 72x72-circuit intercom matrix with the 52x52-circuit Systel IP 16 matrix and the studio's audio console, through 32 input and output circuits of each unit. AEQ Systel IP lines go to an IP telephony carrier, NetelIP, which guarantees HD service (7 kHz bandwidth) in VoIP communications with reporters and other station stable contacts. Thus, some circuits are established in Systel IP16 to give feedback and coordination to the reporters, but also other direct circuits to the sound console to develop contributions in HD voice with 7 KHz bandwidth, covering situations in which there is no at hand a way of entry of better quality for a report or a punctual or stable intervention from a home or any other place.

Internally, in the production control, AEQ TP8116 panels with EP8116 expansion keyboards are used. To coordinate the people involved in a program moving around the studio and through the corridors, two beltpacks with 4 physical keys (16 virtual) AEQ Xplorer with WiFi technology have been added to the system.

A technical peculiarity of this installation is that it includes an AEQ Olympia 3 commentator unit. This equipment works as one more intercom user panel in the system with 8 physical keys, 32 virtual. But it is joined by the ability to listen to various sound sources and comment on them from three workstations with a headset. Thus, from the station itself, in off-tube operation, an external event can be commented on, whether it is its own or another's production. Dante connectivity allows you to directly access a studio sound console or other equipment. Produced audio can also be routed through the intercom's Crossnet matrix. Only when an event is big enough is it worth moving commentators with the Olympia 3 unit to broadcast it on-site.

SPAIN	OVERON	
	Overon has become for years the leader of innovation technology for the deployment of Broadcast services all around the world. Overon is part of Mediapro Group, providing technical and creative solutions to produce and broadcast any audiovisual project. Overon entrusts the installation and integration of intercom systems for its OB Van for outdoor TV productions to the Company Broad Service In 2017, it installed two mobile units, each with a CrossNET 72 matrix and 3 TP8116 panels The company acquired in 2018 one unit of CrossNET 72 intercom matrix with 3 TP8116 rack user panels, and a Stratos Stationary audio codec.	overon

SPAIN	PHASE SERVICIOS AUDIOVISUALES	
	PHASE SERVICIOS AUDIOVISUALES, S. L. is a company specialized in professional sound. They have post-production studios, portable pickup and sound equipment, public address systems and others. PHASE SERVICIOS AUDIOVISUALES, SL offer a wide range of services: engineering design in audio installations, operation in TV	

programs, direct sound capture, OB Vans, sound postproduction, musical creation, corporate or sporting events, documentaries, advertising, TV series, live concerts, etc.

In 2018, PHASE SERVICES AUDIOVISUALES has acquired 1 unit of intercom matrix CrossNET 72 with TP 8416 and TP 8116 user panels.

SPAIN	PRODUCTORA FARO	

Faro is an important audio-video producer based on Vigo, in Galicia, Faro has just presented a new HD mobile unit with 6 cameras.

In order to equip this new HD mobile production unit, the company's Technical Management area has trusted on AEQ, installing its TH5048 Hybrid Intercom system.
Faro has opted for the TH5048 intercom system, with 9 TP4016 panels together with external remote communications interfaces using standard phone lines and GSM.

The installed matrix counts with 28 IP, 16 analogue and 4 analogue ports, enabling a total of 48 ports natively integrating different nature sources (analogue, digital and Voice over IP), what offers great flexibility when managing different signals, such as audio from CCU's, a great variety of user panels or wireless IP belt-packs. All is integrated into a single 1U rack unit.
The transmission of an audio signal via IP and the ability of this system to communicate between different locations and centres via IP have been considered as added-value features of the system by this Producer.

	TP4018 user panels, with just 1U height, include 16 software-configurable cross-point keys and 4 page levels, what sums up to 64 configurable keys. "We are fully satisfied with the human and professional support provided by AEQ, and, once more, we have counted with their help during the elaboration of the project for this new HD mobile unit", highlights Ignacio Fernández (Technical Manager).	

SPAIN	**PRODUCTORA GALAXIA**	
	Galaxia Studios is one of the largest private audiovisual complexes in the Valencian Region. They have a constructed area of more than 6,000 m2, with four sets of 1000 m2, 600 m2, 400 m2 and 200 m2, 3,000 m2 of production offices, 30 multipurpose rooms, 15 post-production booths, 6 sound and dubbing studios, 3 realization controls and 2 transformation centres with a power of 2 MW. His sets are adaptable to CINEMA, FICTION SERIES, ENTERTAINMENT PROGRAMS, ADVERTISING, PHOTOGRAPHY and everything that the imagination of creative people is able to transfer to the world of images. The Systems Integration Company Virtual Lemon installed in 2018 a 40 intercom matrix, two TP 8116 user panels, wireless infrastructure, and an Xbp wireless terminal at the production company Galaxia, in Valencia.	

SPAIN	**RADIO TELEVISIÓN REGIÓN DE MURCIA**	
	The Public Radio and Television of the Region of Murcia, in eastern Spain, includes the Murcia Regional Television. 7 Television Región de Murcia is an open television channel, the main public regional channel of the Region of Murcia. In 2019 the television has upgraded their TH5024 intercom matrix. The company Bienvenido Gil has done the entire project.	

SPAIN	RADIO VITORIA	
	Radio Vitoria is a radio station belonging to Euskal Irrati Telebista (EiTB), the public communication group under the Basque Government. It broadcasts from Vitoria, Álava, Basque Country (Spain), for the entire Alava territory. Its program is mainly commercial and diverse, consisting of political and economic information, sports, culture, humour and entertainment, closely linked to Vitoria and Álava. In 2019 they have renewed their radio studios with AEQ Arena digital consoles. In studies 1 and 4 very complex tasks are developed and the operator is supported to take the program forward in the work of a producer who coordinates external communications. That is why it has been considered to include a CrossNET 72 matrix to facilitate the work of the producers of these studies. Each producer accesses through a TP 8416 panel that allows him to talk with the mobile units, with the sister stations in Bilbao and San Sebastián, with the controllers, with the guests and even go out to the program if necessary. 	

SPAIN	SETEMEDIA	
	SETEMEDIA, the Spanish audiovisual production company with more than 20 years of experience in the sector dedicated to programs production, docs, live events, etc..., puts into service a new 8 Camera HD OB van.	

Among the equipment that is part of this new OB van an AEQ-KROMA Intercom matrix TH5000 can be highlighted with 16 digital and 4 analogue audio ports. Three 16 keys user panels are connected to the matrix, one for each technical and production area of the OB unit.

The advantages of this intercom system are clear: the connections of the panels using RJ45 allows us to very quickly deploy and configure as per the requirement of each event and if needed, to connect the OB Unit to an external Control. Versatility and simplicity Setemedia value as very important, especially when configuring the system and its panel to match each type of broadcast event. We have different "maps" of configuration prepared as "templates" that we can deploy at any instant. Setemedia can also prepare and load a new configuration onsite using the Ethernet or USB connectivity, thus adapting the panels to the needs of every event" says Andrés Díez, CTO at SETEMEDIA.

"Also, we have completed our OB van with an AEQ Stratos IP/ISDN Audiocodecs with two stereo channels for our high quality audio links. We are very satisfied, it's really trustworthy equipment and a great value for money" explains Andrés Díez.
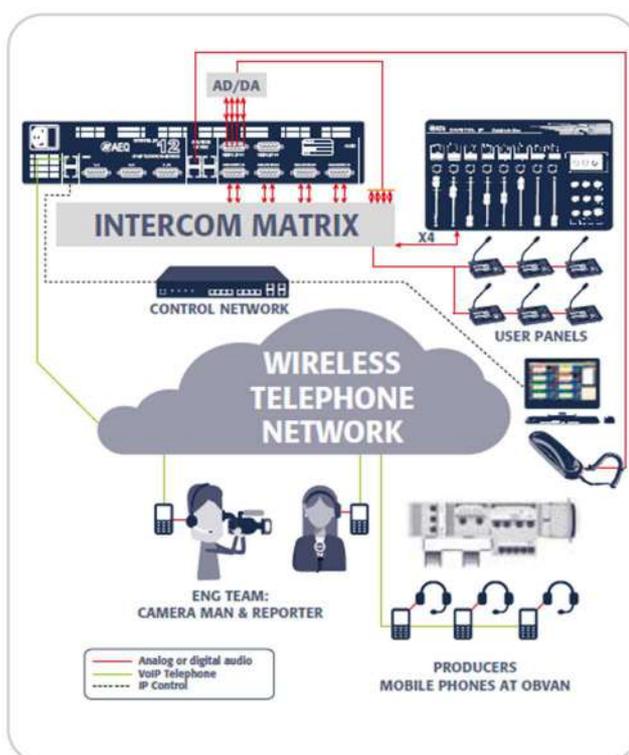

Setemedia has prepared to incorporate a second dual channel audio codec to its new OB Van to be able to meet the need for additional audio links when the type of broadcast so requires. "Both the space distribution of the vehicle and the equipment integration of this new OB Van has been designed and executed by SETEMEDIA'S technical team. When we were looking for equipment and suppliers we did not hesitate to rely on AEQ. Their customer care and the reliability of their equipment are just great" says SETEMEDIA's CTO.

SPAIN	TELEMADRID

Telemadrid is a Spanish regional television channel broadcasting in the Community of Madrid and part of FORTA.

In its schedule, live local and regional news plays an important role, as well as the broadcasting of local cultural and sporting events. For this reason, the production coordination system extends outside the programme production center in Ciudad de la Imagen, to reach the mobile units and ENG teams on the street.

Telemadrid contacted AEQ on the occasion of the appearance of the Systel IP equipment to see how they could provide a solution to their intercommunication needs with the mobile units. Telemadrid is a user of other previous communications management and coordination systems developed by AEQ.

SYSTEL IP was initially defined as an IP telephone system for talk-show applications or the broadcasting of calls and call groups in radio programmes. It allows IP calls from IP telephony providers, IP PBXs or even audiocodecs or ISDN and conventional telephony to be included in the broadcast. It allows a great economic saving in communication expenses and a very remarkable improvement in the audio quality of the communications.

But its infrastructure based on an audio summing and distribution matrix with access to a large number of analogue and digital audio circuits, as well as IP telephone lines based on SIP protocol, covers other needs, in particular TV coordination, as we discovered in the consulting work with Telemadrid to adapt the user application to the technical intercom needs, independent of the make and model of the intercom matrix used in the Production Center.

The diagram below shows the system for the coordination of Telemadrid's outside broadcasts. The analysis of Telemadrid's needs led us to develop the "Systel IP TV" application which is now a standard product in AEQ's catalogue.

The installation is based on a Systel IP12 unit connected to the external 4-wire I/O of an intercom matrix, from a non-AEQ manufacturer, which generates the external communications for your TV studio. You can set up 12 calls in total.

12 call queues have been planned in Systel with independent coordination return for each queue, establishing 12 4-wire circuits from Systel to matrix. The initial matrix, now replaced, had only analogue inputs, so a multiple AD-DA converter was inserted, using both the digital and analogue I/O of Systel IP12.
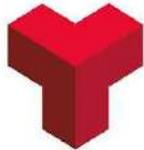
The operator sets up communication with remote interlocutors using a handset. The intercom matrix establishes bidirectional routes with the console and complex partyline-based routes with different panels depending on the needs of each production.

The main application is the coordination with ENG teams via mobile phones, with the journalist receiving the return of the programme and orders on his earpiece.

The camera communicates on 4-wire using micro-hulls installed in its handset with a partyline group programmed in the matrix.

When they work with a mobile unit, at least 3 4-wire circuits are established with the mobile, integrating them into a specific intercom group.

The entire project was been led by the sales manager of AEQ for Telemadrid, Mr. Bernardo Saiz, in coordination with the technical services of Telemadrid.

SPAIN	TELEFONICA AUDIOVISUAL DIGITAL (MOVISTAR +)	
	Telefónica Audiovisual Digital is the mother company of Movistar Plus, the OTT subscription platform for digital television. Movistar+ has acquired in 2018 one unit of our newest intercom matrix CrossNET with 72 ports and four TP8116 user panels to coordinate content creation work	

SPAIN	TELEFONICA SERVICIOS AUDIOVISUALES	
	Telefonica Servicios Audiovisuales, TSA, is the company of the Telefónica Group that has been creating broadcast audiovisual solutions since 1993. With its headquarters in Spain and a strong presence in Latin America, this S.I. company focuses on the client, promoting flexible and innovative technological solutions. The Company has acquired in 2018 one unit of our intercom matrix CrossNET with 72 ports, 9 TP8116 panels, and 4 WIRELESS BELTPACKS Xbp to integrate a solution for a new TV Station. Same year, for other Projects they acquire from AEQ 2 Intercom Matrix CrossNET 72, 5 user panels TP 8116, 2 Wireless Terminals Xbp and 3 audiocodecs Phoenix Stratos.	

SPAIN	**TELEVISION MELILLA**	
	Television Melilla is the public television of the autonomous city of Melilla, a Spanish city located in North Africa, next to Morocco. Television Melilla is the communication instrument of the Autonomous City of Melilla through the public company INMUSA Television Melilla has acquired in 2019 within the integration of its new TV studios, developed by the Broad Service Company, a CrossNET 72 matrix, accompanied by 2 Xplorer wireless belt pack, and 4 TP8116 user panels.	

SPAIN	**TERRASSA TV**	
	Terrassa is a city of more than 200,000 inhabitants, located about 30 km from Barcelona. The Societat Municipal de Comunicació de Terrassa, which depends on its City Council, has a multimedia portal, a television channel and a radio channel that work in coordination to offer citizens the closest information. Sharing information and generating common content to be disseminated by the three media is the objective of the team headed by the Technical Director Ricardo Revaliente and the Head of Technical Teams Wences Matarín. The way of working with integrated multimedia production and optimisation of technical and human resources requires a great deal of coordination. An illuminating detail is that most of the	

television programming is carried out from the radio studio with a VMIX system.

With this objective in mind, to coordinate television, radio and the acquisition of live news and reports, the Societat Municipal de Comunicació de Terrassa has acquired an AEQ Xpeak intercom system. It is a matrix-free system, based on audio over IP technology, specially designed for TV production, and optimised for remote productions.

One Xpeak_R rack terminal has been installed in the TV studio Production Control and another in the Radio Broadcast Control.

Two Xpeak_BP wired beltpacks to coordinate the cameras on the TV set. Two wireless beltpacks with Xplorer WiFi technology ensure communication for producers moving around the set and throughout the production centre.

For external coordination, an Xpeak_IF interface allows the incorporation of up to 4 external circuits, analogue, USB or Dante.

Two of these circuits are connected to an AEQ TH02 telephone hybrid, which allows access to the hands-free headsets of the mobile unit personnel or ENG teams via conventional telephony. The system can grow up to 28 terminals and is configured with the same operational flexibility as large matrix systems, determining who speaks to whom and who listens to whom, so as to avoid distracting production or live broadcast tasks by receiving information directed to other participants.

Technicians deployed the system's operational capacity for more intensive outdoor use. In this sense, they tell us that, when an event requires massive and intense outdoor use, they plan to take the Xplorer WiFi terminals to the event and, by giving internet access to the access points, expand the coordination capacity in situ.

SPAIN	TOBOGGAN BROADCAST SERVICES	
	Toboggan Services is focused to offer high broadcast quality solutions and has equipped the new Master Control room of Non Stop production studios, based in Fuente el Saz - Madrid. An intercom system has been installed in the new Master Control Room as a complete solution for the current operation, always a future expansion is possible. This system is composed by a 72 matrix with only 1U height that offers 32 Dante, 8 digital AES, 12 broadcast-quality 4-wire analogue balanced and 20 IP compressed audio ports. AEQ Crossnet allows great operation and configuration flexibility in what relates to audio signal management. The current CrossNET 72 matrix functionality has been integrated with 13 TP8116 rack-mount panels and a TP8416 desktop one. Also, three CE6000 concentrator units have been installed to enable integration of the different 4-wire signals from the CCU's, offering audio summing. 4 wired BP3004 IP belt packs have been also added to the system. "We are very happy with the support received from Guadalupe López, technical-sales responsible at AEQ, who supported us in all what we needed during the development of this project", Lucas Gómez (Technical Manager at Toboggan Services) highlights.	

SPAIN	TV3	
	Corporació Catalana de Mitjans Audiovisuals, also known as CCMA, is an organization of the Generalitat de Catalunya, dedicated to the production and broadcasting of audio-visual products. CCMA is public broadcaster composed by Televisió de Catalunya (TVC) and Catalunya Ràdio and produces 6 autonomic TV channels, an international TV channel, 4 autonomic radio channels and an international radio channel for Europe.	

TVC's headquarters are locate in San Juan Despí, in Barcelona's metropolitan area. The News Production Center building concentrates the largest broadcast activities: editing and broadcasting news and sports programs, it has four stages – Telenotícies, Sports, a 3/24 news service and a multipurpose one-, and is the place where the Conexia intercom system is installed. It has evolved and been upgraded since 2014.

A new Xplorer wireless intercom has been incorporated to the system in 2020.

Xplorer is more than a beltpack: it is a true wireless user intercom panel. Based on Wi-Fi technology, it features a user interface with 4 shortcut keys organized in pages, another two programmable keys and a multifunction screen.

5GHz Wi-Fi technology eases system installation, setup and maintenance as it is an off-the-shelf technology deployed allover the world that even allows the system to share the existing wireless network.

Xplorer Beltpacks can operate on any Wi-Fi network featuring the roaming function that allows the users to freely move within the whole coverage area.

That's why this XPLORER system uses the Wi-Fi network that was already installed by TV3 as its corporate network, with access points and controller by the Enterasys manufacturer. This is the same network used to provide service to internal users and guests in order to offer them Internet and other online services, so TV3 avoided the need to deploy another new, dedicated network of access points for the wireless intercom.

Xplorer features a user interface with 4 shortcut keys (x 4 pages), mute and menu. It also includes a multi-function color screen that allows for the independent configuration of the controlled keys or destinations and where each talker's input level, the battery and Wi-Fi signal levels are displayed.

XPLORER beltpack has dual volume control in order to quickly adjust the level of the main peer, differentiating it from the rest.

XPLORER dimensions and weight are reduced. It is protected from hits and spills, can be hold to a belt or hang from a strap, using it over the shoulder. It has an internal, high gain antenna, and has enough battery range for 20 work hours (it can be charged in a multiple base).

The usage of the wired and beltpack Xplorer wireless user panels extends to the four stages and its controls, a double central control (Traffic + control central), 4 continuity controls, multiple editing rooms and the editorial office.

One unique feature of the installed system is that the corporate Wi-Fi extends to other territorial centers, which allows for the communication with wireless beltpacks deployed in other cities. There are 14 Xplorer terminals in service for the moment, and more to install in the next weeks.

The CONEXIA platform deployed in TV3's central headquarters has been extended and upgraded as TV3's operative needs demanded for that, since it was installed in 2014. Original intercom systems is composed by a central BC2000D audio matrix (currently offering 512x512 circuits), distributed among two different physical locations, the News and Sports control rooms, as the core where all the user panels deployed in the production center are connected.

This matrix provides redundancy in all its components, since the double controller, redundant power supply unit, automatic backup DSP cards and extra input/output modules, ensuring 24/7 operation.

In 2020 it was updated to Dante AoIP technology (AES67 compatible) with the installation of two redundant network cards, for a total of 128 channels to connect panels, audio consoles and input/output terminals using audio over IP.

More than 60 intercom user panels have been installed so far in all the Sports, News and Traffic TV departments and the rest of CCMA TV channels in Barcelona headquarters, as well as in three provincial offices at Gerona, Lérida and Tarragona.

Thanks to the great flexibility of CONEXIA, the project implies a wide variety of panels in order to adjust to TV3's specific needs. TV3 system has 24 and 16-key user panels, with analogue, digital and even AoIP Dante audio.

A software suite for the system's configuration and real time operation has been developed according to TV3's operative requirements, so the need to download a complete pre-configuration file each time that a live modification to the system is required has been avoided.

The complete project has been leaded mainly by CCMA's Technical Manager of Central Control and Traffic, Mr. Albert Bargallo, in collaboration with AEQ Technical Services in the Madrid central office, and Mr. Nacho Olivella as AEQ Catalunya Office Manager.

The public broadcaster has acquired an AEQ BC2000D audio matrix, as a platform for the CONEXIA Intercom system, as centre of the communications, and intercom user panels distributed in four or more TV studios.

It is sized with three frames of the BC 2000 router, for 508 ports, of which 141 service wired user panels and 20 Xplorer wireless user panels

SPAIN	VAV GROUP

VAV GROUP is the result of more 20 years of proven experience inside the broadcast market. VAV is a reference Spanish contents producer. VAV GROUP shares its projects among its three business units: VAV Broadcast, VAV Studios y VAV Engineering.

The company supplies television production services. In the past acquired one 104 and one CONEXIA intercom systems, both installed in Abu Dhabi OBVans.

In 2018, the company acquired two units of the compact intercom matrix 104. More recently, in 2019, VAV has installed two units of intercom matrix, one of them with 72 ports and the other one with 104 ports.

Especially interesting is the installation of the OB VAN 21 in 4k in which the intercom system incorporates the Olympia 3 commentator unit as a special user panel

The intercom system comprises a 104 matrix with 64 Dante ports providing service to 16 TP 8016 user panels and 12 4-wire analogue circuits, offering great operating and work flexibility.

Using a Dante ecosystem has made possible the incorporation of OLYMPIA 3 AEQ latest commentary unit witch can operate as a commentary unit and intercom panel simultaneously.

OLYMPIA 3 can send and receive audio to/from any Dante-enabled device. It could have been directly connected to the Calrec console, but it is more flexible for VAV to use the 104 intercom matrix as an intermediate routing system.

Audio is mixed inside the commentary unit, so it is delivered to the Dante network already mixed. Some signals such as return, commentator intercom with the studio and remote control, as well as some general audios such as PA and TV event/program sound, are sent from the production audio mixer through the matrix.

Another interesting feature of the OLYMPIA 3 is that commentator 1 channel can operate in the so-called "Intercom mode", which turns it into one more panel in the mobile unit's general intercom system, with identical performance and configuration as the rest of panels. This makes the start-up phases easier to VAV.

SPAIN	VISUALES 2000	
	Visuales 2000 is a communication and audiovisual services company. Its facilities in Alhaurín de la Torre (Málaga) have all the technical means necessary to undertake any audiovisual production, show or TV program. This company in 2019 has acquired 1 unit of CrossNET 72 installed by the company BROAD SERVICE to coordinate the productions.	

The system included 6 TP8116 user panel, a TP8416 user panel and 12 analogue connection for a Vokkero radio communication system, as well as a Phoenix Stratos audio codec
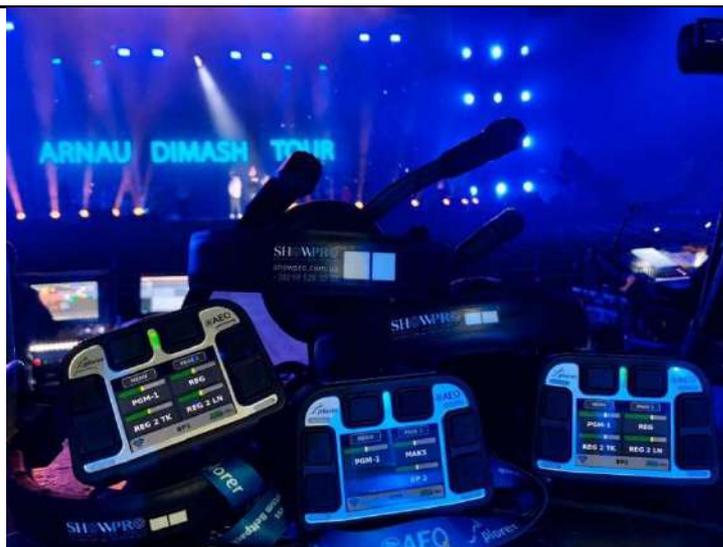
UKRAINE	ARNAU DIMASH TOUR	
	Dimash Kudaibergen is probably the most popular Kazakh singer-songwriter and musician During 2020 he is performed the "ARNAU" tour. ShowPro, a Ucranian-based full-service event management company, partnered with TV-PROJECT - local integrator, maid the production for this Tour. In order to broadacast the content of the shows the company use an OBvan which could record and broadcast the liveshows, as well as take care of the technical coordination in each event.	

The integrator TV Project relies on AEQ for the intercom solution. In this kind of events, the coordination needs go beyond the typical of mobile television units: It is not just a matter of coordinating camera operators in the space where the event takes place, sound engineers and the producer in the OBvan.

Mr. Serhii Lishchenko, Project Manager of TV Project, was requested to offer a system able to provide the standart comms requeest for an OBVan, but also a system capable to coordinate the lighting engineers, the PA table engineer, the monitor desk on stage, the Show director and additional needs in the Back-Stage.

This entire system must provide fixed users sets outside the OBVan, also sets mounted on fligh-cases, in addition to other wireless sets that can be moved all around the event area.

AEQ recommended combining a system based on a CROSSNET 40, rackmounted panels TP 8116 through digital ports of the matrix and VoIP network using the XPLORER wireless system. The beltpacks work on a network based on 5G WiFi access points. The Xplorer users work always with headsets as the users of the TP8116 panels located outside the OBVan.

AEQ's Xplorer wireless system works on 5G WiFi networks with access points that support the roaming function, so the beltpack will automatically connect with different access points searching for the best coverage. As the user moves around the facilities, the communication of the beltpacks is switching to different access points. Xplorer can work with most managed WiFi hotspot systems on the market. ShowPro chosed the Ubiquti.

We asked Mr. Alexey Balkovsky, CEO of Show Pro about the intercom system. He told us "We are very happy. We took it for granted that the wired part of the system will work propertly, but the performance of the wireless beltpacks is great. They have the same communication capacity as rackmounted panels, good coverage and high audio quality. Also quiet happy with the battery capacity. Every night they should be left in the charging station, but when someone forgets to let it there, on the next day they still working. "

UKRAINE	ODESSA LIVE TV
	In The Ukrainian tv channel from Odessa city started broadcasting in the middle of the pandemic, in September 2020. At present, Ukraine is in an intense process of launching TV channels throughout the country, and Odessa Live is an example of this promotion. To provide its technical team with an internal coordination system, Odessa Live has chosen to integrate AEQ's compact CROSSNET matrix and TP8000 user panels.

AEQ Intercom System

AEQ CrossNET is a compact, integrated audio 1RU height matrix, based on IP connectivity featuring DANTE™ technology, compatible with AES67 standard, which can easily be connected using existing Ethernet networks through conventional hubs and switches, and offering optional redundancy. It has 4 keys on its intaface for a user friendly operation. Odessa Live version has 104 ports (64 Ports with DanteTM AoIP Interface, 8 KROMA digital Intercom ports, 12 balanced broadcast quality analog audio ports and 20 ports for compressed audio over IP), but there are available versions from 40 to 168 audio inputs and outputs.

The seven units of TP8000 user panels installed are linked to the AEQ CrossNET matrix, with high quality of audio. In addition to the physical panels, the TV station has added virtual panel licenses to have more workstations.

This intercom system opens to the outside thanks to the new AEQ Systel-IP 16 talkshow system. This equipment allows a multiline IP telephone with SIP protocol signaling, compatible with IP PBX, SIP Trunking and virtual PBX. Systel-IP supports analog and ISDN lines through gateways.

This telephone system is connected to the external 4-wire inputs and outputs of the Crossnet matrix, with which it generates the TV studios external communications. The

connection between Systel IP and the intercom matrix is made by digital and analog audio.

The operator establishes the communication to the remote peers using a Systelset+ terminal. This touch terminal greatly simplifies the operation. Its commands and pre-settings allow intuitive use during TV coordination.

The entire project has been led by Area Sales Manager, Sergey Alekseev, in coordination with Odessa Live's technical team.

UKRAINE	TV PROJECT	

In 2018 the TV Project integrator, distributor of AEQ products, has installed a TV OBVan in Ukraine, for Kiev TV 1 Productions on and has selected for the intercom a CrossNET 40 matrix that communicates 4 TP 8116 user panels and several belt pack stations BP3004

UNITED KINGDON	BBC	
	The British Broadcasting Corporation - or simply BBC - is the public radio and television service of the United Kingdom. The BBC operates under the mandate of a royal charter that guarantees its independence from political or commercial controls. It broadcasts throughout the United Kingdom and has international services

The Broadcasting House is the headquarters of the British Broadcasting Corporation (BBC), in Portland Place and Langham Place, London.

The public corporation has acquired an intercom matrix CrossNET 40 including 6 TP8116 user panels, and an Xvirtual software User Panel. The System was installed by our dealer local partner BROADCAST SERVICE CENTER LTD at Broadcasting House. | |

UNITED KINGDON	UNYVERSITY OF PLYMOUTH	
	The Digital Garage Group is one of the leading British integrators for audiovisual production facilities

In 2019, it acquired a CrossNET 72 intercom system for the University of Plymouth ,

It includes:
o 2 TP8416 user panels
o 3 TP8116 user panels
o 6 XVirtual virtual user panel licenses for Windows or iOS
o 8 Xplorer wireless belt packs with two multiple charging stations and two access points

The University of Plymouth, with 21,645 students is a public university based mainly in Plymouth, England where the main campus is located, but the university has campuses and affiliated colleges across South West England | |

In support of its television training plans, the university has a fully operational television station, which even develops outdoor broadcasting activities. This intercom system has been implemented for the coordination of these retransmissions,

MIDDLE EAST

BAHREIN	BAHREIN MEDIA –BAHREIN TV	
	The country's television is state-owned and controlled by the Information Affairs Authority, which operates over five terrestrial TV networks. In 2018 one unit of the compact intercom matrix CrossNET 72 was installed in one of the OBvans of the public Bahrein broadcaster. The project was done by the Italian company ARET VIDEO AN AUDIO ENGEENERING.	

IRAN	IRIB	
	The Islamic Republic of Iran Broadcasting (IRIB), formerly called National Iranian Radio and Television, is an Iranian media corporation which holds all domestic radio and television services in Iran, and is also among the largest media organizations in the Asian and Pacific regions, and a regular member of Asia-Pacific Broadcasting Union. IRIB is independent of the Iranian government. IRIB has acquired in 2018 two TB3000 intercom matrices with 12 ports to install in OB Vans destined to take live news. Each has three user panels and is linked to a Vokkero wireless system in UHF. In addition, they have acquired in 2019 another system based on the Crossnet 40 matrix, also with three user panels.	

ISRAEL	CONTACT GLOBAL SERVICES	
	They have recently acquired an intercom matrix CrossNET 72 installed at the OB van for outside broadcasting by A.B.S ALTMAN BROADCAST SERVICES.	

ISRAEL	RESHET TV	

In 2017, the Israeli company Reshet obtained a license to operate a new, independent TV channel with national coverage and commercially designated as Channel 13. Since 1978 and up to then, Reshet had been broadcasting as part of a group of operators such as Channel 2.

Channel 13 is a new TV station, offering generalist contents, betting heavily on local production, broadcasting live programming for more than 8 hours every day from its new central studios in Tel Aviv.

The Television has acquired 1 intercom matrix CrossNET 104 installed by our dealer A.B.S ALTMAN BROADCAST SERVICES.
Also in 2017 the television has installed the TB3000 12 ports intercom matrix.

In 2018, AEQ provided Channel 13 with a completely new intercom system based on the AEQ CrossNET 104 compact matrix, featuring 32 multi-channel ports over IP with Dante technology, TP8116 and EP8116 user panels -offering 16 or 32 operator's keys as well as several pages and memories, AEQ TH03 phone hybrids for external calls, a few AEQ NETBOX interfaces to exchange signals between studios using their IP network.

There are currently 5 studio sets operating together with 4 technical control rooms, 5 post-production rooms and an MCR sharing the same, full performance intercom system for their operations. The platform will be expanded shortly, as new programs are introduced in the broadcasting schedule.

JORDAN	JRTV – JORDAN RADIO TV	
	Jordan Radio and Television Corporation (JRTV) is the state broadcaster of Jordan. It was formed in 1985 from the merger of Jordan Radio and Jordan Television. In 2016 the public broadcaster acquired 1 unit of the compact intercom matrix TH5000 with 48 ports installed by HEAT FOR ENGINEERING, AEQ´s local partner.	

TÜRKIYE	AV KOM	
	The Turkish integrator AVKom acquired in 2015 for a television an intercom system including a TH5012 matrix, 5 TP4216 hybrid panels, 2 TP3016 panels and two concentrators for the cameras' CCU.	

TÜRKIYE	FOX TV	
	Fox TV is one of the leading free to air TV networks broadcasting in Turkey, and is associated with Fox Broadcasting Company. The private television has acquired through the AVKom Teknoloji integrator an intercom system for its television production facilities. The main wireless part consists of 8 Xbp terminals centralized on a TW5008 matrix. With this system, works another system with two TP 3016 user panels, and two Xbp wireless terminals. Centralization is performed by a TH 5012 intercom matrix	

TÜRKIYE	ISTANBUL HIPPODROME	
	The Hippodrome of Istanbul was a circus that was the sporting and social centre of Constantinople, capital of the Byzantine Empire. Today it is a square named *Sultanahmet Meydanı* in the Turkish city of Istanbul, with a few fragments of the original structure surviving. The local integrator Ideapro has installed in 2019 a coordination system based on a TH5012 matrix and 8 TP 8116 user panels	

TÜRKIYE	TBMM TV	

TBMM TV (from Turkish Türkiye Büyük Millet Meclisi Televizyon) is the official television channel of the Turkish national parliament, broadcasting all sessions and public commissions held there.

TBMM TV began broadcasting in 1994 and can now be followed online at www.tbmm.gov.tr, on DTT with nationwide coverage, on cable (on channel 69) and via satellite on Eutelsat and Turksat where it can also be tuned in as Meclisi TV.

In the recent technical upgrade carried out by the network's technical management, IDEAPRO (AEQ's local partner in the country) installed one AEQ CROSSNET intercom system.

AEQ CROSSNET is a compact, 1RU intercom matrix with IP connectivity, based on Dante technology, compatible with the new AES 67 standard, carrying high quality audio suitable for broadcast. It also has high quality balanced analogue audio inputs and outputs and includes support for Kroma's legacy IP panels and interfaces with compressed audio, and for Kroma panels with digital audio link. Thanks to its scalability, from a 40 x 40 system to a 168 x168 system, AEQ CROSSNET offers a wide range of external connections: analogue, digital, AoIP Dante and low bit rate IP ports. The

integration of this variety of connections within the same equipment allows the user to reduce the external equipment required.

The TBMM TV Intercom system is completed with the TP8000 Series user panels, which have been designed to achieve the high level of broadcast compatible audio quality that CrossNET digital matrix technology allows. Audio is digitalised and processed at 24-bit 48 kHz, giving a bandwidth of 20 Hz to 20 kHz and minimal distortion and noise levels. Ease of installation has also been taken into consideration, so they incorporate a redundant IP port that handles high quality audio in DANTE format, compatible with the AES-67 standard. The audio is digitally processed to cancel acoustic echo and automatically level the voice power and speech habits of each operator. The acoustics have been carefully studied to achieve the best intelligibility and natural sound.

The whole project has been coordinated and implemented by AEQ's local partner in Turkey, IDEAPRO.

TÜRKIYE	TURKISH STATE METEOROLOGICAL SERVICE	
	The Turkish State Meteorological Service, TSMS, was founded in 1937. It is the only legal organization which provides all meteorological information in Turkey. The local integrator Ideapro has installed in 2018 a coordination system based on a TH5012 matrix and 8 TP 8116 user panels	

UAE	ARISTON BROADCAST AND TELECOM SOLUTIONS	
	In 2016 the Greek integrator acquired 1 unit of the intercom matrix TH 5000 installed for a client in UAE.	