

# PANEL DISCUSSION: Systems Engineering for Touring In India & Abroad



L to R: Warren D'Souza, Neil Lean, Rajesh Khade, Joyjeet Panday, Cijith Oliikal

## Bridging Cultures and Designing Consistency on Tour

Warren D'Souza opened the discussion with Neil Lean, who has worked on several marquee tours in 2025, including an international touring production, inviting him to reflect on the renaissance of live sound events in India and the evolving role of systems engineering in that context.

"For me, international touring acts coming to India is actually very straightforward—if you know exactly what you're doing," Lean explained. He emphasized that the real challenge lies not in equipment or scale, but in aligning people and expectations. "When we work with international productions, we are essentially bridging two cultures. We're not just aligning systems, we're aligning expectations between the international production world and the Indian production ecosystem. At that moment, we're creating a culture map. And the single most important element in that process is communication."

Reflecting on his first experience of a full city-to-city tour, Lean acknowledged the physical and mental demands that come with sustained touring schedules. "It was definitely tough on our backs," he said, "but the bigger picture made it worthwhile." He pointed to the satisfaction of delivering consistency across every stop on the tour, noting, "We created history by executing every show flawlessly, adhering strictly to international production standards while integrating seamlessly with local crews. Our goal was to make everyone look good, while still standing firm on our design principles and delivering exactly what we came to do. That was the most rewarding part."

D'Souza then steered the conversation towards the technical backbone of that consistency, system design. Lean described the relationship between prediction software and on-site execution as a continuous feedback loop. "It's a constant loop, what's on the Array file becomes a virtual plan, which then translates into the venue. Once we're on-site, we validate the venue and feed that information back into the software. It's a continual back-and-forth process, all aiming for precision."

*The PALM Expo Magazine team presents a curated excerpt from a dynamic session at the PALM Expo Conference Series 2025. Moderated by Warren D'Souza (Founder SOUND.COM), the panel featured Neil Lean (Education and Application Support Engineer, India & Africa d&b audiotechnik), Dr. Rajesh Khade (System Engineer), Joyjeet Panday (Audio Engineer), and Cijith Oliikal (Live Sound Engineer), who unpacked the realities of systems engineering for touring, across India's vast geography and within international production standards.*

That precision, he explained, directly impacts efficiency on the ground. With accurate designs and modern software tools in place, deployment becomes faster, tuning more straightforward, and crucially, time is freed up for communication and collaboration. "That gives us more time to communicate with people and understand what's required," Lean noted. "That's where the real learning and enjoyment of touring comes from."

## Learnings in Design and Venue Specific Tuning

Reflecting on a season that began with a major show at IG Stadium and closed with *Guns N' Roses*, **Dr. Rajesh Khade** said the learning curve of touring proved smoother than expected. "I initially thought touring would be extremely difficult, but surprisingly, each city became easier. We worked with a similar PA configuration across venues, but each location demanded a different tuning approach." Emphasising the rhythm of a true tour cycle, he added, "This was my first time doing proper back-to-back tours, actually two tours, and I genuinely had an amazing three months. Every day brought new learning."

Contrasting production conditions across India, Khade noted that smaller towns posed more logistical strain than the metros: "Production-wise, smaller towns were definitely more challenging. They weren't always prepared for concerts of that scale, so timelines, like power readiness or rigging schedules, often weren't met. That was the main challenge. Once everything was operational, though, the shows ran well."

From a systems perspective, the through line is technically consistent: hold the PA design stable where possible, and adapt tuning to the room and conditions. On the production side, metro cities typically offer more predictable infrastructure and delivery windows, whereas smaller markets may require contingency in schedule and crew planning to absorb delays in power-up, rigging readiness, and other critical path tasks.

## Weathering Extreme Conditions for Consistent Delivery

Drawing on back-to-back shows in the Northeast, **Joyjeet Panday** described Bhutan and Shillong as "incredible but extremely challenging," outlining how environment dictates workflow from the very first call time. "Daytime temperatures were around six degrees Celsius with strong winds, and at night everything—grass, flight cases, cable ramps—froze over. Every morning, we had to wait for the sun to melt the ice before we could begin work." In those conditions, he underscored the importance of stepping up for the team: "As system engineers, we should never stop being hands-on. We should always be prepared to step in when crew members aren't available—whether due to logistical or health issues."

Expanding the lens to India's climatic diversity and its impact on system behaviour, Panday noted: "India's geographic and climatic diversity directly impacts design and deployment. December 31st in Chennai is completely different from December 31st in Delhi or Shillong. Coastal winds, humidity, temperature—all these factors shape how systems behave." He framed the systems brief with a clear mandate: "Our responsibility is consistency. As someone once said, we are a waveform delivery service. Like a courier company, regardless of terrain or weather, we ensure the consignment reaches every audience member with the least possible distortion."

Offering broader geographic context, Lean added perspective on scale and variability across runs: "India is quite diverse geographically. We experience nearly every climate zone. One week we're dealing with frozen scaffolding, the next week extreme heat and humidity. Consistency is what defines good systems engineering."

## Large-Scale Productions, Design First Discipline, and the Redundancy Roadmap

Touring at stadium scale demands both collaboration and controlled ex-

perimentation. Reflecting on work with one of India's biggest live acts, **Cijith Olikal** noted the growing ambition and scale of recent productions, as well as the importance of team execution over individual heroics. "Our productions have grown larger and more demanding every year. We are dealing with stadiums and crowds of 20,000 to 30,000 people. Delivering sound at that scale is never a one-person job. Support from talented engineers and production teams makes it possible." He added that iterative trials remain essential to achieving uniform audience experience: "We continuously experiment—like flying subs on delay towers—to achieve better consistency and audience experience."

Underscoring a design first philosophy, Lean stressed that modern systems deliver their best when geometry and prediction are right at the outset, reducing the need for heavy corrective work later. "Modern systems are extremely capable. If the design is right, tuning becomes minimal. I often rely more on a laser than a microphone." He framed a core part of the systems engineer's role as enabling visiting FOH engineers to focus on mixing rather than firefighting: "A strong design makes life easier for visiting engineers. Most of my work is psychological rather than technical understanding the engineer's mindset, giving them a system that works right out of the box, and building trust." The payoff, he said, is operational efficiency: "Striving for design accuracy ensures efficiency, faster deployment, and more time to collaborate."

Offering guidance to younger engineers coming up through today's better equipped ecosystem, Olikal emphasised fundamentals and continuity of learning over shortcuts. "There are no shortcuts. Passion and dedication matter. When I started, we had limited tools and very little guidance. Today, young engineers have access to better equipment and knowledge, allowing them to grow faster. Learn the fundamentals, stay curious, and constantly upgrade your skills."

Turning to signal transport and redundancy, Lean positioned audio over Ethernet as the practical direction of travel for touring workflows, with Milan's deterministic networking and dual path approach providing robust primary protection. "Audio-over-Ethernet is the future. Milan, in particular, offers built-in redundancy with primary and secondary networks. My ideal setup is Milan as primary, with analogue or digital fallback as a tertiary option, with carefully matched levels, of course." Building on that, Khade described taking redundancy a stage further with mirrored processing across protocols to protect the entire signal chain and show control: "We've taken redundancy further by using mirrored processors, one running digital networking and the other fully analogue. Any change made on the primary is mirrored on the backup. For large-scale productions, if the option exists, there's no reason not to do it."

As the conversation drew to a close, D'Souza distilled the panel's through line into a clear directive for touring practice: "What stands out from this discussion is that systems engineering is driven by passion, precision, and preparation. Whether it's flying subs, regional climate challenges, or redundancy planning, it's all about delivering a consistent experience to every audience member, every night."

To view the full conference session, visit [PALM Expo's official YouTube channel](#).



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