



LiveU Recognized for

2021

New Product Innovation

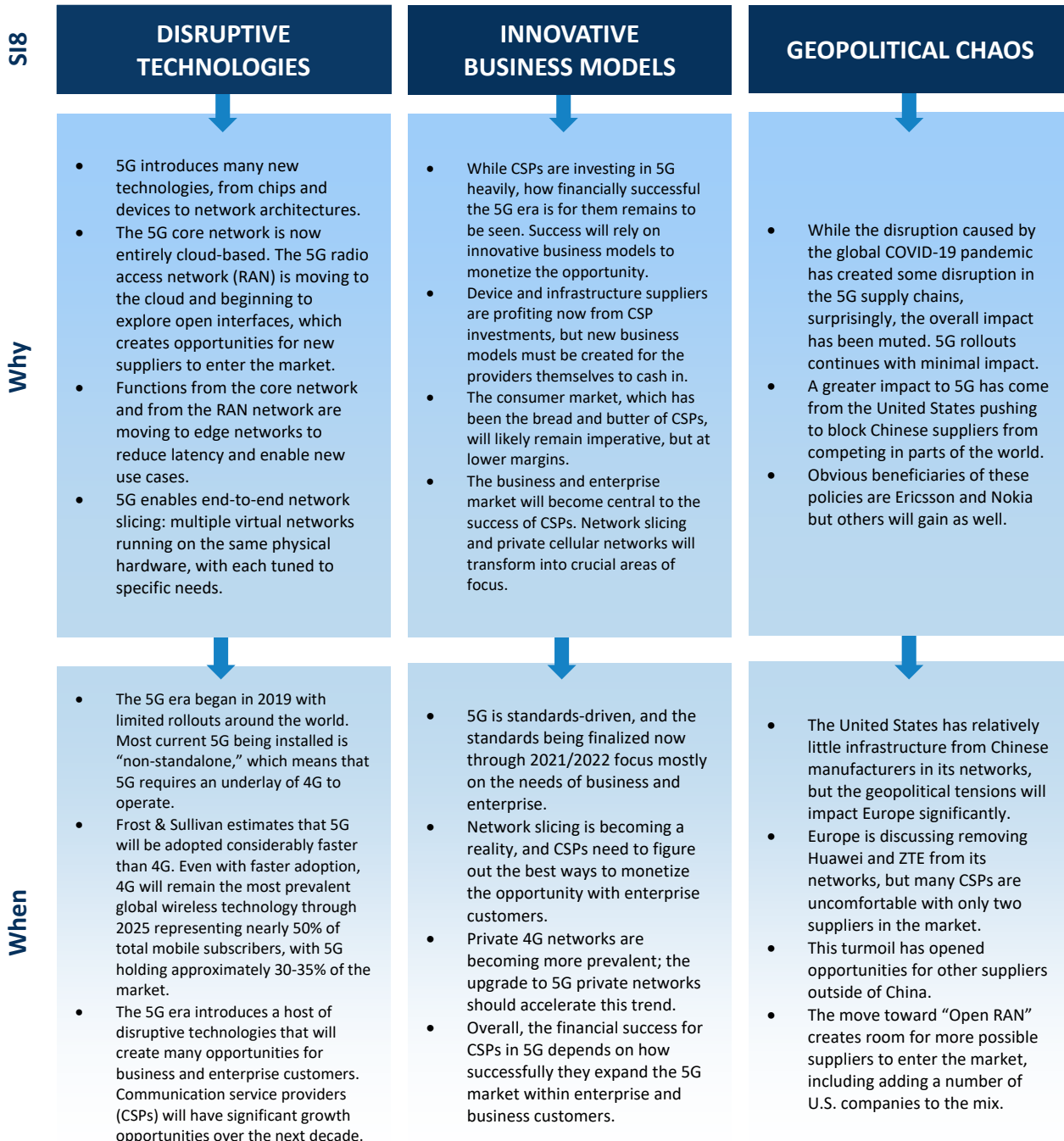
North American

5G Network Applications Industry

Excellence in Best Practices

Strategic Imperatives

Frost & Sullivan identifies three key strategic imperatives that impact the 5G infrastructure industry: disruptive technologies, innovative business models, and geopolitical chaos. Every company that is competing in the 5G infrastructure space is obligated to address these imperatives proactively; failing to do so will almost certainly lead to stagnation or decline. Successful companies overcome the challenges posed by these imperatives and leverage them to drive innovation and growth. Frost & Sullivan’s recognition of LiveU is a reflection of how well it is performing against the backdrop of these imperatives.



Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. LiveU excels in many of the criteria in the 5G Network Applications space.

AWARD CRITERIA	
<i>New Product Attributes</i>	<i>Customer Impact</i>
Match to Needs	Price/Performance Value
Reliability	Customer Purchase Experience
Quality	Customer Ownership Experience
Positioning	Customer Service Experience
Design	Brand Equity

New Horizons and Novel Challenges

One common misconception is that fifth-generation (5G) network evolution is only about faster data speeds. Increased speeds may be one of the first visible manifestations, but the goals for 5G are much loftier. In 2015, the 3rd Generation Partnership Project (3GPP) began to develop use cases, and to identify the features and functionality 5G would need to be able to deliver them. The result was more than 70 use cases that were categorized by performance attributes. Consider some of the advantages 5G will have over fourth-generation (4G) networks: the ability to handle significantly more data at speeds up to 10 times faster than current standard rates, enough bandwidth to connect billions of people and trillions of "things," greater than 99% service reliability, and ultra-low latency communications. Thus, 5G has the potential to radically change how we think about connectivity and trigger an array of growth opportunities across industries.

Presently, the highest quality, most reliable, and most secure remote connectivity options for high bandwidth applications depend on wired networks. For high-definition video (such as 4K ultra-high-definition), producers generally rely on optical network infrastructures and may leverage satellite transmission, while 4G networks seem too unreliable. Some service providers may be retrofitting multi-input portable encoder production units to now include 5G capabilities. Still, it involves adding a different modem and modules that affect the latency, power driver, and overall processing of the unit.

Moreover, video producers found themselves hard hit by the disruptions of the COVID-19 pandemic. Physical distancing measures limited personnel forcing new remote production methods; broadcasters could no longer send a van and several camera people to an event. Content producers and staff of all sorts found themselves forced into new roles to juggle how to set up cameras, production units, and transmission solutions from home and operate remotely. Most critically, with slashed budgets, sports and big live events felt the scarcity of cameras, operators, and production teams most acutely while trying to reproduce the same experience for viewers.

Many broadcasters feel the squeeze of tightened budgets while still being expected to deliver a product of the same quality and reliability as before the pandemic. Broadcasters are seeing that they will have to adapt to new remote production techniques for the foreseeable future. They need consolidated solutions that are portable and reliable while managing multiple inputs, and particularly that will help them create and deliver with flexible connectivity.

Built for 5G from the Ground Up

In the midst of an unpredictable global economic environment (in June 2020) LiveU officially launched its LU800 unit, a production-level field unit with advanced video and audio capabilities and purpose-built for mission-critical transmission in native 5G. LiveU recognized that large multi-camera events, particularly sports, would need a remote production solution that harnessed the benefits of 5G. Rather than simply adding on 5G capabilities or refreshing a previous generation product, LiveU designed the LU800 unit from scratch around 5G connectivity. Initially, LiveU imagined that live sports events would be the primary growth engine, but the unit indispensably bridges the gaps created by the pandemic

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***- Nicholas J. Baugh, Best Practices
Research Analyst***

induced disruptions to video production. Notably, and beyond any other service provider, LiveU worked hand in hand with leading 5G module developers to create the supporting components for the LU800. Leveraging modules from Sierra Wireless, Fibocom, Telit, and Quectel, the LU800 includes up to eight 5G and 4G internal dual SIM modems, as well as high-efficiency internal antennas, and provides support across the band of applicable 5G frequencies for exemplary performance. The company has also customized its LiveU Reliable Transport (LRT™) protocol as a fully optimized transmission on 5G.

Impressively, LiveU is working to unlock 5G capabilities with the LU800 now and to ensure that its production units can adapt to network evolution and harness future spectrum and protocol advancements.

The LU800 over 5G cellular is matching performance compared to satellite connections. LiveU has worked closely with telecommunications operators globally to provide connectivity that delivers exceptional performance, working with multi-camera configurations and achieving up to 350-millisecond delays. Operating natively on 5G, the unit harnesses the power of network slicing to get dedicated bandwidth. Regardless of the cellular activity of fans or crowds, dedicated bandwidth ensures low latency and high bandwidth for the broadcaster's particular application. Indeed, the reliability of tailored 5G coverage makes producing events with LU800 as reliable as fiber and satellite connections, and numerous global tier-one sports leagues are already using the units for innovative coverage.

Built to Leverage 5G Speed in Multi-Camera Live Events



Source: LiveU

A Complete Production Unit

The LU800 leverages the capabilities of 5G, as well as portability and flexibility features that make it a full production unit that delivers holistic value and the complete ability to execute any type of production, on-site or remote. More than the sum of its parts, the LU800 offers an all-in-one platform to broadcasters who need the ability to produce high quality (up to 4Kp60 10-bit high-dynamic-range imaging) multi-camera productions on a tightened budget. Using LiveU's internet protocol (IP) bonding expertise, the LU800 bonds up to 14 connections (cellular, local area network, and WiFi) and utilizes high-efficiency internal antennas. Additionally, users can aim for cost savings and maintain redundancy using least-cost bonding to prioritize certain connections. Highly portable and flexible, the single unit includes integrated remote production tools, sending feeds to a physical remote or cloud-based center. The LU800 PRO4 supports four frame-synced feeds, at high resolution. Users can control IP-based

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equipment such as pan tilt zoom cameras, camera control units, and intercoms through the IP pipe. Further, the unit includes tally light indication, video return capabilities, and a two-way audio connection between field stations and the director.

Many of the features embedded in the LU800 arise from LiveU's customer-focused development process. More than a technology refresh, the LU800 is a transformation. Originally, the company aimed to enable remote sports producers with a complete

range of capabilities and prepare for 5G deployments. The company brought some of its biggest customers together for multiple forums to gather feedback and uncover what users wish the market would provide. LiveU took this input and built the LU800 from the ground up to cover as many requests as possible in a single product.

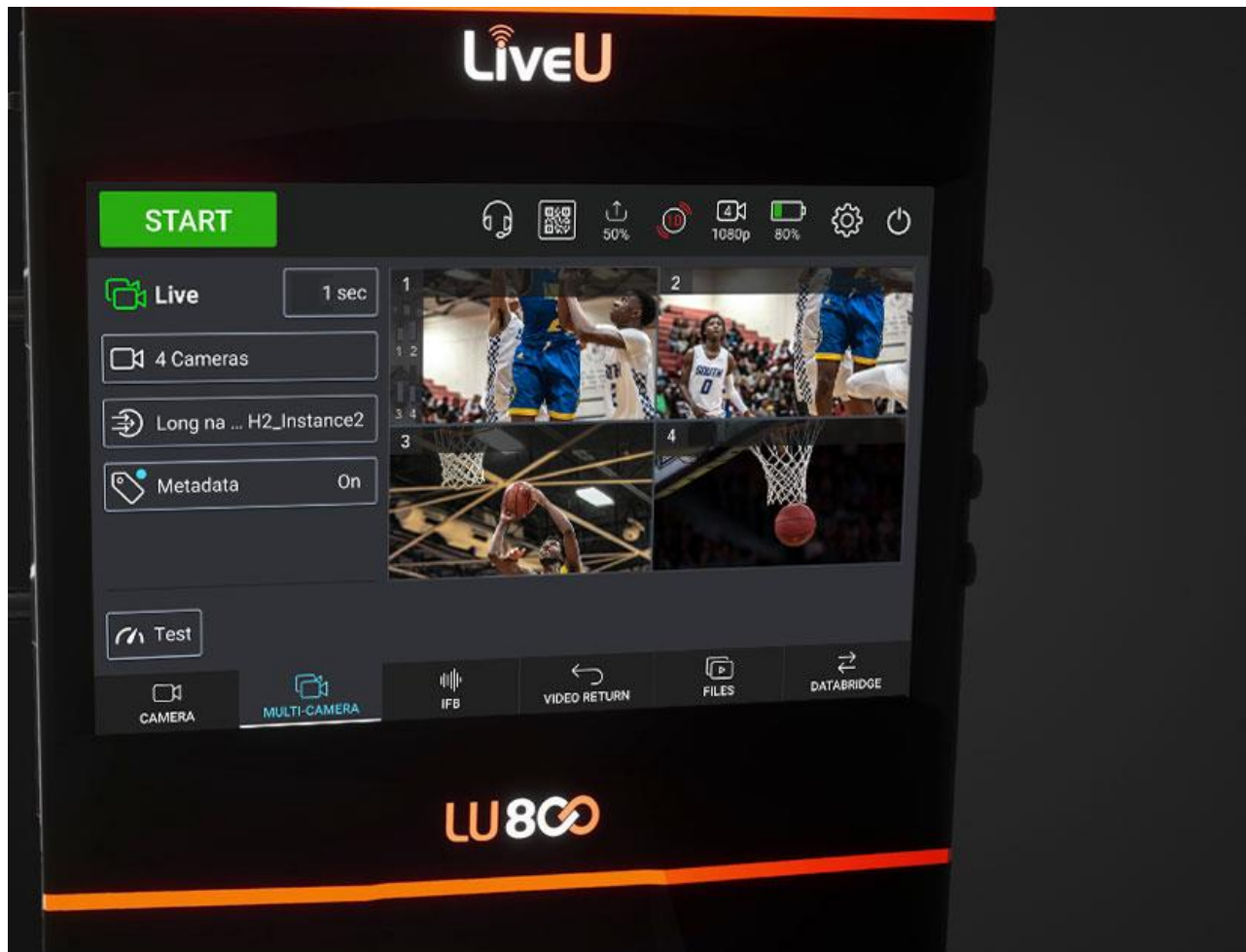
Comprehensive Wrap-around Package, Live-as-a-Service

Beyond only the production unit, LiveU adds wrap-around services to form a comprehensive solution so that broadcasters need only focus on producing the events with Live-as-a-Service (LaaS) covering everything else. Production requires taking the feed from the field as well as myriad add-ons, e.g., tally lighting, video return, audio return, and data transmission. With the LU800, LiveU decided to make a more cost-effective offering for a comprehensive package, rather than a quote for each line of service, at a single monthly rate through its LaaS. The company has already made arrangements for data transmission with global cellular carriers (for 5G and 4G). Users manage the LU800's multi-camera production streams through a unified cloud-based management platform called LiveU Central. This works as part of an end-to-end solution with the LiveU Matrix IP content management and distribution platform for content sharing. Additionally, LaaS includes 24/7 support, platinum-level benefits when renting equipment worldwide, and care through the network operations center. In a single rate, the LaaS and LU800 form a complete solution that removes much of the extra headache and complexity in a production team's burden.

Pandemic Adaptation Demonstrates Underlying Strength of the Offering

Broadcasters, facing massive disruptions to production processes, have turned to LiveU and the LU800 in growing numbers to adapt to the new conditions. Designing the LU800 unit to serve the purposes of complex, remote productions, LiveU has seen the offering provide the ideal solution for COVID-19 impacted events. The company reports that while the last five years have seen double-digit growth each year in the number of feeds, 2020 saw a significant increase in feeds and sessions. Global tier one broadcasters in sports and news, and an increasingly diverse customer base, are adopting the LU800 unit and planning for the 5G future. LU800 solutions enable traditional networks, online content producers, remote medicine and surgical settings, small videographers, corporate, and government organizations to produce live feeds and high-quality productions for audiences and customer as an adaptation to pandemic restrictions. Use cases are expanding almost daily as more verticals and applications realize the potential to leverage 5G/4G connectivity.

Highly Reliable and Remote Enabling Connectivity



Source: LiveU

Unmatched Experience and *Customer Service*

Drawing from an unmatched depth of experience in the field, LiveU demonstrates its impressive expertise and dedication to assisting and supporting clients to achieve success. LiveU is a pioneer in developing cellular bonding solutions, and its 15 years of research and development in algorithms and packet optimization are unmatched in the market. The company's bedrock expertise, and patents, in managing video signals over cellular networks and experience collaborating with cellular carriers across the globe gives it a higher level of understanding and competitive advantage that cannot be replicated or understated. Further, much of the LiveU team, including leadership, has been with the company for more than a decade; this institutional and market knowledge fosters its ability to work with cellular networks and develop inclusive solutions.

Moreover, LiveU exhibits an impressive customer service tradition and culture within the company. More than just developing technology, the company recognizes the value of going to great lengths to assist customers. When customers encounter an issue, they need a resolution as soon as possible to continue production, and LiveU has invested significantly in recent years into regional support centers to remain close and responsive. These regional centers will deliver support in the local language and have the knowledge to troubleshoot issues, remotely log in to systems remotely, and even dispatch a replacement unit when necessary. LiveU understands that for live news and sports events, there is no waiting until tomorrow. Experience supporting production on the massive events, such as the Olympics games, has taught LiveU how to run a well-oiled machine servicing customers, i.e., partnering with local production companies and telcos and setting up an ad-hoc WiFi network and cell towers for customers.

Conclusion

Fifth-generation (5G) networks promise to revolutionize video delivery and production, yet harnessing that potential requires adding layers of complexity (and often the integration of "point solutions") to already complicated production setups. Simultaneously, the COVID-19 pandemic has further highlighted the importance of solutions that enable reliable remote production for broadcasters and content producers working on live events and sports. LiveU's innovative LU800 production-level field unit was developed leveraging the company's unmatched expertise in cellular bonding. The solution is designed to leverage 5G transport natively for maximum reliability and the highest-quality video performance. A feature-rich unit, including remote production tools for portability and flexibility, the LU800 services end-to-end production in a single unit with significant cost savings. With LiveU's wrap around Live-as-a-Service package addressing all add-on details and data connectivity requirements, broadcasters need only worry about a compelling and reliable event experience.

With its pioneering 5G production unit, strong history of innovation, and dedication to enabling a diverse range of broadcasters and content producers, LiveU earns Frost & Sullivan's 2021 North America New Product Innovation Award in the 5G network applications space.

What You Need to Know about the New Product Innovation Recognition

Frost & Sullivan's New Product Innovation Award recognizes the company that offers a new product or solution that uniquely addresses key customer challenges.

Best Practices Award Analysis

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

New Product Attributes

Match to Needs: Customer needs directly influence and inspire product design and positioning

Reliability: Product consistently meets or exceeds customer performance expectations

Quality: Product offers best-in-class quality with a full complement of features and functionality

Positioning: Product serves a unique, unmet need that competitors cannot easily replicate

Design: Product features an innovative design that enhances both visual appeal and ease of use

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

About Frost & Sullivan

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Frost & Sullivan’s proprietary model to systematically create on-going growth opportunities and strategies for our clients is fuelled by the Innovation Generator™. [Learn more.](#)

Key Impacts:

- **Growth Pipeline:** Continuous flow of Growth opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



The Innovation Generator™

Our six analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

