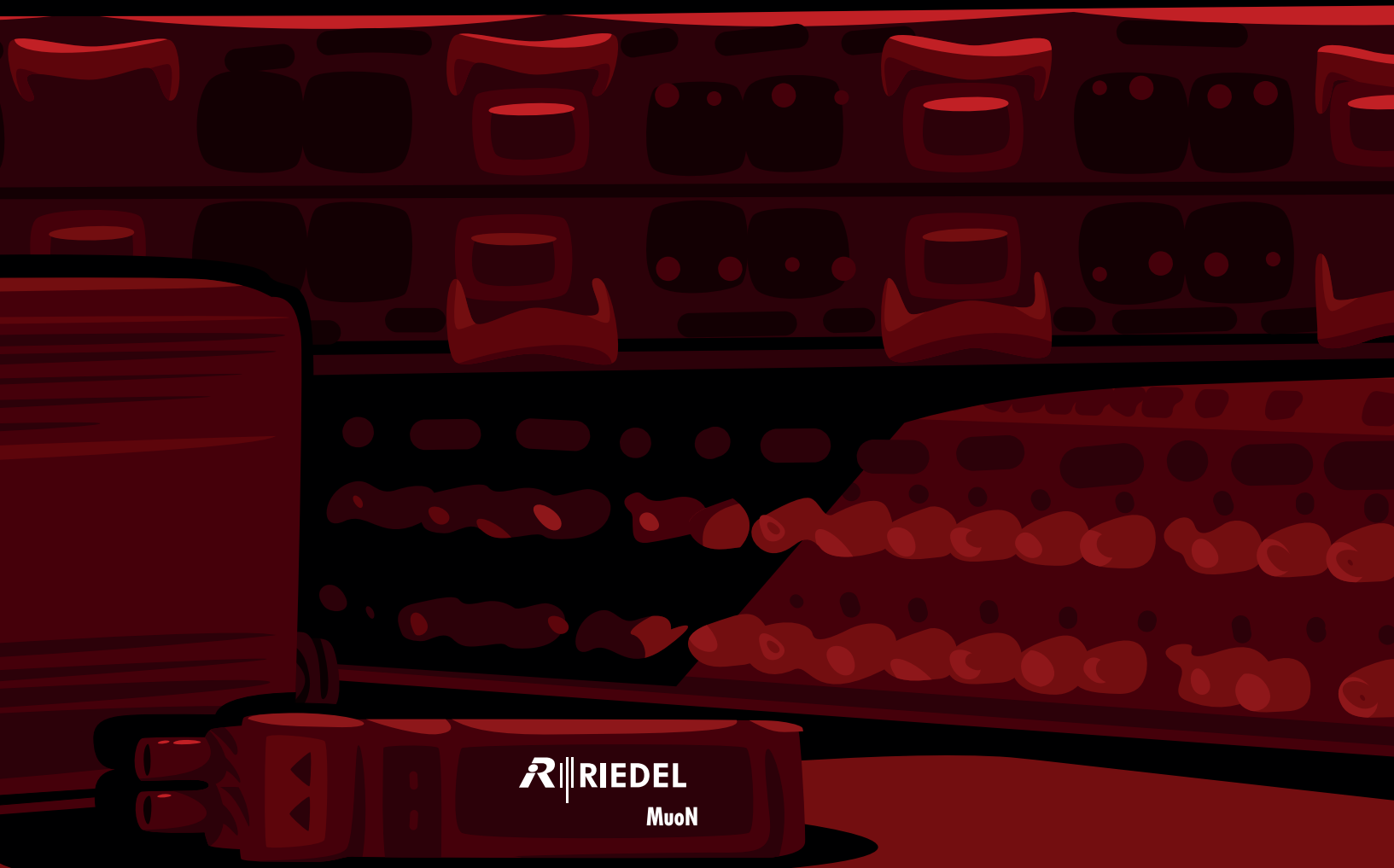


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**R||RIEDEL**  
MuoN

# STANDING TOGETHER

A foreword by:  
**THOMAS RIEDEL**  
CEO & Founder

■ If the past few months have taught us anything, it's that we have the power to stand together – as an industry, as a company, as a family – even in the face of major adversity. We have had an opportunity to step back for a moment and reflect on what really matters and how we can work together to make a better world. And even though there's been plenty of sobering news lately, we have also had many positive developments.

One example is a major expansion of our MediorNet product line in close collaboration with the Riedel Montreal team (formerly Embrionix). These include **MicroN UHD** and a full range of hardware and software products based on the innovative new **MuoN SFP** technology. The fact that we were able to pull off this major launch in the middle of a major public health crisis is a testament to our great teamwork and cohesion, plus the strong remote workflows we've put into place.

Continuing **education and training programs** – such as Riedel Tuesdays and the Riedel Academy – have always played an important role for us. Last year we decided to build up a freely available knowledge database to complement these programs, launched the „Andy Explains“ video series, and have expanded our focus on **online training and remote offers**. These measures are sustainable for the long term and not just for these “socially distanced“ days.

We're very pleased to announce two recent additions to our management team. **Lutz Rathmann** rejoined the company as Director of the Managed Technology

division after serving as CEO at APS. He had previously held several management positions at Riedel, so we're happy to welcome him back to the fold. Also, **Simon Roehrs** has just come onboard as director of our APAC operation. Based in Singapore, Simon brings a rich background in sales executive management for prominent media technology companies to this important role.

“Innovation has always been a part of Riedel's DNA.”

Thomas Riedel

**Innovation** has always been a part of Riedel's DNA. This is why we could meet some very special requirements that have arisen during the past months. As the world continues to find a new normal, we will keep looking for ways that communities can apply our advanced technologies to help them cope with immediate needs. Take our new **DisTag**, for example. DisTag is a lightweight, wearable device that alerts users if people around them aren't maintaining a safe distance. And, together with our partners at **EvoCount**, a specialist in visitor flow analysis and crowd management, we also provide automated, contactless systems that reliably and precisely detect elevated body temperature in public and quasi-public places.

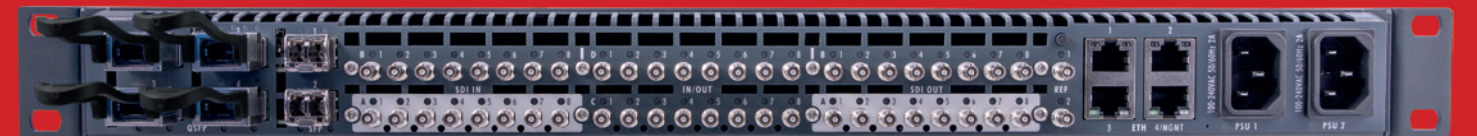
For instance, our **Bolero** wireless intercom has gotten recent attention for its use in three **medical** settings to help with treatment of COVID-19 patients. Also, during the closure of the **Wuppertal Zoo**, Riedel systems made it possible for viewers at home to watch the action inside the elephant house and the complete outdoor facilities. People who would have been at the Summer Games or America's Cup were able to engage with the zoo and support their hometown.

Looking ahead, we see a hope-filled future with real signs of life in our industry. The **German Football League** is playing again, and **horse racing** is getting back on track. Remote production technologies are more important than ever for live event broadcasters – just ask our partner **Remote Recording Network**, who has used Riedel technologies to remotely produce two recent live concerts by German musician Peter Maffay.

The big lesson? That respect and partnership are not trophies that you just put in a showcase and dust off for special occasions. They have to be nurtured every day. Since these values are built into the Riedel culture, **we know we and our customers will come back stronger than ever.**

# MICRON UHD

INTRODUCING MICRON'S BIG BROTHER



■ With the introduction of the software-defined MediorNet MicroN, Riedel revolutionized the way broadcasters moved and processed their signals back in 2015. Since then, the software-defined MicroN has been steadily evolving. With a total of five apps, MicroN's functionality has been greatly expanded by decentralized multiviewing, signal processing, and IP capabilities. But now it's time for the next MediorNet revolution: Meet MicroN UHD!



## MICRON UHD AT A GLANCE:

- Seamless integration into MediorNet SDI family
- 4x 100G Highspeed links
- 8x 12G/3G/HD/SD-SDI In & 8x 12G/3G/HD/SD-SDI Out
- 16x 3G/HD/SD-SDI In / Out (switchable)
- 2x SFP ports (for MADI)
- Sync reference In / Out (BB, Tri-Level, WC)

Micron UHD takes everything you know and love about MicroN but makes it even better! Our crafty product managers and engineers managed to double the I/O port count, increase the backbone connectivity fivefold, and add native UHD support, while retaining MicroN's low-depth 1RU form factor. This new addition to the MediorNet family also builds on Riedel's software-defined concept, provides 400G backbone connectivity for signal distribution over meshed architectures, enables 12G-SDI for native UHD workflows, and allows reliable operation through link redundancy.

## High-density UHD connectivity

With 48x SDI (HD-BNC) connectors, MicroN allows for flexible input and output configurations (16x In, 16x Out, 16x In/Out) and fully supports UHD with up to 8 streams in and 8 streams out.

## High-speed networking

Micron UHD uses 25Gbps as its base link speed and features 16 of these links, offering a total of 400Gbps (4x4x25) available through 4x QSFP slots. These links are fully downwards compatible with existing MediorNet products. And through its high number of QSFP ports, MicroN UHD is redundant by nature.

## Continues MediorNet family traditions

Micron UHD continues and builds on everything customers know and love about MediorNet. Just like its little brother, MicroN UHD is software-defined hardware that provides an unprecedented amount of flexibility, primed to evolve with industry demands. As of now, there are two different apps available (Standard and MultiViewer App), with several more on the horizon.

As a true MediorNet device, MicroN UHD is not just for video, but also features audio support through 2x SFP cages for MADI SFPs. Also, the unit has four RJ-45 connectors, three of which serve as ports for Ethernet tunneling up to 3x 1Gbps, as well as 2x HD-BNCs for sync.

## FIRST SHIPMENT: WDR®

With features like these, it comes as no surprise that our new MicroN UHD has been a huge success right from the start. Within weeks of its launch, MicroN UHD saw its first deployments in the all-new WDR Ü3 OB truck and installations at other high-profile broadcasters. Read more about this deployment on [page 6!](#)

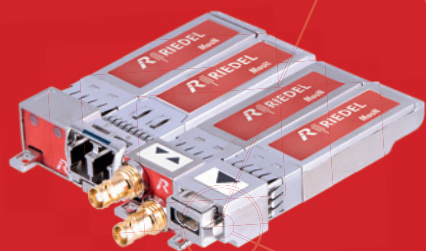


# MEDIORNET IP



MEET THE FAMILY

■ We are proud to present to you our extended MediorNet family of video networking devices! With a total of 13 new hardware devices and nine new software apps, the MediorNet product line is now better equipped than ever to meet the distributed routing, processing, and multiviewing requirements of today's SDI, IP, and hybrid production environments.



## MUON A1 / A10 / B10 / B25

At the very heart of the new MediorNet products lies the innovative MuoN SFP technology. MuoN SFPs are pluggable gateway and processing devices delivered in a uniquely compact form factor that can be used in VirtU frames or COTS IP switches. The software-defined MuoN hardware is available with a range of different input and output configurations, including BNC, fiber, or HDMI, and can be configured with a variety of different apps. A simple change of the software license turns the device into an up/down/cross-converter, a JPEG-2000/XS encoder or decoder, an audio router, or even a multiviewer. The field-upgradable devices offer up to 4 app spaces per SFP, providing truly unmatched flexibility.



## FUSION 3A / 3B

The FusioN series of compact standalone I/O and processing devices can be configured with a range of software apps to act as IP gateways, encoders/de-encoders, or as IP multiviewers. Due to their small form factor and low power consumption, the devices can be placed close to signal sources or destinations, creating powerful efficiencies in any production environment.



## FUSION 6B

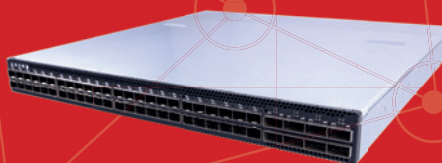
The Fusion 6B is a versatile standalone processing frame that can be configured with your selection of inputs and outputs from our range of SFP I/O modules as well as with a variety of processing Apps.

For instance, the software-defined Fusion 6B platform can be configured as a bulk gateway for HD/3G or UHD signals, a dual channel JPEG-2000 encoder/decoder with SDI or ST2110 I/Os, or a 16x1 IP multiviewer fitting right on the back of your display with HDMI or SDI connectivity.



## VIRTU 32

The VirtU IP infrastructure platform can host an extremely dense array of Riedel MuoN SFP processors in just 1RU. The frame can be used as a bulk gateway, as a very dense processing unit or for any combination of gateway and processing. This modular platform allows users to gradually build their key advanced gateway and processing power as their needs grow!



## VIRTU 48-S

The new VirtU aggregator frame offers more than twice the density of other available solutions, supporting up to 48 MuoN IP processing modules within a single RU. The device allows IP flows to be routed inside the frame or within an IP system through eight 100GE aggregation ports. The frame can be used for bulk gateway conversion, simple IP signal aggregation or any other IP signal processing functions and can be configured to provide ST2022-7 hitless redundancy.

SOFTWARE-DEFINED

BUT

SCALABLE

FLEXIBLE



Renaud Lavoie  
YOU GOTTA KNOW RENAUD!

■ Renaud Lavoie founded Embrionix in 2009 and, while leading the company to worldwide success, pioneered the use of SFP modules for signal processing and contributed to nearly 40 patents. Renaud and the Riedel Montreal team joined Riedel late last year, so it is about time we get to know this visionary entrepreneur, engineer, and inventor!

**How exactly did you end up in the broadcast world?**

A friend of mine was working for Miranda, so I started there while teaching at ETC University in Montreal. I left Miranda in 2006 after serving as an architect for their multiviewer product. This was my way into broadcast market.

**In retrospect, failures often have something positive about them. What was your "favorite failure?"**

One of my first businesses never really got off the ground. This is my most important failure, because it taught me the hard way that if you want to start a business, you need the foundation of a strong team. Building a great business is really a group effort, and you need good people for production, sales, finance, marketing, and other important functions. You can try to do it all yourself, but you'll run out of fuel fast! Behind every successful business is a talented team.

**Any places in Montreal one absolutely has to visit?**

Old Port is a place no one should miss!

**What was the single most emotional moment in your career up until now?**

It was a big deal for me to be able to say to friends and family that we collaborated on high-profile world events like the Olympics or F1. Also, when we started seeing our SFPs being used by a majority of vendors, we knew we were right to push this technology forward. That validation really felt good.

**How and when did you meet Thomas for the first time?**

In the past few years, Embrionix had been experiencing tremendous growth. We were seeing a 29% year-over-year increase, and at NAB2019 we had reached a crossroads. We were looking into acquiring other companies to keep up with this rapid expansion, but we were also looking at the other side of the fence: to find a big brother for Embrionix.

We found this big brother in Riedel, an established business that could benefit from our product line and that could help us continue grow our unique technology. I visited Thomas right after NAB and had another dinner with him at IBC, after which we both knew that our companies were a perfect match!

**What do you think the future of the broadcast industry will look like?**

This is an interesting one. I think that, in the future, remote production will play an even more important role for live events. The ability to take signals and send them to a remote production center located anywhere will be a real game changer.

I envision a time when all live event visitors become contributors to the production. If we push ourselves in 10-15 years with the technology for video recording glasses, production teams will then have access to hundreds of thousands of streams. Imagine how much a production could benefit from all that additional material. I see this as another exciting potential development for live event production.



# MICRON ÜHD

**RIEDEL'S NEW MEDIORNET MICRON UHD SIGNAL DISTRIBUTION DEVICES DRIVE UHD BROADCASTS FOR WDR'S NEWEST OB VAN**

■ German public broadcaster WDR will be the first European customer to adopt Riedel's all-new MediorNet MicroN UHD media distribution and processing device. WDR is deploying 13 MicroN UHD devices to support live UHD (4K) broadcasts using Ü3, the broadcaster's newest OB van. Broadcast Solutions, a Germany-based systems integrator, is providing engineering and installation services for the Ü3 project.

The newly launched MicroN UHD is the latest generation of the award-winning MediorNet MicroN family of modular, high-density signal interfaces. Reflecting Riedel's distributed and software-defined approach to signal transport, two of the 13 MicroN UHD modules on Ü3 have been configured as multiviewers using the MicroN UHD Multiviewer App.

"For our new UHD truck, we wanted to adopt technologies that could support a highly decentralized approach to signal management, signal transport and processing via one cable, and also provide an on-ramp to IP-based operations,"

said Harald Glaser, Group Head of Production, WDR. "As long-time Riedel MediorNet users, we were excited about the new MicroN UHD nodes because of the additional horsepower they would bring to our UHD broadcasts. And, as software-defined hardware devices, the MicroN UHDs offer a huge advantage because they can be reconfigured swiftly to fulfill a vast range of functions, such as multiviewing. That reduces the need for single-purpose peripheral devices, which translates to big savings in rack space and associated costs."

WDR is also deploying an Artist-128 digital matrix intercom mainframe, together with seven RSP-1232HL SmartPanel interfaces that enable agile routing and control of audio, video, and intercom signals. In a future project, Broadcast Solutions will expand the use of the SmartPanels for control of MediorNet in combination with the HI human interface control tool.

"MicroN UHD just hit the shelves a few weeks ago and is already being embraced by the industry's biggest names in live production. This is a clear sign that with our new networking and processing solution, we are in the right place at the right time," said Olivier Görts, Senior Account Manager at Riedel. "WDR's new Ü3 van is the perfect showcase to demonstrate MicroN UHD's groundbreaking capabilities, including 400G backbone connectivity, link redundancy, and support for 12G-SDI in native UHD workflows."

DID YOU KNOW...?



MEDIORNET MUON



**500 MuoNs** weigh as much as one German **DACHSHUND**



**22.187.500 MuoNs** fit into Wuppertal's iconic **SCHWEBEBAHN** suspension railway



It would take **709,292,300 MuoNs** to form a ring around the **EQUATOR**

# CATALONIAN PARLIAMENT

## MEDIORNET, ARTIST, AND BOLERO SIGNAL ROUTING AND COMMS

■ Broadcast operations are essential to the Parliament of Catalonia, the unicameral legislature of Spain's autonomous Catalonia community. Occupying a historic, 300-year-old palace in Barcelona's Ciutadella Park, the Parliament has been producing its own institutional television signal since 2002 and making it available, free of charge, to media outlets. As part of a multiyear HD upgrade of its video recording and broadcast capabilities, the Parliament has chosen MediorNet, Artist, and Bolero to form a comprehensive signal routing and communications backbone.

The Parliament had several complex requirements for the migration to HD video. Although the installation would initially be based on 1080i, the goal was to adopt technologies that could be easily migrated later to 1080p and 4K production in an IP-based operation. In addition, the signal distribution mechanism would need to support existing workflows in the Parliament building, which are

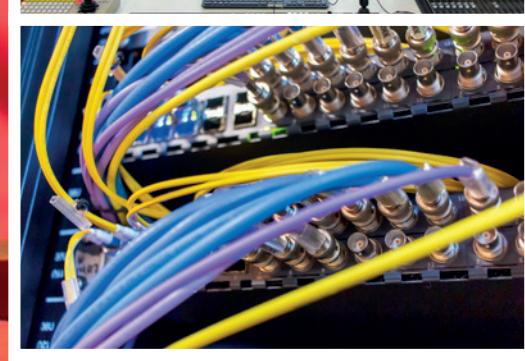
based on nodes distributed throughout the facility and connected by fiber optics.

"Even in the project's early stages, it was clear that Riedel's MediorNet would be perfectly suited to our needs in terms of flexibility, decentralization, and the ability to transport and route signals over fiber. MediorNet also gives us the guarantee of a smooth transition to IP in the future, with the reliability and proven success of a solution that's well-established in the market," said Daniel Rodriguez Carvajal, Audiovisual Technician, Parliament of Catalonia.

The Parliament of Catalonia's massive decentralized 368 x 368 router consists of four MediorNet MetroN core routers and 36 MediorNet MicroN high-density media distribution network devices, 10 of which are configured as multiviewers with the Riedel MultiViewer App. The deployment also includes two Compact Pro stage boxes and four RockNet real-time audio distribution devices. The SMPTE 2110-30-based network integrates an Artist-64

intercom mainframe and Bolero wireless intercom, outfitted with 20 2300-SmartPanels to enable agile routing and control of all intercom signals.

Thanks to close collaboration between the Parliament audiovisual staff, the Riedel team, systems integrator Telefonica Servicios Audiovisuales, and Riedel's partner Crosspoint, the new signal infrastructure was deployed in record time. Barely four weeks after the deployment began, the installation operated flawlessly for its first event, a ceremony to present the Parliament of Catalonia's Medal of honor on the National Day of Catalonia. Essential to this production were the Artist wired intercom system, which also acted as a simple audio monitor, and the easy-to-use Bolero wireless intercom, which enabled the audiovisual staff to communicate seamlessly and reliably.



# TOURING VIDEO

## MEDIORNET ANCHORS FIRST PRODUCTION TRUCK IN NORTH AMERICA TO IMPLEMENT DISTRIBUTED ROUTING



■ Riedel's MediorNet is at the heart of a massive signal transport, processing, and routing backbone for TV-2, the newest member of the Touring Video Inc. production fleet. A California-based entertainment production services provider, Touring Video has completely embraced distributed routing with TV-2—North America's first truck built on the concept from the ground up. Unlike most production vehicles in which the gear is permanently mounted inside the truck, TV-2 engineers have the ability to outboard gear, or even the entire control room, to achieve entirely new levels of production flexibility.

The MediorNet signal backbone on board TV-2 has 34 nodes comprising four MetroN core routers and 30 MicroN signal distribution and processing devices. Of their 30 MicroN devices, 20 are equipped with the Standard App, eight use the MultiViewer App, and two use the Processing App. As a long-time Artist and Bolero customer, Touring Video has equipped TV-2 with an Artist mainframe and an assortment of the new 1200 Series hybrid lever key SmartPanels, 2300 Series SmartPanels, and Bolero wireless intercom.

The entertainment productions that Touring Video services differ from sports in that the needs of the show dictate the needs of the truck, and these requirements can change from day to day. One day the job could be a concert, and the next it could be a TV game show or award show. The truck needs to be as quick, agile, and responsive as possible to suit the needs of each client. For one recent entertainment show, up to 30 people were required in the control room.

The ability to take the control room out of the truck and easily relocate it closer to the stage made a huge difference in production flexibility—and it was made possible by distributing the router. Now, with control room space no longer a limitation, a second 4ME switcher could be added for screen control. Three highlight operator positions and additional production staff were then easily housed in TV-2's vacated control room. The total video I/O on the stage was 96 x 96, with audio over MADI and two tunneled Ethernet paths.

Doug Armstrong, President at Touring Video, said: "MediorNet is relatively unproven in the North America OB market, and choosing it as our core routing system was a leap of faith. But I've been able to create the unique workspaces that my clients have come to expect from me without compromise while creating economies and streamlining workflows."



# THE EAGLE HAS LANDED

## ADLER MANNHEIM COACH COMMS WITH BOLERO AND BOLERO S



Ice hockey is one of the fastest team sports in the world. There's no time for misunderstandings, and decisions have to be made extremely fast - which requires crystal-clear audio quality for coach communications. That's why Adler Mannheim, the ranking champion in the German DEL ice hockey league, is the latest major sports organization to adopt the Riedel Bolero S managed communication service in conjunction with the Bolero wireless intercom.

The home venue for Adler Mannheim and the Rhein-Neckar Löwen handball club is the SAP Arena in Mannheim, a multipurpose venue with a total capacity of 15,000 seats. For a typical home hockey game, the assistant coach on the bench is often surrounded by 13,600 emotional, roaring fans.

Given the noise levels and RF reflections, a closed arena is a very challenging environment for wireless communication. With the previous intercom, the Mannheim team often struggled with feedback and miscommunication - but these problems are now a thing of the past with Bolero.

As a top team in the DEL, Adler Mannheim aims to be the technological pioneer in European ice hockey and have a deep commitment to technical innovation. For example, the team has been using live tagging for video analysis for many years. For every Adler Mannheim game in the 2019/2020 DEL season, Bolero and Bolero S enable clear three-way communications between the goalie coach in the stands, the video analyst in the locker room, and the assistant coach on the bench. The Bolero intercom

enables the coaches to review and discuss relevant situations and make information immediately available to their colleagues on the sidelines. The Bolero solutions give Adler Mannheim maximum flexibility, especially for away games, freeing the coaching staff from having to worry about acquiring radio frequencies.

In the SAP Arena, Bolero is in use for more than 130 events a year, not only by coaching and event personnel but by facility technicians to facilitate efficient communication between different departments. With Bolero and Bolero S, teams have absolute certainty that every detail and every instruction will be conveyed to coaches instantly and clearly.



# SMALL FORM FACTOR BIG IMPACT



CTV OUTSIDE BROADCASTS OPTIMIZES IP WORKFLOW WITH MEDIORNET MUON AND FUSION GATEWAYS

■ U.K.-based CTV Broadcasts is widely recognised as a leading broadcast provider, with over 35 years of experience in outside broadcast. CTV's large OB fleet rolls worldwide, delivering technical and creative solutions to productions across all genres.

CTV Outside Broadcasts recently deployed Riedel's all-new, compact MediorNet MuoN and FusioN gateways within its live production workflow to optimise speed and flexibility of signal conversion during the production of a popular reality show. The MediorNet solutions move SDI-to-IP conversion to the edge, allowing for a fully scalable IP workflow.

"With the innovative gateway devices from Riedel, we realized that scaling IP is not just possible, but easy," said Paul Francis, Chief Technical Officer at CTV Outside Broadcasts. "Other manufacturers' solutions require deployment of messy single boxes or large frames, but the MediorNet gateways work with a switch that is already in place, handling two or more signals as needed at each location. The granular nature of Riedel's SFP gateway deployment has really enabled the efficiency and flexibility of our project."

Riedel's SFP-based MediorNet MuoN IP gateways provide multiple practical interfaces for bridging SDI signals into IP. With their small form factor (SFP+, SFP28), the modules can be installed inside a standard 10GE/25GE IP switch. Because they are software-defined, MuoN modules can be configured to run encapsulation such as SMPTE ST 2110, ST 2022-1/2, and ST 2022-6.

The MediorNet FusioN device deployed by CTV Outside Broadcasts is a versatile stand-alone gateway designed for remote control applications. The FusioN 6B can be configured with a combination of MuoN modules to deliver the signal processing capabilities the production company requires. The bulk gateway is capable of treating up to eight gateway conversions for HD/3G signals or four in UHD.



Especially in OB environments, space is at a premium. At CTV Outside Broadcasts, Riedel's miniaturized smart SFP solutions save precious space and energy, while optimizing the speed and flexibility of signal conversion. MediorNet Muon and FusioN are practically made for the OB business.

www.riedel.net  
/VIDEO



■ The COVID-19 pandemic is causing many live event broadcasters to take a closer look at remote production technologies that might actually make traditional on-site production workflows obsolete. With advancements in collaboration tools and remote broadcast technologies, it is now possible to do things remotely from a studio or remote operations center (ROC) that until recently had been just unthinkable... including live music recording, mixing and mastering, management and support for sports productions, or even remote engineering.

Riedel has ramped up their remote capabilities long before times of contact restrictions and social distancing and has therefore been well-prepared for the recent increase in demand for and complexity of remote productions. Since Riedel's collaboration with the DFL Deutsche Fußball Liga, where the ROC engineers ensure exceptional communications between referees and the video assist facility, the ROC concept has proven to be suitable for all kinds of applications – one of them being remote mixing and mastering.

Riedel and Remote Recording Network (RRN) collaborated on a live concert by the German musician Peter Maffay that was mixed and mastered remotely. The concert was streamed live from the Berlin Columbiahalle to radio stations and the internet and was broadcast via satellite to audiences at 100 German cinemas.

As Riedel's client, RRN provided remote mixing and mastering services for the live multiformat broadcast. The RRN studio in Cologne was connected through the Riedel ROC to the Le Voyageur 1 OB van at the Columbiahalle and the Cinestar cinema in Berlin. ROC

## REMOTE? OF COURSE!

engineers remotely configured all signals and sent six audio streams on to the RRN studio in Cologne for audio mastering in LV1. The mixer in the Cinestar cinema had access to the mastering unit in LV1 for adjusting the mix to suit the cinema environment.

Together with RRN, Riedel was able to put together an extremely compact plug-and-play system that could be linked quickly and easily to the ROC via a WAN connection. Equipped with RSP-2318 SmartPanels and supported by Riedel's ROC engineers, Brandt and his team didn't have to worry about setup or communications. Instead, they could fully concentrate on their task at hand – delivering the perfect sound experience to listeners all over Germany. And guess what? The next stop for ROC remote mixing was Wacken World Wide, a AR live stream hosted by the world's biggest heavy metal festival, the legendary Wacken Open Air!

As the limitations imposed by the coronavirus pandemic further complicate various aspects of in-venue production for both music and sports events, many leading sporting series are now beginning to take advantage of the efficiency and safety of

Riedel's remote concept. To take one prominent example, the ROC is now also represented in the most popular open-wheel racing series since its relaunch in Spielberg this July. Here, Riedel's ROC serves a wide range of applications, such as remote support of teams and engine suppliers, as well as direct access to Riedel's trackside equipment such as Artist and MediorNet. Furthermore, the setup in Wuppertal allows for crystal-clear communications from the operations center to the racetrack.

And there's even more: For the upcoming America's Cup, the ROC will serve as a monitoring and engineering hub providing a reliable backbone that allows to remotely access the entire system setup, including video, audio and intercom signals. This way, the ROC team can support the on-site crew in optimizing the performance of the specifically designed Riedel solutions and can monitor and control essential parameters of the equipment aboard the racing yachts. These parameters include camera control, audio setup, GPS data transmission and battery management. Now this is what we call remote engineering.



# STAYING SAFE RIEDEL SOLUTIONS AT THE DFB CUP FINAL

▪ ARTIST ▪ BOLERO ▪ BOLERO S ▪ SMARTPANEL ▪ MEDIORNET ▪ DISTAG

With the ongoing global health crisis, the game has changed for professional sports. Everyone – from clubs to fans to broadcasters – is having to adapt to new normals in the ways we produce, broadcast, and consume sporting events. In May, Germany's Bundesliga led the way as the first professional sports league to resume operations since the pandemic began, abiding by strict new hygiene measures.

The latest sporting event to adhere to the new biosafety protocols, aided by advanced technologies from Riedel, was Germany's 2020 DFB Cup Final football match on July 4. The match, which saw Bayern Munich defeat Bayer Leverkusen, leveraged Riedel's Artist, Bolero and SmartPanel intercom solutions to provide seamless communications for officials and production crew.

Riedel's MediorNet real-time network provided a comprehensive signal routing backbone for the intercom signals as well as in-stadium lighting and OB vans.

Played in the closed Olympiastadion Berlin without spectators, the DFB Cup Final "ghost match" adhered to strict protective and hygienic measures including disinfection of equipment and safety distancing of crew, players, and staff. Riedel partner Wilhelm & Willhalm event technology group (W&W), which has worked the DFB Cup Final for 27 years, once again handled technical implementation and services.

In addition, the DFB Cup Final was one of the first deployments of Riedel's all-new DisTag distance monitoring device. Worn around the neck or

carried in a pocket, DisTag is a reliable and precise instrument that immediately alerts its wearer via haptic, visual, and acoustic signals whenever the mandatory minimum distance to other people is about to be breached.

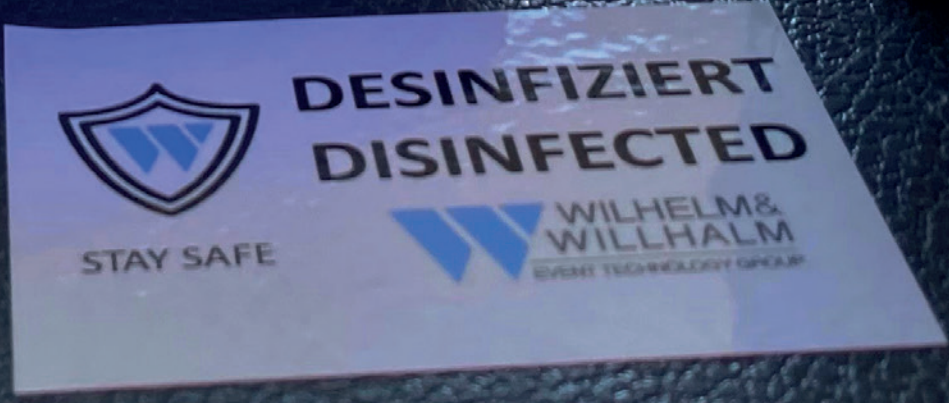
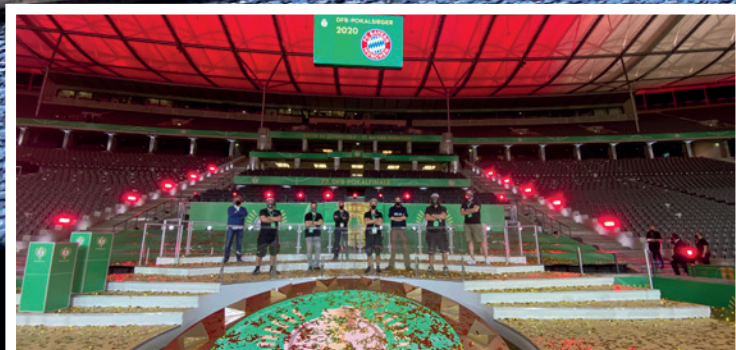
Pre-pandemic, the W&W technical crew were able to work on the field — but their movement was more restricted for this year's DFB Cup Final and they were required to operate from business lounges within the Olympiastadion Berlin. The crew was spread across five lounges to ensure safe distance, and each crew member wore a DisTag.

Since the crew was not allowed to enter the infield, W&W created a fiber optic ring based on MediorNet that conveniently routed signals from the business lounges. The MediorNet network was used for connectivity with the OB vans and to control the stadium's brand-new LED floodlight system, which celebrated its premier on July 4 as the first full-color floodlight in the world.

"MediorNet offered the signal stability and flexibility we needed to pull off this match without a hitch, plus the ability to reroute signals effortlessly with maximum security," said Hannes Gruener, Project Manager at Wilhelm & Willhalm event technology group. "That made MediorNet the perfect solution for holistic remote control, since our crew would not have been able to reach the corresponding point of failure in the event of a problem."

Riedel's Artist facilitated all communications between technical crew working in the stadium and on the OB vans, with full integration of 15 Bolero belt packs and seven RSP-2318 SmartPanels. This outstanding solution, built around Riedel's award-winning intercom and signal routing technologies, shows that anything's possible with world-class equipment and expertise. Even in these challenging times.

For further information about Wilhelm & Willhalm event technology solutions, please contact [info@wwvt.de](mailto:info@wwvt.de)







# RIEDEL MEDICAL SOLUTIONS

■ With the COVID-19 pandemic placing unprecedented demand on healthcare systems around the globe, reliable communications are critical for efficient handling of patients and an emergency response that can ultimately save lives. In these settings, communications gear must be high-performance, easy to use, reliable, and wireless to ensure unrestricted mobility for the individuals involved.

With these requirements in mind, Riedel has launched an all-new Medical Division to provide customized, highly scalable networks incorporating signal distribution, wireless and wired intercom systems, and comprehensive IT and security solutions. Targeted to ad hoc emergency field hospitals, these solutions greatly increase efficiency and enable medical facilities to become operational as quickly as possible.

Riedel medical communications solutions have already been deployed in various medical settings, among these a pair of large hospitals in Budapest, Hungary, which have deployed Riedel's Bolero wireless intercom for use in the treatment of COVID-19 patients.

In the Hungarian hospitals, strict regulations are in place in the COVID-19 wards to prevent infection of staff or other patients. Nurses and doctors often have to work in complete isolation, and direct communication between the nursing staff on the different wards is not possible under these conditions. But thanks to Bolero, doctors and nurses working in protected areas can now communicate with colleagues outside the isolated treatment areas. So that they do not have to press any buttons on the device, the Bolero Beltpacks are permanently on air.

The Riedel Medical Division has launched a Medical Team Communication system, based on Bolero, that enables medical teams to talk hands-free with or without headsets. With crystal-clear, calm communication between every member of the team, health care providers can be more efficient and less stressed, improving the working environment. And the integrated Bluetooth technology allows them to not only connect wireless headsets, but even bluetooth stoscopes!

Innovation Manufacturer  
**BUSINESS  
AWARDS 2020  
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**BOLERO S AND ROC**

■ Nicolas Winter is a German Bundesliga referee who has been guiding football matches for nearly 15 years. Since 2019, he's been refereeing 2. Bundesliga matches and has therefore had a chance to put Riedel's Bolero S referee communications system to the test. We talked to Nicolas about respect, the power of football, and the importance of communication.



## IT'S ABOUT RESPECT

BUNDESLIGA REFEREE  
NICOLAS WINTER ON THE  
POWER OF FOOTBALL  
AND THE IMPORTANCE OF  
COMMUNICATION

**Hey Nicolas! What is the best thing about being a Bundesliga referee?**

It really is a childhood dream come true. Walking into a full stadium, hearing the fan chants and soaking up the atmosphere – these are absolutely magic moments for me.

**How did you get into this, and what made you want to be a referee?**

I think that has a lot to do with my strong sense of justice. I originally wanted to become a policeman, but I ended up in football...That's life (laughs). But you can also stand up for justice on the pitch. I have a good sense of fairness and I'm very happy to be able to apply it on the pitch. One of the advantages I had early on was that I played football myself and so I knew exactly how things work on the playing field. Then, at the age of 14, I switched to the role of referee.

**What does a typical working week for a referee look like?**

It's very exciting. Similar to freelancers, referees coordinate their day-to-day business on their own. Monday's schedule usually includes recovering from the weekend before getting right back into a training routine. This is not only about fitness! To be ideally prepared, you also need a general match analysis with a referee coach, including video analysis. Of course, I also watch the other matches of the day as preparation. This helps me plan possible courses of action for my own games. This is an essential element of theoretical preparation.

But fitness is just as important. I have an athletics coach with whom I train several times a week. At the same time, we have a very good athletics coach at the DFB who provides us with an individually tailored,

holistic fitness program. This includes nutrition, regenerative measures, and much more. After the analysis of the last match day, we already start preparing for the next game. For this purpose, I analyse the two teams whose game I will be leading.

**Tell us a bit about the communications system you work with during the match - I imagine it must be a really important part of the modern game. Who do you talk to most? What kinds of incidents are discussed and how does it all work?**

Communication is key on the pitch. This applies not only to communication between those on the pitch – the referees, assistant referees and fourth officials – but also when the referee communicates with the video assistant in Cologne. Talking to my assistants on the field during the game is one thing, but the connection to the Video-Assist Centre in Cologne and also to Riedel's Remote Operations Centre in Wuppertal before the game is just as crucial. And it works perfectly. We have a crisp and clear audio connection. That's worth its weight in gold when you look at the sound levels in the stadiums. The voice quality of the system is absolutely critical. For me, I can say that my experience with the Bolero S has been nothing but positive.

**England has only just recently introduced VAR - and the initial reaction has been quite mixed, as you probably know! What do you think about this technology, and do you think England is doing it right?**

I believe that technological innovation always requires a process of sensitization - this was and is of course also the case in Germany. Every technological innovation needs some time to evolve.

**What is the greatest moment in your career to date, and do you still have something to cross off your bucket list?**

This is a difficult question to answer. Every promotion in the elite area is an absolute highlight for me. But complacency would also lead to standstill. My goal is therefore to establish myself further in the elite area and to develop further from game to game.

**What do you think are the best aspects of football - and where would you like to see some change?**

Football has a lot of power, moves the masses, and brings together all kinds of social classes. And, it is universal. Football is played all over the world, from Bhutan and Gibraltar to Trinidad and Tobago. Football is supposed to unite people, so the issue of respect in football is more important today than ever. I would like to see respect on and off the pitch getting the attention it deserves. Emotion in football is fantastic, but certain limits must not be exceeded. Professional football has a clear role model function. We need mutual respect between referees and players on the pitch, in the stands, and anywhere where football is played. This is where everyone involved needs to play their part.

# MEDIORNET DRIVES SIGNAL TRANSPORT AND OTT STREAMING

## FOR UNIQUE DRIVE-UP WORSHIP SERVICES

Cherry Hills Community Church, a large house of worship based in suburban Denver, has come up with a unique way to maintain social distancing: a drive-up ministry powered by Riedel's MediorNet real-time signal transport, processing, and routing technology. The church presents its Sunday services to worshippers gathered in the parking lot in their cars — with MediorNet providing reliable and expandable transport of all video, audio, and intercom signals between the control room and the outdoor stage. The gatherings are also streamed to various social networks and OTT channels.

The Cherry Hills Community Church technical staff needed a solution to deliver interconnectivity between the building and a trailer set up in the parking lot that served as the front of house mix position for the drive-up services. Riedel partner Touring Video Inc., based in Burbank, California, was able to deploy the technology required for the project.

The modular Riedel network consists of two MediorNet MicroN high-density media distribution network devices. Acting as an extension of the church's permanent IT network, the MicroNs also provide an Ethernet tunnel between the control room in the building's main auditorium and the outdoor stage. The MediorNet network carries the video program feed from the control room to LED screens in the parking lot and carries three camera feeds from the outside back into the building. In addition, the MicroNs supply a confidence monitor feed to display lyrics for church vocalists on stage. The MicroN unit in the control room is patched directly into the church's video router and interfaced with an existing network switch and a Riedel Artist-128 intercom mainframe. The connection with the Artist mainframe also facilitated delivery of intercom feeds from Riedel's Bolero wireless intercom.

"As longtime Artist users for our intercoms, we're well familiar with the flexibility and reliability of Riedel systems. That flexibility carries over to the MicroNs, which allow us to add signal paths at the last minute as needed," said Chris Thomas, Technical Arts Director, Cherry Hills Community Church. "And we've been completely amazed with MediorNet fiber multiplexing capabilities, which have allowed us to transport all of our signals over a single fiber. The Riedel support team was incredibly helpful, and they were able to show us via remote conferencing just how fast and easy it is to set up MediorNet with its simple drag-and-drop configuration."

A parking lot ministry presents technical hurdles that most houses of worship aren't equipped to tackle, but Cherry Hills Church rose to the occasion. The congregation loved being able to gather for worship, and the service gave them an important connection — even though they were in their cars. This unique deployment is another reminder of how Riedel's products and technologies can help any organization face a challenging situation.



# WELCOME TO THE PUPPET SHOW!



Japan's National Bunraku Theatre Relies on MediorNet for All-New Digital Video Operation

■ One of six national theatres in Japan, the National Bunraku Theatre is the country's headquarters for "Ningyo Joruri Bunraku" – a traditional form of puppet theatre that emerged in Osaka in the end of 16th century. In addition to bunraku, the theatre also stages performances of buyō and other traditional arts as well as Japanese music concerts and stage plays across two performance halls.

The National Bunraku Theatre recently completed an extensive upgrade to all-digital video operations and a brand-new industrial television (ITV) system, with Riedel's MediorNet carrying all video and audio signals. As Riedel's first theatre install in Japan, the deployment is a showpiece example of the power, flexibility and reliability of MediorNet technology for real-time signal transport.

The theatre's MediorNet installation includes three MicroN high-density media distribution network devices and 15 SmartPanel app-driven user interfaces. The MediorNet devices enable agile routing of audio and video signals from 8 cameras to various monitors in the control room, the lobby, and the two performance stages. The SmartPanels have been configured with the Riedel MediorNet Control App, which enables the technical and backstage staff to change video sources for each monitor with less latency.

"Distribution delay is the biggest challenge when considering solutions for a digital ITV system. We chose MediorNet because it has infinitely less delay in video distribution and provides reliable, safe, and accurate operation during a live performance," said Mr. Hideki Takaoka of the National Bunraku Theatre. "We have been satisfied with MediorNet's low delay and fast response that makes switching sources so seamless the naked eye can't recognize them. In addition, the system is easy to understand and manage, with settings that can be changed using the dedicated application. We look forward to even more features in future versions of MediorNet."

# READY, SET, GO! ARTIST AND BOLERO IMPRESS AT INTERNATIONAL SWIMMING LEAGUE



■ When the all-new International Swimming League (ISL) launched its first-ever season in 2019, Riedel's Artist and Bolero were along for the ride. Artist and Bolero are at the core of a comprehensive event communications solution for the ISL, which has brought swimming to the world of professional sports.

Throughout 2019, the ISL conducted seven short-course swimming matches in cities around the world, with male and female swimmers competing in teams rather than individually. With Artist and Bolero enabling clear and highly reliable crew communications, the season culminated in December's Grand Final at the Mandalay Bay Resort and Casino in Las Vegas.

Dodd Technologies Inc. (DTI), a full-service event and entertainment production company, produced the four U.S.-based meets for broadcast and streaming outlets. For each of these events, the DTI production team relied on an Artist-32 mainframe interfaced with desktop and rack-mounted Riedel 2300-Series SmartPanels, which routed intercom signals seamlessly to 10 Bolero intercom belt packs. At Mandalay Bay, only two Bolero antennas were needed to provide flawless and crystal-clear communications to the entire arena and surrounding rooms.

"Each ISL event is an extremely high-paced production that demands fast and foolproof crew communications. We're also under an intense time crunch, and we can't waste minutes troubleshooting or worrying about coverage," said Caleb Cassler, Audio Engineer, DTI. "The flexibility of the Artist ecosystem, combined with the easy setup and

ironclad reliability of the Bolero wireless intercom, are exactly what our production team members need to keep the show running smoothly."

The DTI team was able to allocate a Bolero channel for each of six departments — audio, video, show lighting, LED walls, truck engineering, and truck director — and make changes easily and on the fly using the Riedel Director configuration software.

The Artist-Bolero comms ecosystem is the perfect choice for this brand-new sports entity with plenty of room to grow. Bolero lets the production expand or shrink to any size depending on the show, working in stand-alone configuration or as part of an integrated Artist system. Likewise, Artist adapts easily to changes in the production and scales to meet increasing show demands, and it's agile enough to handle new formats as content creators look to engage new audiences in different ways.

## IMPRINT

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THE CURTAIN RISES FOR ARTIST AND BOLERO AT

# DE MUNT THEATER

■ Located in the heart of Brussels, the **Théâtre Royal de la Monnaie**, also known as the **De Munt Theatre**, is one of the most prestigious opera houses in the world and the largest in Belgium. Over its 300-year history, the theater has survived a revolution, a fire, and two world wars, as well as the normal passage of time and evolution of technology. And now, the theatre is looking to the future with a massive new communications infrastructure based on Riedel intercom equipment.

The De Munt had several key requirements for a modern communications system that could provide seamless, high-quality coverage of the complete facility. Because of the theatre's historic designation, the installation would have to be as unobtrusive as possible with a minimum of antennas. Another critical requirement was an integrated intercom solution that would work over the De Munt's IP network and also in standalone mode for performances outside the theater, with wireless support for PCs and mobile devices.

Riedel's Bolero exceeded the De Munt's expectations on every count. Consisting of the Artist digital matrix intercom, Bolero wireless intercom in both integrated and standalone modes, and SmartPanel multifunctional user interfaces, the Riedel solution delivers highly flexible, reliable, high-quality, and future-proof intercom operations. The new communications system spans two De Munt Theatre buildings and supports a staff of 180 crew members. An Artist-128 matrix intercom mainframe enables a seamless AES67 connection over the theater's IP network to 2300 SmartPanels, which enable agile routing and control of all intercom signals transported over the network. In addition, SmartPanel "virtual panel" apps enable up to 56 Mac, PC, Android, or iOS devices to communicate with the system.

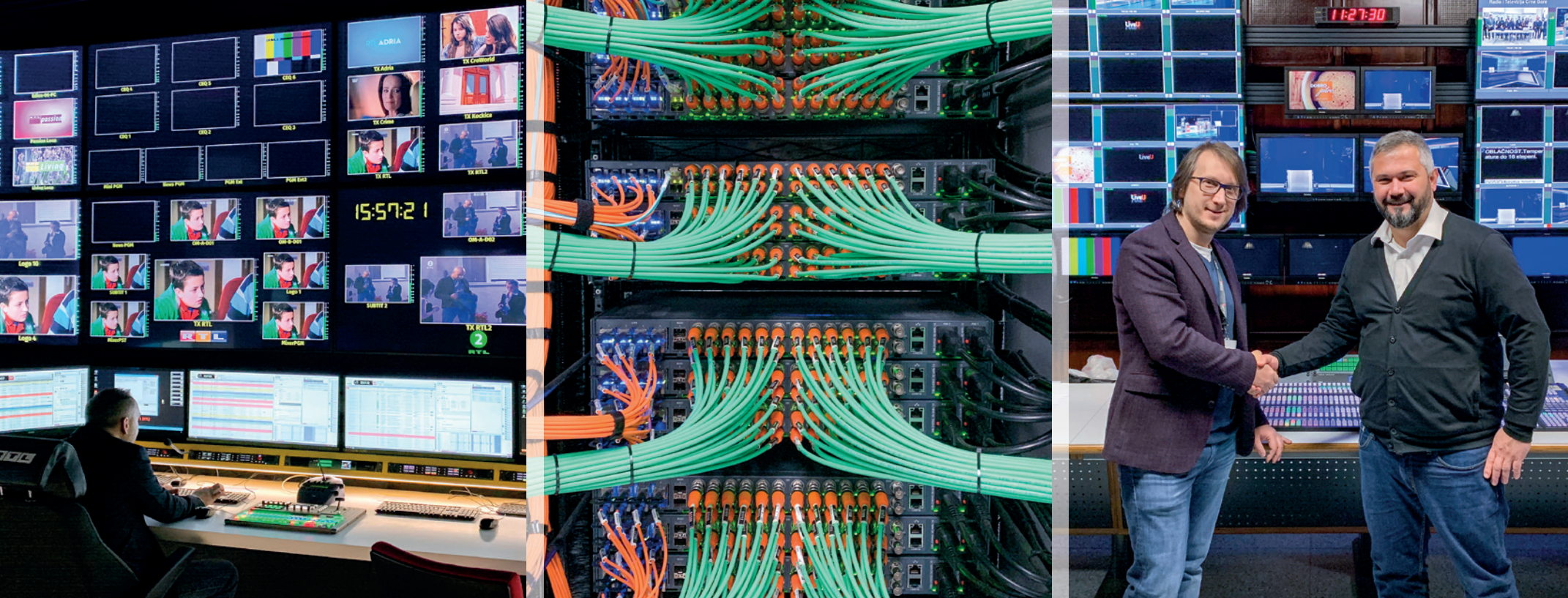
The Bolero wireless intercom system, consisting of 48 beltacks and 12 antennas, is also integrated with the Artist matrix via the AES67 cards. Seven of the antennas are installed permanently to provide full coverage for the entire facility, with

four additional antennas available for standalone use at outside performances. Outside broadcaster DB Video has also installed Riedel's Artist on board its OB van for seamless production communications during live streaming of the theater's events.

In the performance hall, the new intercom is a great improvement over the previous static system. With the new system, since the virtual panels can be viewed from offices or a laptop, tablet, or smartphone, users can program intercom configurations of any size and create subgroups as needed. Ambient noise during a performance is no longer a problem since the beltacks can be programmed to eliminate it. A large advantage in a performance setting, especially for music, is Bolero's extremely low latency – between 35 milliseconds and 38 milliseconds. Not only is Bolero extremely easy to use, its ability to operate in both integrated and standalone modes, plus native IP technology, gives the theatre greater flexibility than ever before.

The De Munt Theatre installation is a standout example of everything that is great about Bolero — seamless and crystal-clear communications in a large-scale and challenging environment, the flexibility to configure the intercom from any device, and the versatility to support any type of production, whether on-premises or at a remote location.





## RIEDEL MAKES INROADS IN EASTERN EUROPE WITH SHOWCASE INSTALLATIONS AT RTCG OF MONTENEGRO AND RTL CROATIA

■ Riedel is continuing to expand its market leadership in Eastern Europe with two new landmark installations: a comprehensive signal routing and crew communications solution at Radio and Television of Montenegro (RTCG), and an integrated and decentralized routing and comms backbone to support HD operations at RTL Croatia.

As the public service broadcaster of Montenegro, RTCG is the country's broadcast rights holder and host broadcaster for a broad range of national and international sporting events. RTCG has installed the MediorNet real-time network, Artist digital matrix intercom, and Bolero wireless intercom as part of a major studio upgrade at its broadcast centre in the capital city of Podgorica.

The decentralized design and production flexibility of MediorNet supports back-to-back broadcasts of many types of programs — with Artist and Bolero delivering integrated and seamless communications from main production rooms to dressing rooms. The Riedel network will provide seamless, reliable, and high-quality signal transport and communications for RTCG's UHD coverage of next year's summer games from Tokyo, Japan.

"As a proven solution that's well-established in the market, Riedel MediorNet was the perfect choice," said Dejan Vujović, Deputy General Manager for Technology at RTCG. "Thanks to our close collaboration with the Riedel Austria team and the systems integrators from BFE, installation of the Riedel equipment was so easy that it was almost plug-and-play. Not only will MediorNet give us newfound agility in production of live sports broadcasts, but it will help us make a smooth transition to IP operations moving forward."

Carrying both television and radio signals, the MediorNet infrastructure includes four MetroN core routers and 33 MicroN high-density media distribution network devices, 14 of which are configured using the MicroN MultiViewer App.

An Artist-128 digital matrix intercom mainframe supports seven Bolero wireless belt packs, with only four Bolero antennas supplying intercom signals to the entire facility. In addition, 50 RSP-2318 SmartPanels are distributed throughout the operation to enable agile routing and control of audio and video signals transported across the MediorNet network.

RTL Croatia is one of Croatia's largest broadcasters and a division of RTL Group, a Luxembourg-based digital media company with interests in 61 television and 30 radio stations in 10 countries. Working with Riedel's local distributor and consultant, AVC Zagreb, RTL Croatia has just finished a four-year project to upgrade its production facilities to deliver its eight channels in HD.

MediorNet and Artist form an integrated and decentralized signal routing and communications backbone for the new HD operation — including a multiview video wall that includes up to 70 PIP displays. In addition, the Riedel solution supports a control room for news programming that manages 20 incoming feeds, studio cameras, computer graphics, and news playout and includes a multiview video wall with 108 PIP displays.

For playout and production, the Riedel solution consists of three MetroN core routers and 36 MicroN media distribution and processing devices, 12 of which are configured using the MicroN MultiViewer App. Production is supported by 29 SmartPanels that enable agile routing and control of audio and video signals transported across the MediorNet network. For intercom functions, an Artist-1024 node

delivers AES67-compliant communications, with intercom capabilities supported by an additional 23 SmartPanels.

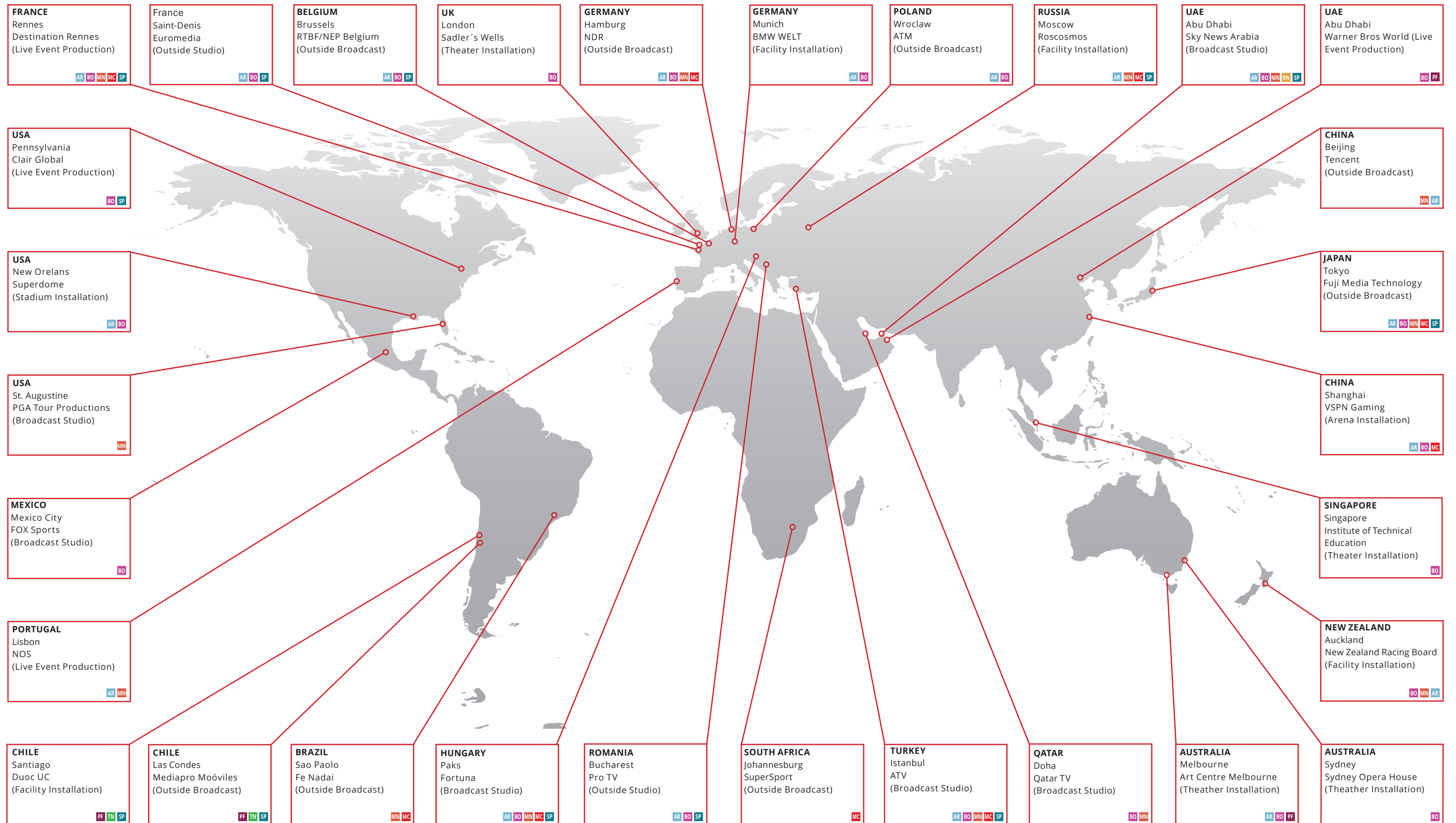
"When RTL Croatia presented their requirements for a comprehensive networking and routing solution for the studio upgrade, we had no hesitation in recommending Riedel Communications," said Juraj Novina, Sales Manager at AVC Zagreb. "We were completely confident that MediorNet could provide the seamless, reliable, and high-quality signal transport and communications needed for RTL's new HD service. Plus, MediorNet also gives RTL the guarantee of a smooth transition to IP in the future, with the proven track record of a market-tested solution."

Zoran Jankovic, Chief Technical Officer of RTL Croatia, added, "We needed a signal routing solution that could meet our rather complex requirements — namely, decentralization, a high degree of flexibility, and the ability to transport and route signals over fiber. We could see right away that MediorNet would not only meet, but exceed, those requirements. Plus, MediorNet and Artist were incredibly fast and easy to install."



# Recent Installations (selected)

**MEDIORNET** MN **BOLERO** BO  
**MICRON** MC **TANGO** TN  
**ARTIST** AR **ROCKNET** RN  
**SMARTPANEL** SP **PERFORMER** PF





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