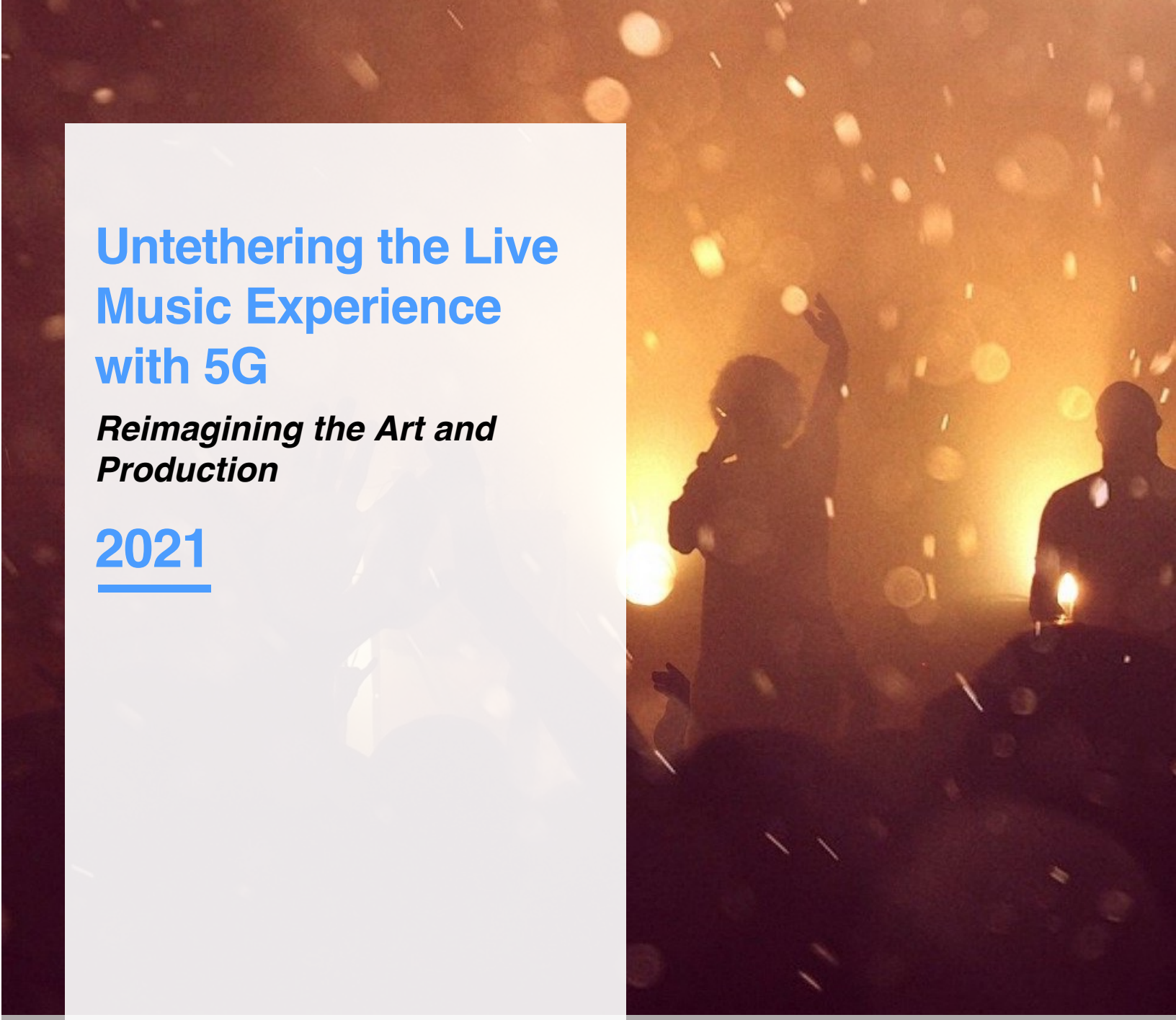

Untethering the Live Music Experience with 5G

Reimagining the Art and Production

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Live music is not just about music. It is a powerful human and social experience shaped by sights, sounds and the emotions evoked by the art. It's also about the energy of the crowd and the uniqueness of a live performance. These are the things that make live music so special and such an integral part of our lives and culture.

Unfortunately, the coronavirus pandemic has made it difficult for us to experience live music as occupancy restrictions and health concerns among would-be concert goers have dramatically limited the congregation of large groups at venues. Nonetheless, it is a certainty that stadiums and arenas will be filled once again in what we hope is the near future. But in the interim, the pressure is on venue owners, operators, artists and music labels to bring live music and events back in some form.

To date, dreams of new live music experiences have been largely suppressed by the state of technology and the state of regulations. Thankfully, there is no shortage of available and emerging technologies that can expand the frontier of innovation and creativity in live music now and in the post-pandemic era. One of these technologies is 5G.

Despite the hype, 5G is a tremendously exciting technology that will change the way we think of connectivity, computing and how we architect systems. Over the next decade, it will bring about new wireless connectivity capabilities that can unshackle the live music industry from the legacy limitations and assumptions that have stifled wireless innovation and hamstrung artistic creativity.

Live Music's Past and Present of Stifled Wireless Innovation

Think about how much has changed since James Brown first hit the stage tethered to a wired mic and dependent on a floor monitor system if one was available. Sure, he was amazing regardless, but imagine a James Brown in his early prime with the mobile freedom of a wireless mic and in-ear monitor set. No mic stand. No cord to trip over, limit movement or risk injury. Today, artists such as Beyoncé, Lady Gaga, BTS and countless others continue to advance the art of performance on the stage unencumbered by wired connections.

While wireless technologies have had a long legacy in the live music industry, the stage remains largely a wired environment. We have not seen wireless impact live music beyond the decades-old microphone, instrument jack and in-ear monitors. Indeed, it seems that the industry has hit a wall with wireless technologies and industry innovation for quite some time.

Historically, wireless devices for live music have operated in shared television broadcast spectrum. In order to rein in interference, the number of channels have been limited thus restricting the number of devices that can be used in a venue or on stage. It is not uncommon for yesterday's wireless systems to suffer from limited range, distortion and dubious reliability.

To make matters even more challenging, the FCC recently banned all wireless mics from using Band n71(600 mHz) spectrum. This band was auctioned off to T-Mobile in 2017 and is now used for their low band 5G network. As of July 31, 2020, wireless mic users have had to buy new equipment that use one of a number of newly designated licensed and unlicensed spectrum bands.

Unfortunately, the spectrum issue has also limited the global portability of wireless systems. Each region has its own spectrum policy and allocations for wireless devices used in live music. The lack of a global spectrum standard for wireless equipment has forced many international acts that tour around the world to rent equipment locally. The use of noncompliant equipment can result in sizeable fines levied by a local regulator as well as the disastrous shutdown of an event.

Reigniting the Wireless Revolution in Live Music with 5G

It's not like the live music industry has not dreamed of the wonderful possibilities that wireless connectivity could bring to the stage, the venue and the live music experience. What if the snake could be replaced with a high-bandwidth, low-latency connection that is wireless from the board to the stage. What if the multitude of devices on stage could be auto-provision in a secure and trusted fashion connected by a highly reliable communications infrastructure? What if hi-definition audio could be pumped wirelessly across all the speakers and monitors in a venue without interference and distortion? What if devices could be expressive and smart?

Fortunately, we live in different times. Technologies such as 5G and the Internet of Things (IoT) are expanding the possibilities for how we can drive live music innovation. In particular, 5G brings about capabilities that can revolutionize how we connect things on stage and how artists can connect with their audiences. Much talked about 5G features such as enhanced mobile broadband (eMBB) and ultra-reliable low-latency communications (URLLC) are making industrial-grade wireless connectivity a reality.

From production and performance perspectives, latency, reliability and fidelity are critical requirements of a live music system. Traditionally, wired connections have provided the organic feel and analog richness and warmth that digital technologies have struggled to deliver. The tactile response and audio fidelity that are essential for a discerning artist or engineer can only be delivered by ultra-low latency and high throughput throughout the entire system whether it is from the mic to the board or the board to the monitors.

Current and emerging 5G technologies and deployment architectures have the potential to deliver the ultra-low latency connections across a live music platform - which includes audio, visual and lighting systems - while enhancing the flexibility and adaptability of a stage configuration or venue. 5G also brings powerful technologies that mobile network operators use to operate and manage their networks with 5 nines (99.999% uptime) reliability. We are seeing early trials of 5G networks being used to support industrial use cases that require 6 nines (99.9999%) reliability.

5G technologies are not just for big telecom operators. 5G can be right sized for various private network implementations on licensed and unlicensed spectrum. Live music venue operators will be able to consider a wide range of private and carrier-hosted network deployment options to support their client's productions as well as to connect audiences in and beyond the venue.

In short, 5G opens up an expansive frontier of possibilities for the live music industry that need to be explored.

Expanding the Art of The Live Music Experience

There are emerging opportunities for 5G to drive innovation in a way that can help the live music industry adapt during these difficult pandemic-afflicted times. There is also exciting potential to create new live music experiences and novel models for operating venues and infrastructure.

Based on neXt Curve's research there are six areas where the live music industry can apply 5G and IoT concepts to reinvent live music.

Live Music Design & Engineering – 5G has the potential to revolutionize stage and show design by introducing a new level of flexibility that wireless technology can bring. It can also enable novel mobile robotic applications that can bring about new dynamism and channels of expression to the stage which we are already seeing with drone-base light shows.

Live Music Performance – 5G is a global technology driven by a unifying standard established by the 3GPP. While regulators have provided alternative spectrum for wireless equipment to operate on, 5G presents an opportunity for the live music industry to shape spectrum policies that foster wireless performance tech innovation or perhaps untethers the industry from regulatory concerns all together.

Live Music Production – Live music is a mission critical operation. 5G has the potential to bring unprecedented mobile flexibility and agility to live music production. It can provide the ultra-reliable wireless connectivity that reduces the complexity and cycle times for production setup and teardown. 5G also has the potential to improve the flexibility of a venue and its ability to support the infrastructure needs of international acts and the global portability of their equipment.

Live Music Audience/Fan Engagement – The multi-access nature of 5G will enable new cyber-physical approaches for artists and show designers to engage with the audience. This can be through real-time messaging, multicasting, gamification and a multitude of other digital interaction modes that augment the physical experience at massive scale and in real time.

Live Music Experience Capture – Each live performance is a unique experience. 5G will enable novel approaches for extreme-fidelity video and audio capture such as volumetric media and drone-based videography. These new applications will require wireless connectivity and the industrial grade performance and broadband capacity promised by 5G.

Live Music Event Broadcast & Sharing – Finally, 5G promises to deliver the high throughput needed to make the live broadcast of new immersive media formats possible. It will also provide the massive capacity that will allow members of the audience to share live multimedia content with each other, the artist and friends on social media during the course of a live performance.

Enabling a New Frontier of Live Music Innovation with 5G

We are very early in the process of thinking through how 5G can revolutionize live music. The industry will need to develop the creative lens that makes 5G-enabled possibilities visible to the artist, the show designer, the stage engineers, production engineers, venue operators and the equipment vendors who will be critical participants in the rethinking of the live music experience, the venue and the business of live music as a whole.

The live music industry will also need to bridge the vast 5G knowledge gap. 5G is a broad, complex technology that transverses semiconductors, spectrum, devices, software, edge computing models, deployment architectures and more. It is a vast ecosystem that the live music industry needs to explore in order to uncover the 5G applications that will revolutionize the future of live music.

In the next three installments of this series on untethering the live music experience with 5G, we will explore the six areas of 5G innovation. We will provided an overview of the transformative value of 5G as well as the hurdles and pitfalls that need to be overcome to bring about a wireless reinvention of live music. Stay tuned.

The Research Team

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Mr. Lee is the founder of the research advisory firm neXt Curve. Drawing upon over twenty-five years as a managing partner, principal consultant, and industry analyst with Gartner, IBM, PwC and EY, Leonard has advised and delivered emerging technology and business solutions to leading enterprises across a broad range of industries. His perspective is shaped by extensive experience helping Global 500 companies drive business innovation and value through digital technologies and assisting top technology vendors with their go-to-market strategies for their digital products and services.

About neXt Curve

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