

# Interstellar Technologies

Case study





## Breaking the Technology Barrier:

Interstellar Technologies Improves Space Launch Operations  
With Riedel's Intercom and Video Transmission Systems





# Challenge

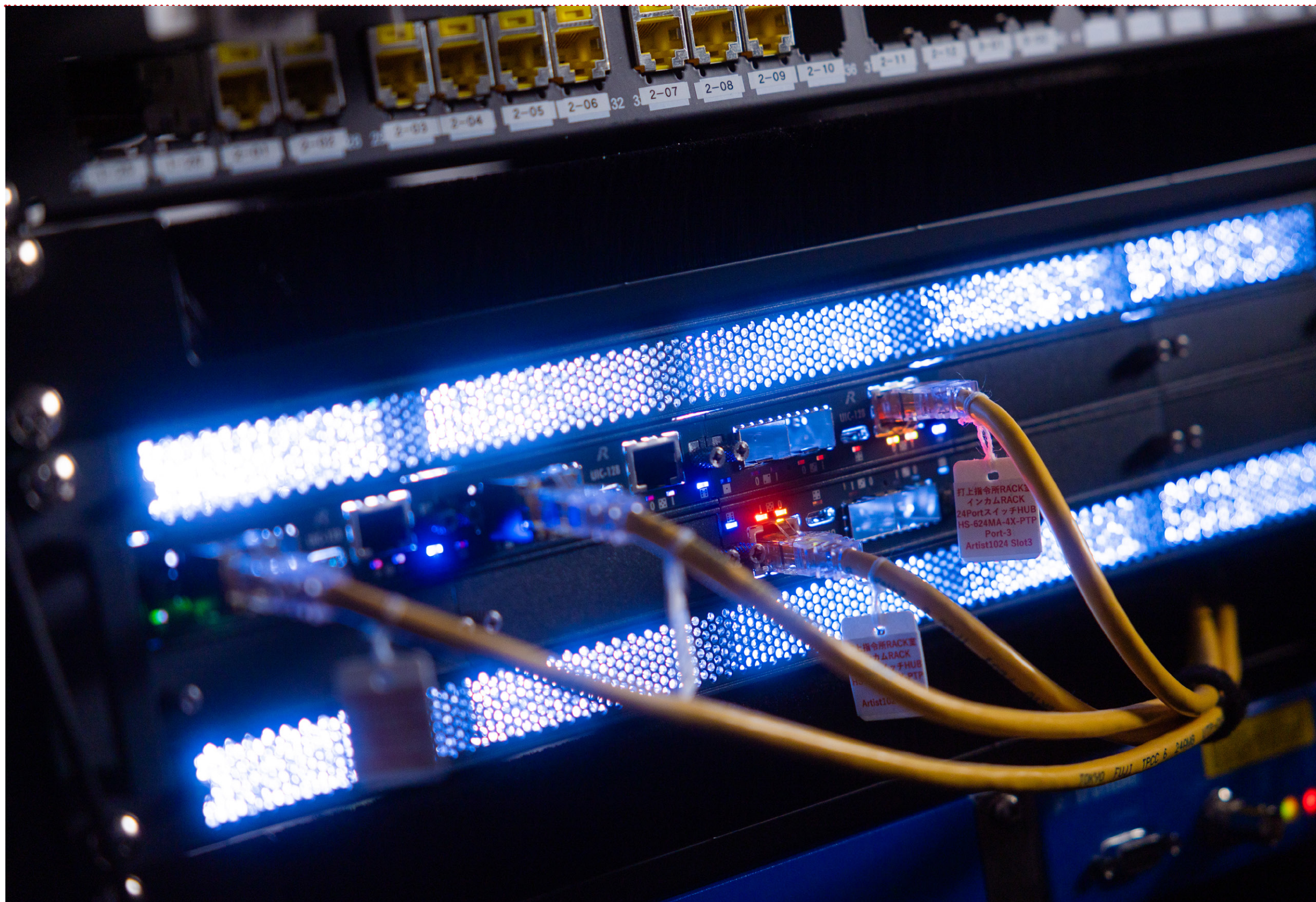
Based in Taiki, Hokkaido, Interstellar Technologies is a visionary start-up at the forefront of developing affordable and efficient space transportation services that are accessible to everyone. With operations spread across its Tokyo and Fukushima offices, as well as the Muroran Institute of Technology, Interstellar has successfully achieved three space missions with its sub-orbital launch vehicle MOMO. Currently, the company is focused on the development of its next-generation small satellite launch vehicle ZERO, marking a significant step forward in its ambitious journey.



Interstellar's operations are supported by two primary facilities: a command center responsible for the oversight and management of rocket launches, and a combustion test and launch site dedicated to launching rockets and testing engine combustion. These critical sites are situated 8km apart and are interconnected by 10GbE fiber lines. The communication line between the two sites is essential, as the monitoring and launching of commercial rockets must be carried out with constant and accurate communication.

However, the reliance on digital simple radio systems for inter-site communication had led to delays, posing a significant and dangerous challenge as the launch of ZERO approached. Additionally, Interstellar recognized it needed a more efficient IP video system capable of reducing delays and enhancing image quality for the combustion test and launch site's two 4K cameras.





The quest for a robust communication and video transmission solution led Kazunori Makino, TT&C Group Leader at Interstellar's R&D Department, to Riedel's cutting-edge technology, renowned for its use in the high-stakes environment of Formula One racing. In collaboration with Otaritec Corporation — Riedel's sales partner in Japan — and Riedel Communications Japan, a comprehensive proposal was developed to address Interstellar's needs. Now, the setup facilitates communication among staff via Riedel intercoms, as well as the transmission of high-quality images from the 4K cameras through MediorNet IP.

The selection of Riedel's intercoms for the communication system was driven by their user-friendly design, operational ease, and compliance with the latest video standards. The command center was outfitted with a single Artist-1024 digital matrix intercom, eight RSP-1216HL Hybrid Lever Key Smart-Panels and one Bolero antenna to ensure clear and reliable communication. Meanwhile, the combustion test and launch areas were equipped with two Bolero antennas and six belt packs, providing staff with the mobility and ease of use necessary for efficient operations.

For video transmission, the installation of twelve MediorNet IP FusioN 6B devices — utilizing the JPEG-XS video coding standard — enabled the transmission of high-quality, low-latency video between sites, ensuring that the command center could maintain a real-time visual connection with the combustion test and launch sites.

» „The successful integration of our system within Interstellar's operations is a testament to our commitment to innovation and excellence. We are thrilled to see our technology play a crucial role in advancing the next frontier of space transportation“

Vincent Lambert, Sales Director Key Accounts Asia, Riedel Communications.





# Result

*The implementation of Riedel's technology has had a tangible impact on Interstellar's launch operations. The easy-to-use high-fidelity communication system has virtually eliminated the delays that once plagued the team, allowing for more precise coordination and decision-making during critical launch sequences. The enhanced video quality has provided engineers with unprecedented clarity, enabling them to monitor and analyze rocket performance in real-time with greater accuracy.*

*The scalability of the system has also been a significant advantage. As Interstellar continues to grow and take on more ambitious projects, the Riedel solution can be expanded to accommodate additional staff and equipment without compromising performance. This flexibility ensures that Interstellar's communication infrastructure will not be a limiting factor in their pursuit of making space accessible.*

 [Case Study Video](#)



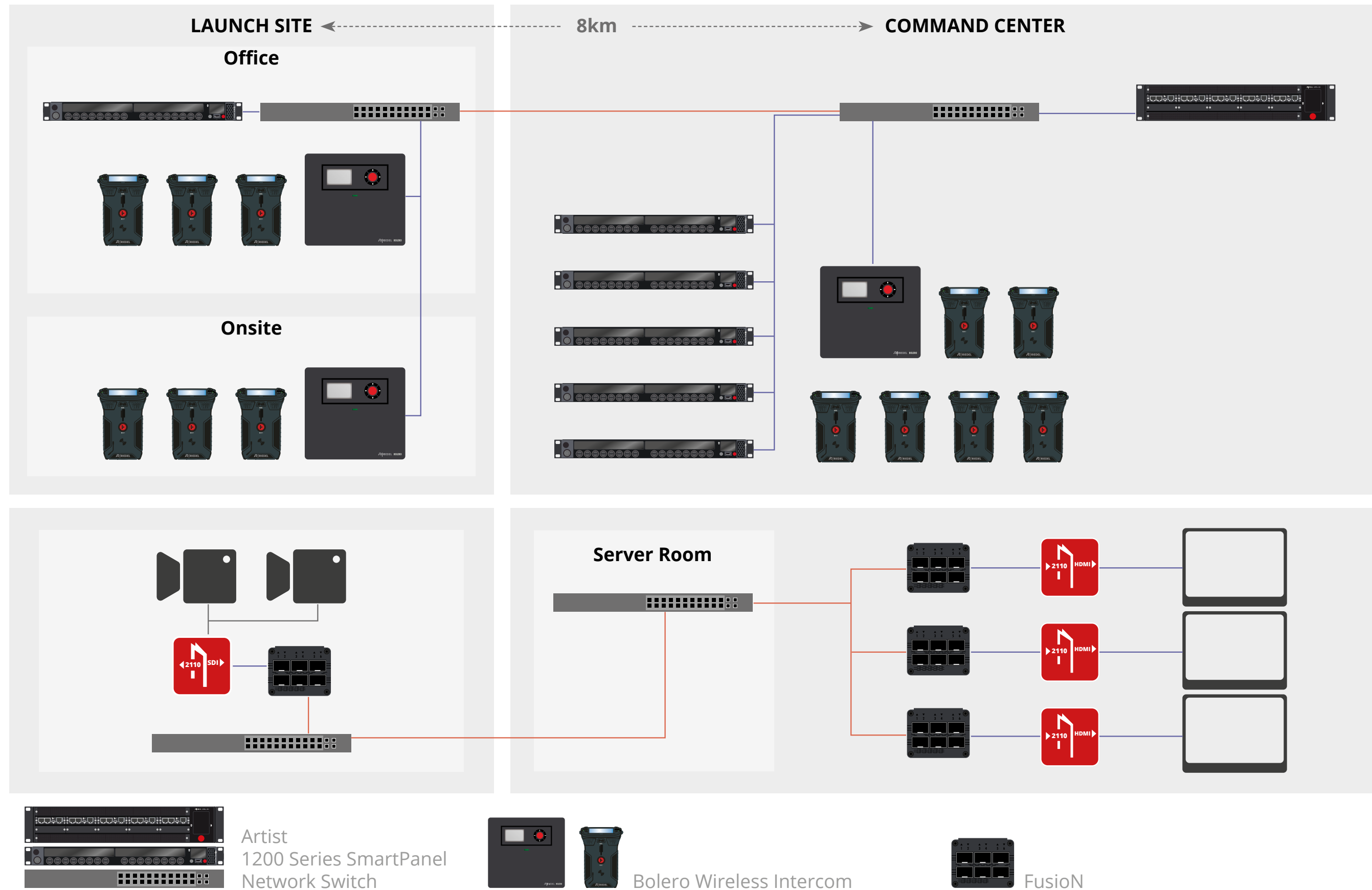
**» Working with a well-respected brand like Riedel reflects our commitment to the highest quality standards in the technical field. We will continue to expand the system in preparation for the first launch of ZERO, which is still under development. For this launch, the Riedel solution will be used not only by Interstellar staff but also by affiliated satellite companies. We feel that the intuitive Riedel solution will provide a high level of launch operations for our company.**

Kazunori Makino. TT&C Groupm Leader, Interstellar Technologies.



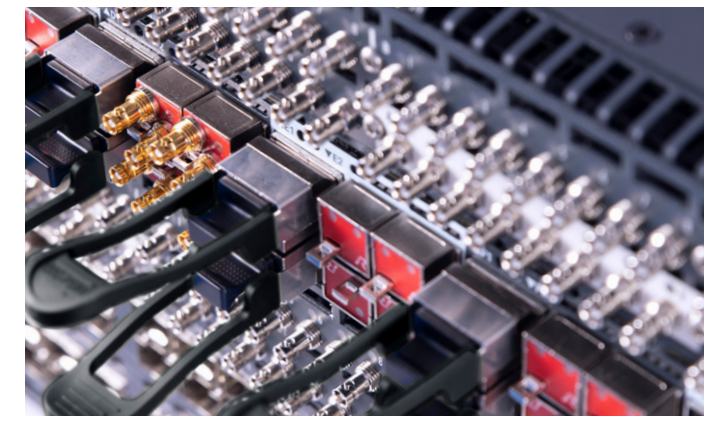


# Product Lines



## MEDIORNET - THE REAL-TIME MEDIA NETWORK

- Unified network infrastructure for broadcast and entertainment
- Integration of all video, audio, data and communication signals
- Distributed routing, processing and multiviewing capabilities for SDI/TDM, hybrid or IP environments
- Intuitive real-time configuration



## ARTIST - THE DIGITAL MATRIX INTERCOM

- Distributed masterless system architecture for reduced wiring and installation costs
- Up to 1,024 x 1,024 non-blocking ports per system
- Seamless integration of VoIP SIP PABX and mobile HF radio (conventional and TETRA)
- Easy and intuitive programming for reduced training and service
- Future-proof – scalable and expandable



## BOLERO - THE WIRELESS INTERCOM

- Up to 10 beltpacks per antenna; 100 antenna, 250 beltpack system capacity
- High-clarity voice codec, ADR technology for multipath mitigation
- 6-channel beltpack plus dedicated REPLY button
- Decentralized AES67 IP networked antennas
- Seamless integration into Riedel's Artist intercom matrix
- Two standalone network modes: Standalone Link & Standalone 2110 (AES67)



## SMARTPANEL - THE MULTIFUNCTIONAL USER INTERFACE

- Multiple full-color multitouch displays, innovative hybrid-lever keys
- Easy adaptability to various workflows
- Ability to leverage apps for multifunctionality: Intercom App, Control Panel App, Audio Monitoring App



### Product Spotlight

**MEDIORNET FUSION** 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 or encoders/decoders. With FusioN 3, FusioN 3 Fanless and FusioN 6, there are three miniature frames available, each with a flexible set of inputs and outputs and reprogrammable with different software functions. 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.

- Quiet and compact, can be installed on the back of HDMI monitors
- Versatile software-defined hardware, can act as a gateway, JPEG-XS encoder/decoder or a video splitter
- Flexible inputs and outputs via a selection of SFP modules
- Ultra-dense I/O capacity of up to 8 signals
- IP enable any source, any essence, anywhere
- Ease of integration using open API



