INDIA EDITION

AUGUST 2024

AV TODAY

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Insightful Conversations

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Chairman and CEO QSC | Q-SYS

Prabha Lakshmi
CEO, Office 2000 Solutions

Reema Bhandari
Director, M Moser Associates

Vipin Verma
Founder & CEO, ConsultechPro

Steven Medeiros
CEO, Vega Global

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Editor's Note - August 2024

Nishita Hanspal Kalita
Consulting Editor

Welcome to the August edition of AV Today magazine, packed with amazing interviews and insightful conversations with some of the brightest visionaries in the AV industry.

This edition features exclusive interviews with Joe Pham, CEO of QSC, and Steven Medeiros, CEO of Vega Global, who recently visited India. Architect Reema Bhandari shares her valuable perspectives on an "integrated solutions" approach, and 'Women of AV' highlights the inspirational journey of Prabha Lakshmi, the CEO of Office 2000 Solutions Pvt. Ltd.

We are also excited to present our first podcast, featuring Vipin Verma, CEO and founder of Consultechpro, who shares his phenomenal journey in the AV industry.

They say health is the greatest wealth, so we've dived into the healthcare vertical with a spotlight feature and compelling case studies on AIIMS Guwahati and IISER Tirupati to understand the impact of AV in India's healthcare sector. Lastly, we take you on a trail through audio signal processing, circadian lighting, and the remarkable transformation of Azad Park using AV.

We're sure you'll find this edition as fascinating and informative as we did putting it together. Happy reading!

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5 Key Takeaways

Exclusive Video Interview with
Joe Pham, Chairman & CEO of QSC | Q-SYS

As technology continues to advance and promises to transform the audiovisual (AV) landscape, influential leaders will play a crucial role in shaping this new reality. Joe Pham, the Chairman and CEO QSC | Q-SYS stands out as one such influential leader.

AV Today had the privilege of sitting down with Joe Pham during his visit to the QSC Bangalore office in India to discuss his inspiring journey and his vision for the future of the AV industry.

Here are the key takeaways from the interview:

1. India presents great opportunity

"India is amazing. I love it every time I'm here," Pham enthusiastically shares at the start of our interview. "The timeline for India becoming the third-largest GDP in the world is not far off. This presents tremendous opportunities for the AV industry," he adds.

He emphasizes that India's thriving economy and its rich talent pool create an ideal environment for multinational corporations to establish a presence. "Higher education, in particular, presents a remarkable opportunity. The modernization of universities, enhanced learning experiences, cross-border collaboration, and distance learning, all represent significant opportunities for AV," he explains.

He also emphasizes the potential for AV to revolutionize the entertainment and hospitality sectors and the largely untapped market in smart spaces, buildings, and cities. "The proliferation of AV and its role in city planning and urban development, presents an exciting and significant opportunity for the industry; This is an opportunity India should seize."

2. Organizations must adopt a full-stack AV platform

Pham underlines the critical need for organizations to adopt a platform-based approach, particularly in view of AI's transformative impact across all industries. "In the AV industry specifically, organizations must adopt what I termed a full-stack AV platform."

Pham believes that a full-stack AV platform offers numerous benefits, including the ability to harness data, leverage machine learning and AI to gain insights and enhance user experiences.

"However, to fully capitalize on this opportunity, you must have a full-stack platform with a robust ecosystem built around it. This begins with a thorough assessment of your AV systems, understanding that technology can enhance human connections, and partnering with a technology provider who has a clear vision for AI and its roadmap. This assessment is what ultimately leads to the development of a robust AV platform," he explains.

Comparing the AV industry to the broader technology sector, where nearly 8 billion people carry a consumer technology platform in their pockets, Pham points out that the AV industry has yet to reach that level of ubiquity. "But with the convergence of AV with AI, the industry will reach that milestone, and it will happen rapidly," he predicts.

3. Accept the moment. Embrace the change

Pham draws a parallel between the current apprehension surrounding AI and the fears that accompanied earlier technological advancements, such as computers, airplanes, and automobiles. He notes that even bicycles were met with skepticism when first introduced.

"Humans naturally raise concerns for a change and its impact. However, I would encourage everyone to understand the emerging technology and to view the evolution within the AV industry with optimism. As technology advances rapidly, resisting it is not a viable strategy. Instead, we should embrace these changes allowing organizations to do the same," he says. This approach aligns with the philosophical belief of living in the present moment, " Pham adds. He shares his experience of discovering yoga and how it changed his life. "Yoga has made me calmer, teaching me to be more present with employees and the world, and it makes you better in whatever profession you are in."

He further emphasizes that every organization has bright minds who are eager to grow. "We should amplify those minds by fostering a culture of continuous learning, and empowering employees to be influential and make an impact within the organization, whether in AV or other areas of productivity."

4. Follow your passion

Pham recollects his past and tells us how his passion for music played a pivotal role in his journey to becoming the Chairman and CEO of QSC | Q-SYS.

Reminiscing about growing up listening to Rush and Led Zeppelin and learning the guitar through classic rock, Pham says, "I've always been around music." After completing his studies at UCLA, he began his career at McKinsey & Company. However, he made the bold decision to leave without having another job lined up. "Most people won't do that, but I wanted to follow my passion and be closer to music products, audio, AV, and entertainment. I've always liked being in that environment, whether going to a concert or playing an instrument and just tweaking and playing with gear. That's how I found my way into the AV industry. I was incredibly fortunate to meet the founders of QSC and then joined the organization about 20 years ago," he adds.

He expresses his gratitude for the way his passions have aligned with his career. "I'm fortunate that a kid passionate about music grew up wanting to join the industry just to be closer to the gear and then followed the technology route. I feel incredibly grateful that my two passions have intersected, and I'm thrilled to be part of this industry," he adds.

5. We are uniquely positioned to create value for enterprises, people, and the world

Pham emphasizes that the convergence of AV and AI will revolutionize the industry and create significant value for many. "The only way to unlock the potential of our industry, elevate joy across the world, connect human beings, and deliver better outcomes for enterprises and everyone is to leverage technology. This intersection of technology and AV is, in essence, what I talked about at InfoComm 2024."

He is confident that our industry is meant to take advantage of this AI moment.

"I've talked about the importance of sight and sound many times, but the AI moment is also about the treasure trove of data we have as an industry. By harnessing this data and the power of AI in a full stack AV platform, we as an industry can elevate our value to enterprises, governments, institutions, and across every vertical we deliver our solutions in".

In conclusion, Pham shares one key message: "Be inspired by the value our industry can create at the intersection of AV and AI." He highlights how our industry is uniquely positioned to take advantage of this moment, not just commercially but also by making a positive impact on the world. "Whether you're a creator, an engineer, or anything in between, the industry has a role for you. I hope we continue to attract and inspire a generation of folks to join this amazing industry and, akin to yoga, enjoy the moment and the process."

You can scan this QR code to view the full video of Joe Pham's interview with AV Today

Smart Hospitals
The changing face of healthcare in India

How AV Technology is Transforming the Future of Medical Care

Today, we enjoy unprecedented access to quality medical care, far surpassing that of our parents' generation. Yet, in just a few decades from now, the healthcare landscape could undergo a transformation beyond our wildest imagination.

According to a recent report, the Indian healthcare market, which stood at about $180 billion in FY23, is projected to grow at approximately 10-12% Compound Annual Growth Rate (CAGR) to reach $320 billion by FY28. As healthcare advances, AV technologies are poised to make significant contributions to India's healthcare sector, offering solutions that are both impactful and measurable.

Kelvin Ashby-King, Principal Consultant at Clarity Consultants, highlights the increasing adoption of technology in healthcare, accelerated by the COVID-19 pandemic. "Hospitals are now online, providing pharmacy and consulting services, which has made healthcare more accessible. The pandemic also accelerated the widespread adoption of video conferencing and unified communications (UC). The development in UC has made remote consulting a reality, enabling doctors to connect and share medical data for consultations. This trend is expected to continue as

the government, through the National Informatics Centre (NIC), pushes to expand a system that facilitates service delivery, peer learning, and knowledge transfer," he elaborates.

The healthcare industry has undergone significant shifts due to the COVID-19 pandemic. Koreth Mathew, Director of A&T Video Works Pvt. Ltd., notes that prior to the pandemic, many healthcare professionals were hesitant to embrace technology, preferring traditional in-person consultations. "But COVID cut that off completely. There was a massive uptick during the pandemic, but post-COVID, it dropped. However, there is now a growing interest in innovative AV technologies that can enhance healthcare in hospitals." he observes.

The evolution of healthcare through AV technologies

Kelvin notes that AV technology has been used in the private healthcare sector for over a decade, primarily for marketing and communication purposes. "Today, AV technology is being implemented across all stages of healthcare, in both private and public institutions. There is even more extensive use of specialized equipment in teaching hospitals or medical colleges, particularly in hospitals affiliated with medical colleges. This involves the application of very specialized equipment in operating theatres or sterile environments," he adds.

Koreth highlights that AV technology is crucial for hospitals affiliated with medical colleges, particularly for conducting continuing medical education (CME) programs and medical training. " During these programs, surgeries can be recorded or live-streamed to seminar halls or individual laptops with secure access, enabling trainee surgeons to observe procedures remotely."

Kelvin also highlights the evolution of patient entertainment systems, although he acknowledges that the pace of change has been slower than expected. " In one of our proof-of-concept projects, hospitals are going fully digital. Instead of traditional charts, each bed will be equipped with a 21-inch tablet on a swing arm, serving as the doctor's touchscreen, patient entertainment system, and room control interface, " he explains

Moreover, AV technology is becoming crucial for recording patient-doctor consultations in emergency rooms, ICUs, and outpatient departments. Koreth explains, "AV systems capture video and audio of the consultation, including the doctor's explanations and any digital annotations made on electronic medical records. These recorded interactions can be used for legal purposes and to improve the quality of consultations". He also highlights the critical role of secure storage solutions, noting that most hospitals prefer cloud storage due to its security and compliance with the Unified Data Protection Regulation (UDPR).

Telemedicine has significantly benefited rural healthcare by facilitating remote consultations. " Doctors in urban areas, such as Bangalore, can now connect with patients in corporate settings through partnerships with organizations like Accenture or Deloitte. Telemedicine benefits rural health and expands access to healthcare. AV technology has played a significant role in enabling data sharing and visual interaction with patients." Koreth also highlights an innovative ambulance system equipped with a comprehensive videoconferencing setup. "This real-time interaction with the doctor is especially critical in cities, where one could miss the golden hour if stuck in a jam," he says.

"The healthcare industry is evolving in response to shifting patient expectations. People no longer want to visit multiple places to make a payment; they prefer a single point of access for all their needs," Kelvin explains. "The widespread use of mobile phones increased technology competence levels across every social stratum. The transfer of muscle memory from phones to other devices has made adopting new technology much easier. This unified communication (UC) low or no cost is making a huge change, making it easier for doctor consultations and knowledge sharing. This shift will catalyze a broader transformation within the healthcare system. Now, with distant treatment over the media core, streaming is also a significant change."

Bridging the healthcare divide in India

Kelvin shares, "Great changes are happening in the government. Over the past ten years, the Indian Government has brought about amazing changes in the healthcare sector and has achieved tangible results. Politics aside, the most important thing is that things have been done and actions have been taken to benefit people who need it. In all of the AIIMS projects we've done, we have wired every single operating theater. We have provided connectivity to allow these systems to develop, so in the government sector, yes, they are proactively looking at provisioning for the addition of technology as funds become available."

"The biggest change has been the ability to share resources and make information more easily available across a vast country like India," says Kelvin. While a divide between government and private hospitals still exists, it is gradually narrowing. "Government hospitals are far better than

> "The widespread use of mobile phones increased technology competence levels across every social stratum. The transfer of muscle memory from phones to other devices has made adopting new technology much easier."

Kelvin Ashby- King
Principal Consultant
Clarity Consulting

they were five years ago, nearing the standards of private hospitals. Technology is playing a key role in this transformation. Of course, private healthcare will always be a step ahead of the government facilities as is the case worldwide," he points out.

Kelvin also highlights the modernization of hospitals, a process that began before the COVID-19 pandemic ". We've been involved in the construction of six AIIMS hospitals, and there is a whole thrust to bring in more technology, specifically for educational purposes. One of the most significant changes is the digitization of operating theatres and the enhancement of educational facilities within AIIMS. We are approaching international standards in these areas, and similar advancements are being mirrored in the private sector"

"The computerization of healthcare systems is another critical area that drives significant change over time," Kelvin emphasizes. "The government is working towards establishing a national healthcare data system. Currently, if you visit different doctors, they can only access your medical history if you carry your records with you. This system is inefficient, and a centralized healthcare registry is needed to ensure that all relevant information is readily available to healthcare professionals across different hospitals and facilities."

Koreth highlights, "The government has developed an app for telemedicine, but the cost of setting up these services is still a challenge. Hospitals and companies have tried implementing telemedicine, but the cost-benefit ratio is challenging. Setting up a telemedicine infrastructure in remote areas requires various digital devices, which are expensive. As a result, hospitals are exploring corporate partnerships to make this a reality. Although the Telemedicine Society of India has become very active since the pandemic, we have observed substantial deployment of telemedicine setups as an initial step in Primary Health Centers (PHCs)." he explains.

"I believe the most transformative innovation today is the adoption of telemedicine," Kelvin explains. "It connects doctors' medical records and utilizes technology to enable even a junior doctor in a small public hospital serving a population of 20,000 to access expertise from major city hospitals. This advancement represents a fundamental shift, focusing not only on the technology itself but also on how knowledge can be effectively shared and replicated."

"The government has developed an app for telemedicine, but the cost of setting up these services is still a challenge. Although the Telemedicine Society of India has become very active since the pandemic, we have seen substantial deployment of telemedicine setups in the Primary Health Centers (PHCs)."

Koreth Mathew
Director Sales
A&T Video Networks Pvt Ltd

Emerging innovations in healthcare

Discussing the role of emerging technologies such as artificial intelligence (AI) in healthcare, Koreth notes, "AI and AV play a significant role in healthcare. For example, we have developed a medical camera with AI capabilities that can focus on a specific spot just one millimeter above. This camera can monitor multiple beds in the ICU and alert staff to patient movement or elevated body temperature. Such AI-integrated AV systems are revolutionizing healthcare and we plan to launch this camera at InfoComm 2024."

Kelvin offers his perspective, saying, "AI is certainly going to make a change, but it's not fully realized yet. However, numerous other medical innovations are being developed. One of the biggest challenges will be ensuring the security of information. Robotic surgery is becoming increasingly common, and private hospitals are rapidly catching up with the latest medical technology. Essential equipment like digital imaging tools and MRI machines are now available in almost every major public hospital, enhancing accessibility and functionality", he explains.

He adds, "Other areas of focus include imaging and specialized hospital technologies that incorporate AV components. For instance, we frequently work on screen extensions and transfer of data from digital radiography, MRI, and other equipment to make that information available online and on screens in operating theaters. So, this is another side, where it's not just AV but its extension to other computer equipment in the AV realm."

"3D surgery technology, which allows laparoscopic or endoscopic images to be converted into 3D visuals for surgeons wearing specialized glasses, is another area of innovation. While robotic surgery is already happening, surgeons must be nearby," Koreth notes. He adds that various experiments involving AV are currently underway such as a hospital in Bangalore exploring the use of AV technology to monitor patient emotions in reception and pharmacy areas.

At the forefront of innovation

Kelvin points out on India's role in global healthcare innovation, stating, "We often perceive India as lagging, but in my view, India is often at the forefront of trying new technologies. Whether in the corporate AV market or other areas, India is experimenting with cutting-edge solutions. For example, the first augmented reality (AR) walkthroughs for architects were developed in India." Kelvin adds that while many innovative technologies are being developed locally, they may not always be deployed here due to differing cost structures.

With healthcare innovation projected to double by FY28 as per the recent report, we are on the brink of an exciting era where AV technologies have the potential to both expand significantly and make a substantial impact on healthcare outcomes in the coming years.

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Bridging the gap

Architect Reema Bhandari advocates for a unified approach to delivering bespoke integrated solutions

The AV Today team had the opportunity to catchup with Reema Bhandari, Director at M Moser Associates, a prominent global firm in interior design and architecture. In our conversation, she offered valuable insights into the latest advancements in the AV industry.

One of the first things that strikes you when you meet Reema is her infectious enthusiasm and passion for innovative workplace design. A widely respected visionary with over 15 years of extensive experience in the design and construction industry, Reema is committed to creating spaces that are not only functional but also inspiring and enriching. "Integrated Solutions" stands out as the resounding theme in our conversation, as Reema shares insights on the AV industry and the potential for a deeper, more meaningful collaboration in creating bespoke AV solutions and an integrated experience for clients.

AV is core to a holistic experience

At the outset, Reema shares how AV is often brought in at the last stage of the project, which leads to last-minute challenges and disruptions. "That's when it became clear that introducing AV as a last-minute addition was disruptive. Since AV is essential to a complete experience, we decided to integrate AV services in-house. We communicate to our clients that AV is a fundamental part of our service, ensuring a comprehensive, end-to-end solution."

"Many of our clients may not be fully familiar with the intricacies of AV technology. They often rely on their global stakeholders to navigate these complexities, and there is an opportunity for us to help bridge this gap by providing tailored AV solutions that meet their specific needs," she says.

Involving AV at the start is key

From her first-hand experience, Reema emphasizes that involving AV designers earlier in the process can lead to significant improvements and integration. "Traditionally, AV design should be introduced only after the architectural layout plan gets finalized and this is not an integrated approach. AV cannot function in isolation. AV needs to be integrated into the overall project, considering functionality, experience, and client requirements."

"When I speak to people in the AV industry, unfortunately, most of them say they come in after the structures are in place, and at that point, it's too late to change any structures. The challenge is to deliver a better experience within a limited scope, and that's where the struggle lies," says Reema. However, this is slowly changing, she explains. "Architects are also realizing that AV has to be incorporated well in advance in the initial stages of the project." AV procurement also happens late in the process, leading to integration challenges and "AV the last package to be done," she says.

When asked about the ideal approach to AV, Reema emphasizes the crucial role of working with an AV design consultant in the early stages of a project. "Consultants provide unbiased solutions focused on pushing the boundaries rather than just selling a specific product. It's also easier for us to get them on board than an SI directly when we win a project. In contrast, SIs may be fixated on certain brands and products, which can limit the overall integrity of the project," she adds.

Bespoke AV is the future

"User intuitiveness is one aspect, but the unique experience you build around it with bespoke AV solutions is going to be a future trend we are seeing happen right now," notes Reema.

"This is a huge advantage and an opportunity for integration between AV designers and us, which needs to happen at the initial stages of the contract. AV design needs to come with us when we pitch to the client and when we win, not when the design is done, which is traditionally how it happens," explains Reema. She also points out that bespoke solutions require more intricate integration and infrastructure, which involves nurturing solutions with the SI. "We have mock-ups, workshops, and meetings to ensure everything fits together, but there seems to be a lack of enthusiasm for collaboration between AV and others in the industry; maybe it is because AV has been running independently all these years,

but things need to change when we talk about integrated solutions," she says.

An integrated solution approach = a win-win for everyone

Reema emphasizes that every client looks for integrated solutions today, and this is a major trend. "To achieve this, we also need integrated partners. Without that level of maturity and understanding, the impact is lost. It's a triangle. If the client asks for integrated solutions, everybody should be able to come together to make it happen. It's not about the money, the cost, or the order; it's about the solution. So, it can't be siloed. When we take this approach, we achieve higher bottom lines for all the partners involved," she says.

She explains that collaborating with AV partners presents its own set of challenges, often involving considerable back-and-forth communication. "It has taken time, but in the last four to five years, the result has been something that the customers have been very happy with, and ultimately, it's been a win-win for everyone." She elaborates that the process is still unfamiliar to many, as working closely with architects or design teams is not generally the norm, even for AV vendors who are used to simply receiving a bill of quantities (BOQ) and following it. "Creating solutions together is about working through how bespoke it can be."

Reema also points out that our industries share the same purpose - serving our customers. Instead of working separately, we should collaborate to deliver the best results," says Reema. Citing that the AV industry could be more organized, she also finds it puzzling that the AV field operates so independently when other areas, like IT, MEP, etc., integrate more seamlessly. "We need to come together and change this approach, encouraging collaboration between designers and AV SIs from the beginning of projects for integrated solutions," she adds.

Co-creating unique experiences

Reema explains that technology plays a big part in creating and elevating the experience for clients and end-users. "To build comprehensive solutions, we all must come together and co-create these solutions from the start. It all starts with the experience we want to build. We work with our AV consultants as partners, asking them how they can help integrate the right AV solutions to create a bespoke, meaningful experience. They then push the boundaries and show us how to deliver something that hasn't been done before, as many clients ask for unique, groundbreaking, never-before-seen experiences."

"We've seen marvelous results when we have a shared vision and equal interest from the customer in creating something unique. It's a combination of consultants bringing new ideas to the table, challenging them to think creatively, and learning from past experiences," she says.

She emphasizes that customer buy-in is also crucial. "Do they have an appetite for a revolutionary idea and the associated cost and delivery time? When there is enthusiasm and buy-in from both sides, the magic happens."

Shifts after the COVID-19 pandemic

Reema emphasizes the necessity of AV solutions in the hybrid work environment, especially post-COVID-19. "The concept of hybrid cannot exist without technology. Technology can improve the hybrid environment and the agility the client is looking for. So, it's crucial to use technology sensibly to boost productivity and enhance the hybrid approach in our layouts from a functional perspective. It's also essential that remote workers have a positive experience similar to being in the office with the help of AV technology," she says.

"We're also witnessing a change in the way we view workspaces. Before, offices were considered essential, but now many question the need to go to the office. So, how do we make the office a magnet that attracts people to the office in a hybrid world? What is the space requirement for an office in this evolving scenario?" she says. Reema also points out that the focus is shifting towards creating smaller, high-quality office spaces accommodating remote and hybrid work. This shift prioritizes enhancing the experience for smaller workspaces and using real estate more efficiently.

"Additionally, given the focus on sustainability and conscious spending, companies establishing their first offices in India require flexibility to accommodate both contraction and expansion. If they need 100% of the seats, they will initially aim to fill 60% and expand as needed. How can technology and AV enable a consistent office experience while allowing scalability? We need to solve this problem for our clients," she adds.

In conclusion, Reema emphasizes, "We would like to invite consultants and AV consultants and SIs to work with us from the initial phases of the projects to collaborate and co-create integrated solutions together. We know that the AV industry has its own setups, discussions, and specifics, just like we do in the design industry. However, the design of workplaces and AV overlap, and this integration needs to happen cohesively with interest levels both ways. The strengths of both parties need to marry and support each other on this journey."

Audio Signal Processing
A deeper understanding of sound, electronics and applications

By Prashant Govindan

Early beginnings:

The whole premise of audio reproduction electronically is the conversion of an audio wave into an electrical signal using a transducer. From the time Thomas Alva Edison successfully converted the human voice into a mechanical vibration that was "recorded" on his phonograph device, it was imperative that this stored information be reproduced back into audible sound.

Edison home phonograph -courtesy Library of Congress

While early devices were primarily mechanical and were amplified acoustically using a horn, the invention of the vacuum tube (or valves as they were commonly known) changed the way an electrical signal was reproduced and transmitted with its magnitude increased several thousand times. This process is called amplification of the electrical signal and the invention of the diode and eventually the triode changed how we humans perceive sound once and for all.

Enter the solid-state semiconductor diode and transistor and gone were the pre-war days of huge, bulky devices with innumerable glowing vacuum tubes, though fascinating; was also highly inefficient and unreliable. The solid-state era changed electronics and laid the foundation of what would become modern audio amplification and signal processing devices.

Vacuum Tubes – notice the grid and the heating element

R. Hilsch and R. W. Pohl in 1938 demonstrated a solid-state amplifier using a structure resembling the control grid of a vacuum tube, though this was largely unusable as a practical device as it had a cut-off frequency of one cycle per second. The first working transistor was a point-contact transistor invented by John Bardeen, Walter Houser Brattain, and William Shockley at Bell Labs in 1947. In 1954, physical chemist Morris Tanenbaum fabricated the first silicon junction transistor at Bell Labs. However, early junction transistors were relatively bulky devices that were difficult to manufacture on a mass-production basis, which limited them to a number of specialized applications.

John Bardeen, Walter Houser Brattain, and William Shockley at Bell Labs (1947)

What is an audio signal?

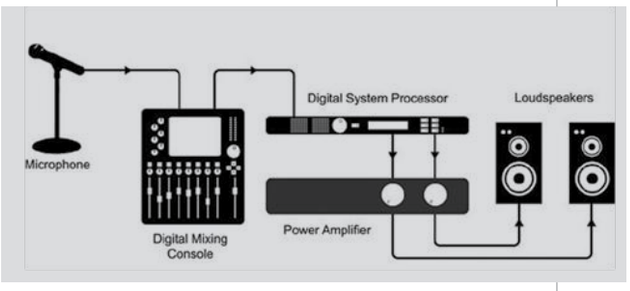
Without getting too deep into the theory, to put it simply: an audio signal is a reproduction of a sound wave in the real world that needs to be captured, recorded or transmitted with minimal loss of the original information contained within. This could be a speech signal, music or simply ambient sounds as would be captured. The invention of the microphone along with the attendant electronics to amplify the signal and then transmit it for further processing or broadcast laid the foundation of what modern signal processing would be.

In the rudimentary sense, a audio signal can be visualized as a sine wave with frequency between the human auditory range of 20Hz to 20kHz. This sine wave or combination of sine waves would need to be initially amplified (pre-amplified), combined (mixed) and then various aspects of the signal such as the frequencies, the dynamics (the ratio between the quietest and the loudest sounds) and eventually the amplitude of the signal would need to be brought up to a level that can drive a coil, in a magnetic field attached to a diaphragm– essentially a loudspeaker.

This is the basis of signal processing, from the source to the destination, whether it be a small public address system, a recording system, or a transmission system for broadcasting. All of these systems require signal processing at some point to make the signal amenable to its targeted application.

The audio signal chain as we see in the illustration above comprises of a source which could be a microphone or a playback device, a pre-amplifier, a mixing or routing device (in case there are multiple sources), filters for attenuating or undesired frequencies or complete bands of frequencies or maybe even boosting a set of frequencies, a set of additional filters to divide the frequency bands that can then be sent to loudspeakers that are best optimized to those frequencies, and finally power amplifiers that amplify the signals or set of signals that can finally drive the loudspeakers as intended. For recording the same signals after mixing and processing is sent to recording devices that store either one source all by itself or

a "mix" that can later be retrieved and "mastered" for the final "mix" before being released on the intended medium, be it tape, vinyl, CD or as a digital release.

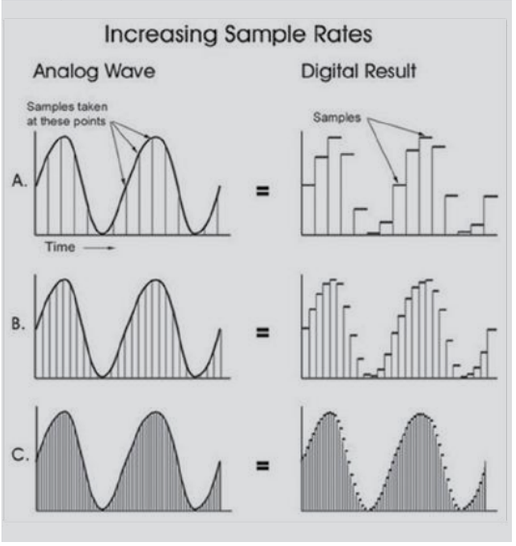


Analog and Digital Signal

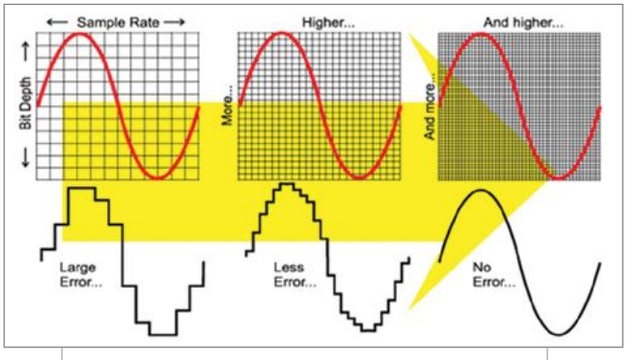
In the old days the signal chain was completely analog, which meant that the signal remained in the analog domain without being digitized. The mixers, filters and equalizers were all built from analog filter circuits that used a combination of resistors, capacitors, and inductors to cut or pass frequencies. Usually, for a complete live sound setup, there would be multiple stages of filters, equalizers and mixers aside from microphone and instrument pre-amplifiers. Usually this meant a room full of audio gear that would not only be complex to set up and replicate but would also mean that in less skilled hands would be less than optimal sounding. Add to this the signal loss and noise picked up by cables and the equipment themselves, and it was a frustrating experience to get a basic sound setup done within a reasonable time frame.

With the advent of computer technology in the late 60s and early 70s, it was successfully demonstrated that any analog signal could be converted into a digital signal with 0s and 1s that could then be stored, replicated and transmitted with no loss. Furthermore, this digital signal could now be re-converted back to analog for amplification to drive loudspeakers. This breakthrough also meant that the original analog signal could now be manipulated more efficiently in the digital domain as a digital signal stream without any of the attendant losses as encountered in the analog domain.

The only challenge that now remained was that of the faithful reproduction of the original audio signal. As would be expected, the process of digitization was not completely one to one. In converting the signal from the analog domain to the digital one, a process called A/D conversion, some key parameters such as the sampling rate and the quantization bits would make all the difference. Fortunately due to the many developments in the computing domain, we now have access to A/D converters that can sample upto as high as 384000 times a second, (384kHz) and the resulting sample can be stored in 32 bits which far exceed the demands of human hearing



The Nyquist theorem states that an analog signal can be digitized without aliasing error if and only if the sampling rate is greater than or equal to twice the highest frequency component in a given signal. Since the highest frequency humans can hear is 20kHz; a sampling frequency of twice as much is sufficient. This translates into 40kHz and therefore a sampling frequency of 48kHz, that is the de-facto standard in professional audio is more than sufficient.



On the other hand, the bit depth in digital audio stands for the levels of audio in the amplitudes domain that we need to accurately capture and reproduce the loudest audio signals that can be heard by humans. This is usually represented as decibels, which is actually a logarithmic value, which means that it increases or decreases exponentially. Although an increase of 3dB represents a doubling of the sound pressure, an increase of about 10dB is required before the sound subjectively appears to be twice as loud. The smallest change we can hear is about 3dB. The subjective or perceived loudness of a sound is determined by several complex factors. 24-bit audio could theoretically encode 144dB of dynamic range, and 32-bit audio can achieve 192dB, but this is almost impossible to achieve in the real world, as even the best sensors and microphones rarely exceed 130dB.

Once in the digital domain, the signal is now a stream of 0s and 1s that may be added, subtracted or multiplied just as any other digital value in a computer. These calculations are performed in blindingly fast computing devices with processors that operate at a few million floating point operations per second (MFLOPS).

All digital signal processors are essentially a bank of filters, that enable the user to manipulate frequencies and mimic analog filters.

DIGITAL FILTERS	ANALOG FILTERS
High Accuracy	Less Accuracy - Component Tolerances
Linear Phase (FIR Filters)	Non-Linear Phase
No Drift Due to Component Variations	Drift Due to Component Variations
Flexible, Adaptive Filtering Possible	Adaptive Filters Difficult
Easy to Simulate and Design	Difficult to Simulate and Design
Computation Must be Completed in Sampling Period - Limits Real Time Operation	Analog Filters Required at High Frequencies and for Anti-Aliasing Filters
Requires High Performance ADC, DAC & DSP	No AOC, OAC, or OSP Required

Most analog filters such as high pass, bandpass or low pass filters in the frequency domain can be modeled in the digital domain. Generally most filters are implemented using the Finite Impulse Response (FIR) or Infinite Impulse Response (IIR) models.

IIR FILTERS	FIR FILTERS
More Efficient	Less Efficient
Analog Equivalent	No Analog Equivalent
May Be Unstable	Always Stable
Non-Linear Phase Response	Linear Phase Response
More Ringing on Glitches	Less Ringing on Glitches
CAD Design Packages	CAD Design Packages Available
No Efficiency Gained by Decimation Available	Decimation Increases Efficiency

Unlike analog filters, the characteristics of digital filters can easily be changed simply by modifying the filter coefficients. This makes digital filters attractive in communications applications such as adaptive equalization, echo cancellation, noise reduction, speech analysis and synthesis, etc.

Applications of DSP in professional audio

DSP finds diverse applications across many domains in professional audio, including automatic mic mixing, gain sharing mixers, matrix mixing, parametric equalisers, feedback suppression, compression, limiting etc.

While most leading brands offer most of the above in a single unit as general purpose DSP devices, there are others that are purpose built for applications such as far end conferencing, sound reinforcement, speech processing, feedback elimination, loudspeaker processing and so on.

Again, within DSP devices, most of these are either fixed path or open architecture that allow the user to create their own processing chain. Fixed path DSPs are usually designed for a set of certain applications, while open architecture may be used for multiple applications. As a downside, these may not be optimized for any application thus taking a one-size-fits-all approach.

Some of the earliest examples of fixed path purpose designed DSP have been in speech processing by automating the function of an operator manning an audio console. This is particularly useful in meeting room, conferencing facilities or classrooms where its either not feasible or impractical to have an audio mixing console. Some of the more popular models include the Shure SCM 810 and the Automix from Peavey. Other manufacturers such as Rane and Biamp also made analog automixers. The digital counterpart of these products have been implemented as DSP programmable software blocks as below.

Similar to this, we can see that analog products like graphic and parametric equalizers are now

available in their digital avatars, as part of DSP hardware.

Most of these software implementations are primarily filter designs based on IIR filters, which are then modeled using software such as Matlab and

equalisers on each input and outputs, depending on the availability of overall DSP processing resources. Similarly, a bank of filters may be used to shape the output waveform to suit the application.

then a familiar GUI is skinned on for familiarity, as may be seen above. This ensures that the operator/engineer has the same familiar look and feel as the original analog product.

Most open architecture DSP will allow multiple

Amongst adaptive filter implementations, the acoustic echo cancellation remains one of the more popular ones with extensive usage in conferencing products that involve multiple microphones and need connecting over voice or video links.

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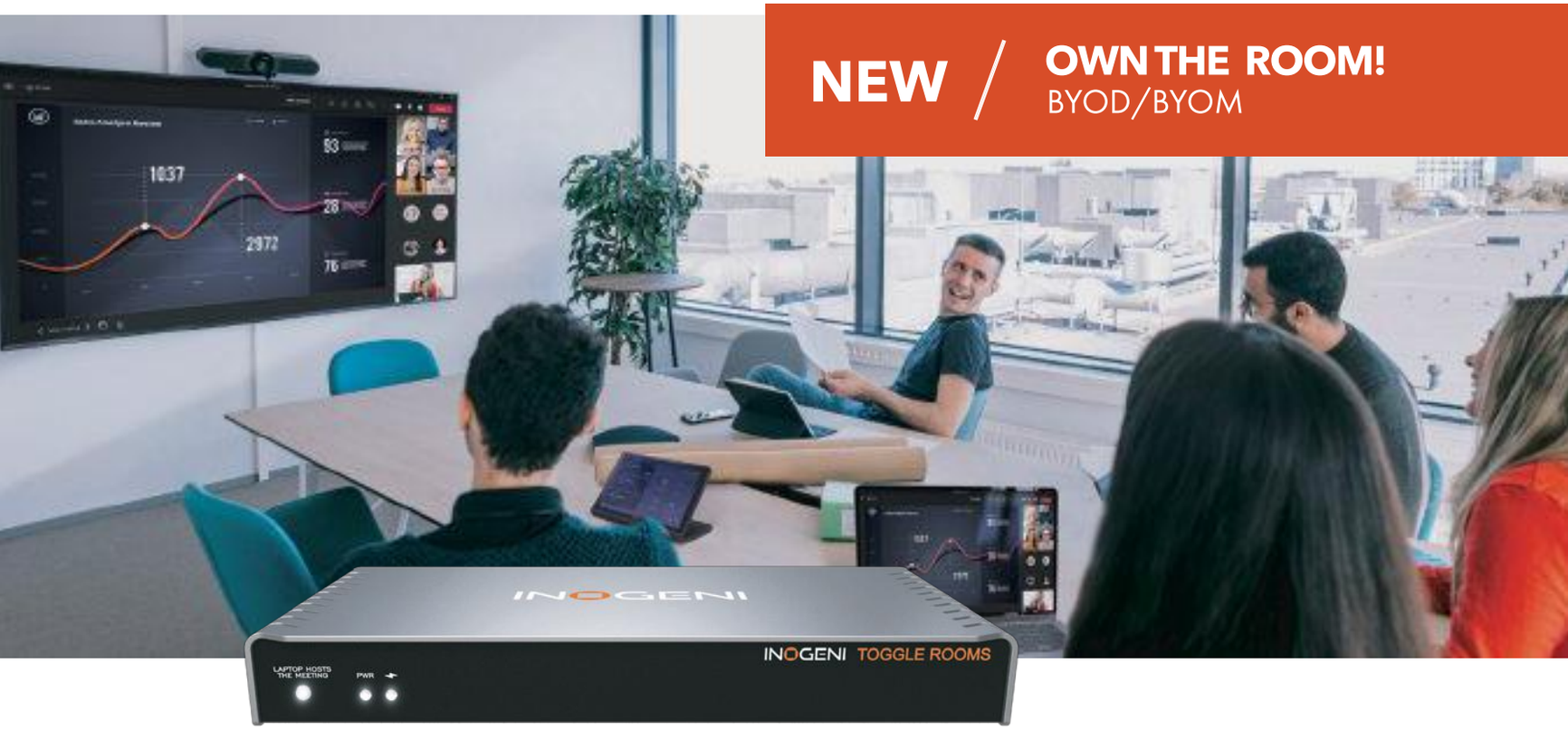

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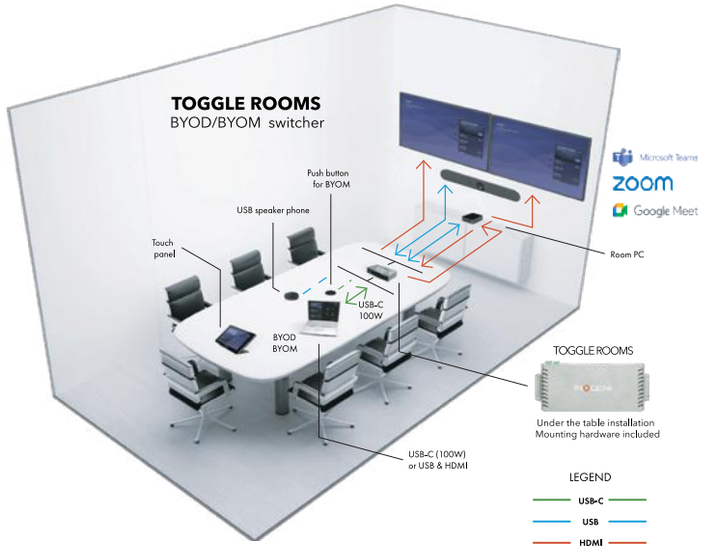

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Women of AV

Discovering the journey of Women Leaders in the AV industry.

Enhancing women's representation in the AV industry introduces a wealth of diverse perspectives and skills, paving the way for future generations. In the second episode we feature Mrs. Prabha Lakshmi, CEO - Office 2000 Solutions.

Welcome to the second episode of AV Today's "Women of AV" series, where we highlight trailblazing women in the AV industry. In this episode, we feature Mrs. Prabha Lakshmi, CEO of Office 2000 Solutions an award-winning AV systems integrator, key member of the AVIXA Women's Council, and an accomplished entrepreneur with over two decades of experience in the AV industry. Despite starting with no initial knowledge of AV, Mrs. Prabha Lakshmi has become a transformative leader, revolutionizing how businesses connect, communicate, and collaborate on a global scale. This episode also explores her insights on industry advancements and initiatives aimed at increasing women's presence in the field.

The underrepresentation of women in the AV industry stems from several factors, including limited awareness of the industry, inadequate parental leave policies, and persistent stereotypes that often overlook the sector. There is also a need for more proactive efforts to promote the AV industry in ways that attract more women. These outdated societal perceptions have historically impeded the entry of women into mainstream AV roles. During our formative years, educational pathways typically emphasize traditional careers in fields such as computer science, electrical, mechanical, and chemical engineering, or in disciplines like medicine, finance, or education. Surprisingly, few are aware of the AV industry as a viable career option, despite its unique blend of creative and technical skills.

In recent years, the AV industry has experienced significant growth, reaching a wider audience than ever before. From an employment perspective, the AV industry's openness to learning and skill development, combined with its supportive and encouraging environment, makes it ideal for those eager to expand their horizons.

Empowering women in the AV industry not only nurtures their innovative ideas but also unites individuals from diverse backgrounds, driven by their passion, technical expertise, and creativity, to make meaningful contributions to the field. Women bring a unique ability to blend their natural talents in sound, color, and light with artistic sensibilities and technological acumen, delivering the innovative solutions the AV industry demands today.

In our conversation with Mrs. Prabha Lakshmi, she shared how her desire for change inspired a bold transition from a successful IT career to the AV field. She discussed her inspiring journey, detailing the factors that motivated her switch, the steps she took to gain expertise in AV, and how her valuable IT connections seamlessly integrated into her AV business. Mrs. Prabha Lakshmi also spoke about balancing her personal and professional life as a woman entrepreneur in the industry. She emphasized that AV is not confined to traditional engineering stereotypes; it's a field where anyone with a passion for creativity, a keen eye for video, and a fine ear for audio can build a thriving career. Furthermore, Mrs. Prabha Lakshmi is actively working to pave the way for future generations of women in AV. Through her collaboration with AVIXA, she is championing various initiatives and awareness programs at both the college and government levels. Her goal is to attract more women to the field, empowering them to explore and thrive in the opportunities that the AV industry offers.

With over 25 years of unmatched experience, Office 2000 Solutions has been at the forefront of revolutionizing how businesses connect, communicate, and collaborate globally. The company delivers seamless AV solutions that maximize returns on investments in AV infrastructure, designing, managing, and executing customized AV solutions that transform business operations. Office 2000 Solutions is also AVIXA-certified.

To access the full interview, scan the QR code.

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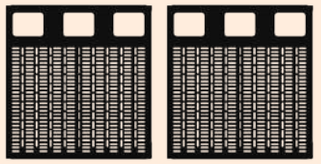

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Aim for the Impossible
AV Today Podcast

A Conversation with Mr. Vipin Verma, Founder and CEO of Consultechpro

Welcome to our special podcast series from AV Today, where we delve into the remarkable journeys of AV industry veterans and leaders. In our inaugural episode, we are privileged to host Mr. Vipin Verma, the Founder and CEO of Consultechpro.

Mr. Vipin Verma's story is one of determination, innovation, and breaking barriers. From humble beginnings in Meerut, Uttar Pradesh, to becoming a leading figure in the AV industry, he exemplifies what it means to aim for the impossible and succeed. Join us as we explore his professional journey, personal insights, and the challenges he overcame to build a thriving independent audio-visual design firm.

As Mr. Vipin Verma's story illustrates, "The only way to discover the limits of the possible is to go beyond them into the impossible." This sentiment resonates deeply after hearing his experiences.

Coming from a family with an agricultural background, Mr. Vipin Verma's path was unconventional. He ventured into a different academic and career life, supported by his family's strong values. Reflecting on his early days, he shared, "My father ensured we received an excellent education, enrolling us in one of the top schools in Meerut, which eventually led me to pursue Mechanical Engineering. After graduation, I was determined to pursue a career outside our family business, despite significant opposition."

Unlike many engineering graduates, Mr. Vipin Verma's career trajectory was more of a spiral, with multiple entry and exit points. He began his career in manufacturing, then moved into services, customer support, and sales for professional audiovisual manufacturing systems. However, his true passion led him to establish an AV consulting business. The diverse roles he undertook throughout his career equipped him with a holistic understanding of various sectors, which ultimately helped him realize his dream of founding his firm Consultechpro.

During our discussion, Mr. Vipin Verma delved into how he entered the AV industry, built his expertise, and cultivated relationships with end users, architects, PMCs, and system integrators. He recalled, "I entered the AV industry in 2000. After 20 years, I had built significant relationships within the industry, which were forged over time through trust and dedication. I always prioritized clear communication and focused on educating the industry through training programs for partners and customers, helping them understand the technology and products."

Speaking about his consulting firm and its prestigious projects, he said, "We were selected as the AV engineering technology support partner for the Indian Prime Minister's Museum in Delhi by the main contractor from Europe. The project was successfully executed and inaugurated by the Honorable Prime Minister Narendra Modi. Recently, another gallery project was completed and inaugurated by our President Droupadi Murmu" These accomplishments have significantly enhanced his market recognition, enabling him to attract new opportunities from multinational firms. When asked about the challenges he faced, he responded, "I wasn't giving 100%; I was giving 400%."

As a solution expert, Mr. Vipin Verma highlighted some of the unique and exceptional AV solutions provided to Indian organizations and multinational companies. He also discussed the pros and cons of AI in AV projects, stating, "AI is quite beneficial in the AV domain, but the person using it must be sufficiently skilled in AV, otherwise, it's ineffective." He emphasized the importance of addressing the talent shortage in the AV industry by supporting skill development centers, particularly in non-metro cities, and actively contributing to the growth of the AV industry in India. He concluded, "This platform has brought me great success, which comes with significant effort. So, learn, strive, succeed, and create a legacy. Pass on your knowledge, train others, and prepare the next generation."

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Advancing the Frontiers of Medicine

How AV elevated learning experiences at AIIMS Guwahati, bringing their vision to life.

The All India Institute of Medical Sciences (AIIMS) is a group of world-renowned premier institutions known for the pursuit of knowledge, healthcare innovation, and transformative patient care. The first AIIMS institute was established in 1956 in New Delhi as an autonomous institution under the Ministry of Health and Family Welfare, Government of India. With a vision to serve as a center for nurturing excellence in all aspects of healthcare, AIIMS has since expanded its influence by setting up institutes across the nation.

AIIMS Guwahati, established in 2015, inaugurated its new sprawling campus in April 2023. Vallect was entrusted with the design and integration of AV systems for this project. Laxminarayan Rakshit, Project Manager at Vallect, states, "Vallect is proud to be involved in this prestigious AIIMS project. The foundation of transformation begins with quality education. As the first AIIMS in the Northeast, the institute will significantly enhance the quality of healthcare across the Northeastern states. In this era of digital transformation, our AV systems play a vital role in enriching the learning experience at globally renowned medical institutions like AIIMS. As an integrator for AV technologies, we have contributed to the institute's vision by designing bespoke, engaging, and immersive learning spaces that benefit both professors and students"

Envisioning a modern, engaging, interactive learning experience

Laxminarayan explains that AV installation began during the civil phase of the project, and the team set out with an ambition to align their efforts with the institute's vision for a modern, engaging, interactive learning experience. "The goal was to seamlessly integrate technology and education to create an improved learning experience that fosters student engagement and maximizes learning outcomes," he says.

He adds, "Our approach was meticulous. We thoroughly analyzed the architectural and design plans of the campus, conducted in-depth consultations with the client, and then prepared a comprehensive AV systems solution tailored to the unique needs of each space. Our team, based in the East region, managed the installation process with precision, flawlessly executing the project within eight months, well ahead of schedule."

The AIIMS Guwahati campus, spanning an impressive 189 acres, houses a medical college, a nursing college, and a hospital complex with a 750-bed in-patient facility offering OPD and emergency services. "The project's scope included deploying AV systems to enhance the experience across various spaces, including the 500-seater auditorium, conference rooms, and lecture halls in the medical college, as well as demonstration and conference rooms in the hospital building," explains Laxminarayan.

Elevating the auditorium experience

Tasked with creating a versatile design and cutting-edge AV system for the "multi-use" 500-seater auditorium, Laxminarayan recalls how the team equipped the auditorium with AV technologies that would cater to a diverse range of activities like live events, instructional sessions, video conferences, presentations, and cultural events. "Our goal was to deliver excellent audio and visual quality to enthrall guests with an incredibly engaging and immersive experience, regardless of the type of event." he says.

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The auditorium's audio setup includes Bose AM10040 stage monitor loudspeakers, which deliver high-quality sound with a wide frequency range, excellent sensitivity, and powerful output, according to Laxminarayan. "These speakers are perfect for auditoriums as they allow for easy coverage customization. Additionally, the multiple modules help build arrays that improve sight lines, reduce weight, and lower system costs as they require fewer modules than conventional arrays. These line arrays ensure accurate line-of-sight sound pressure, providing the auditorium with crisp, engaging, and complete audio coverage throughout the entire space," he explains.

For projection needs, the team selected the Christie D13WU-HS 13,500-lumen projector to deliver a powerful visual experience. Laxminarayan highlights, "We chose this Christie projector because it is versatile enough to handle various events, thanks to its WUXGA resolution, which delivers sharp and detailed images. Compared to standard laser projection, the exceptional color performance and saturation of Christie projectors made this the right choice. Our team also integrated the projector with various input options, Wi-Fi connectivity, and control interfaces to ensure flawless performance." He adds that Samsung's 22" monitors were meticulously selected to enhance camera monitoring capabilities throughout the space, ensuring clear and detailed visuals in every corner of the auditorium. The three-sided borderless display lent a clean and modern aesthetic to the space.

He continues, "We also deployed the Polycom RealPresence Group 700, a state-of-the-art full-high-definition video conferencing system. This system features 1080p resolution for crisp, clear video quality, complemented by a 12X optical zoom integrated camera, RF remote control, and an omnidirectional microphone." He notes that this setup ensures seamless point-to-point video conferencing capabilities, enhancing communication and collaboration within the auditorium.

Coming to stage lighting and fabrication, Laxminarayan explains the choice of advanced lighting fixtures and controls to create dynamic and immersive experiences tailored to meet the needs of varied events hosted at the auditorium. "Our fabrication expertise ensured seamless integration and optimal positioning of lighting elements, delivering captivating visual effects that complement any type of event. When asked about the choice of Canara Lighting RGB lasers for stage lighting, Laxminarayan says, "Canara Lighting RGB lasers are well suited for large theaters and entertainment shows. They are energy efficient and offer vibrant, full-color lighting. Canara Lighting is among the foremost providers of Luminaires, and their customizable solutions make them an excellent choice for educational auditorium and stage lighting."

Collaborative learning takes center stage

From virtual collaboration to distance learning, telemedicine consultations, and immersive simulation-based training, innovative AV technologies are indeed transforming medical education and training environments today. By offering future medical professionals and faculty opportunities to share, learn, and engage beyond the traditional classroom setting, these technologies lie at the heart of the learning experience at institutes like AIIMS Guwahati.

The institute aimed to equip four conference rooms, eight lecture rooms, 21 demonstration rooms, and 18 demonstration halls in the Outpatient Department of the new campus with world-class AV technologies.

Laxminarayan explains that the conference and lecture rooms are utilized for administrative and faculty meetings, telemedicine and consultations, inter-institutional collaboration, guest lectures,

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and training sessions. He gives an example of interdisciplinary lectures held at the institute that involve cooperation with guest speakers from other AIIMS institutes and practicing specialists. "Additionally, simulation-based training sessions and Continuing Medical Education (CME) are conducted in these rooms, allowing remote participation and ongoing learning for medical professionals." he says.

Keeping these requirements in mind, Laxminarayan explains that these rooms are equipped with advanced AV technology, including high-quality projectors, video conferencing systems, and robust audio equipment to facilitate seamless presentations and meetings. "Our AV setup ensures clear visuals, crisp HD video calls, and powerful sound for effective communication, empowering students and fostering a sense of connection and engagement," he elaborates.

Panasonic VZ-580D laser projectors have been installed in the conference rooms, accommodating up to 126 people. "These projectors are known for their bright, clear image quality and long operational life, and provide high-quality visuals that work well for large gatherings and important meetings. Additionally, we installed a high-definition video conferencing system using the Polycom RealPresence Group 700 for video conferencing solutions. This system supports full HD 1080p video quality for clear, detailed video calls. It includes a 12X zoom camera, a remote control, and an omnidirectional microphone. We also installed recording and streaming devices that support high-definition recording, multiple HDMI inputs, and IP video sources. These devices offer flexible scaling, window processing, and built-in storage," highlights Laxminarayan.

The lecture rooms, with a capacity of over 120 Pax, are used for distance learning and lectures, enabling students to attend classes and seminars remotely. "In these rooms, the Bose IZA 190-HZ Class D power amplifiers deliver powerful, clear sound with built-in protection features and digital signal processing," he says.

In the demonstration halls with 40 Pax capacity,16 AWG speaker cables and customized projector mount kits were installed to optimize projector placement. Laxminarayan explains that the demonstration rooms are designed for hands-on sessions, reinforcing theoretical teachings and preparing students for clinical practice. "These rooms also host hands-on sessions, enriching student learning with modern audiovisual aids, anatomical models, and interactive tools."

Additionally, Bose IZA 190-HZ integrated zone amplifiers are installed in certain spaces to provide high-quality sound with features such as priority override and a fire alarm interface.

Stumbling blocks

When asked about the most challenging aspect of the project, Laxminarayan responds, "We had to work across multiple spaces on the campus alongside several vendors. Efficient scheduling and communication with these vendors were crucial to ensure timely product deliveries and seamless installation. We also needed to ensure optimal positioning of the AV systems in each space, which required a comprehensive understanding of the solution and technical expertise to guarantee a smooth installation."

A new frontier

The world of medical care and education has transformed significantly in just a few years. As healthcare evolves rapidly and technology advances, AV interventions will be poised to play a pivotal role in shaping a future where health and well-being are more achievable for all.

Reflecting on Vallect's experience with AIIMS Guwahati, as well as other government projects such as AIIMS Bathinda, Dental Medical College, Nalanda, Government Medical College, Chapra, and other institutions, Laxminarayan shares his perspective on the changing landscape and the opportunities it presents. "In the wake of the COVID-19 pandemic, there has been a noticeable shift in healthcare in India, with numerous upcoming healthcare projects emerging across the country. This huge potential for growth presents an incredible opportunity for us as AV System Integrators, not only in the education sector but also in hospitals, where we can assist doctors with remote consultations, telemedicine, and surgical support."

Laxminarayan also shares that Mr. Venkatpati Raju, the former MEP Consultant of AIIMS Guwahati, praised the quality of the work executed, stating, "The feedback from students and faculty has been overwhelmingly positive. The new AV systems have transformed classrooms into vibrant, interactive learning spaces. Students are more engaged, collaboration has increased, and the overall learning experience has been significantly enhanced. Excellent work by the entire team involved in this project. Great coordination and timely delivery of the product. Thank you so much."

In conclusion, Laxminarayan emphasizes that the enhanced learning experience delivered at AIIMS Guwahati is a testament to the team's effort in successfully bringing the institute's vision to life.

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Future-Proof, Scalable AV Technologies at IISER Tirupati

One of the many things India is known for is its deep-rooted emphasis on education, nurturing some of the greatest minds in the world. The government's thrust on advancing higher education has played a pivotal role in contributing to this steady stream of high-quality, talented engineers and scientists graduating year after year.

The Indian Institutes of Science Education and Research (IISER), comprising seven institutes across the country, is a testament to this dedication. Set up by the Government of India through the Ministry of Education, these niche institutes impart quality education in basic sciences and advanced science research.

When the permanent campus of IISER Tirupati was constructed last year, Havi Design India LLP was entrusted with transforming the learning spaces and auditorium using innovative audio-visual (AV) technologies. Creating an immersive and engaging learning environment was crucial in fulfilling the Institute's mission of nurturing talent to meet the nation's needs and preparing them for future careers in a global society.

Setting the bar high

Manikk Guptha, managing partner at Havi Designs India LLP, explains that IISER Tirupati wanted technologically advanced yet easy-to-operate solutions for their campus. This included eight 60 Pax classrooms, four 150 Pax classrooms, one 300 Pax classroom, and a state-of-the-art auditorium.

Entrusted with the design and installation of the entire AV and stage lighting system for these spaces, the Havi Designs team went all out with an ambitious mission to deliver top-notch sound and visual capabilities that exceeded the Institute's high expectations. "The goal was clear - to create state-of-the-art interactive learning and presentation environments catering to different audience sizes while upholding the highest audio and visual performance standards, with ease of operation and maintenance," he explains.

He adds,"The AV installation began after the civil work was completed, and the interior work, including some furniture, was already in place. Our team collaborated closely with the client and other contractors to understand the requirements and limitations of the existing setup. With precise planning, we maintained the room's acoustic integrity and ceiling structure while integrating our equipment without disturbing the existing structures,"

Shaping smart learning spaces

Manikk further elaborates that the goal for the classrooms was to install an intelligible audio system along with ceiling-directional microphones to deliver crisp and clear sound uniformly distributed at every seat. "The Institute also wanted a dynamic video setup featuring functionalities like presenter tracking, lecture recording, and live streaming. The aim was to create an immersive experience, all easily controlled through a sleek graphic interface on a wireless iPad for seamless integration and effortless operation," he adds.

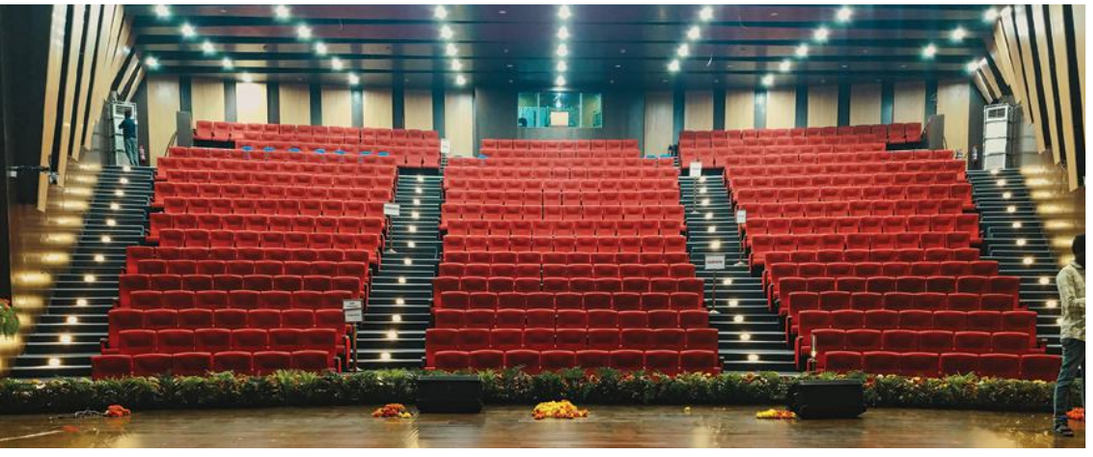
He continues, "We designed the AV systems to enhance in-person and remote learning experiences with scalable, future-proof AV infrastructure that would allow for future upgrades and expansions. Easy-to-use interfaces and staff training reduced the need for technical support, ensuring smooth operation and minimal downtime and boosting the Institute's overall teaching and learning experience,"

Manikk continues, "In all the classrooms, we chose the narrow vertical Bose MA12 column array speakers because of their controlled sound dispersion that directs sound only towards the audience, ensuring better speech and clarity. A Bose P2600A power amplifier with digital

connectivity powers the speakers." When asked about the choice of speakers, Manikk emphasized that Bose would bring significant value to the project. "We have worked closely with Bose for many years, and they have a wonderful product line. We get excellent support from them, which means we can support our customers better," he highlights.

In the larger classrooms, the team added functionalities like presenter tracking through multiple PTZ cameras, lecture recording, and live streaming with multiple large motorized screens for video displays and seamless touch control.

"TCC2 Sennheiser ceiling microphone tiles placed close to the stage are used for video conferencing and sound capture for broadcasts within or outside the campus. Sennheiser wireless lapel and handheld microphones, as well as wired gooseneck microphones for podiums, allow flexibility in microphone usage. The Lumens PTZ cameras installed have live streaming directly from the camera for recording lectures." he explains.



When asked why they chose Lumens PTZ cameras Manikk highlights that Lumens is one of the most popular brands today, and they work closely with them, especially on most government projects. "They offer excellent Korean-made products at competitive prices, and their unique selling point is their standby policy. They ensure that within 24 hours, they send a standby product for any project we work with them on. For projects in Delhi, the standby product will arrive in three hours. We just inform them, the new product arrives, and the old one is returned to us after repair," he explains.

For the largest classroom, with a 300-audience capacity, the institute required stage teleprompters and video confidence monitors on a portable trolley for presenters. "Many orators prefer teleprompters to deliver their speeches confidently, so the Sony teleprompter is used mainly when senior professors, faculty from other universities, or high-ranking officials present. On the other hand, the Sony monitor display is more regularly used to help speakers stay on track while presenting." he adds.

Connection, sharing, and collaboration, whether in the classroom, across campus, or globally, is a rising trend that brings AV collaboration front and center of the student learning experience. Manikk emphasizes that the AV infrastructure is scalable and future-proof, allowing for expansion of the existing system as needed. "For instance, if there is a need to integrate all classrooms by broadcasting a lecture from one hall to another, it can be done through AV over IP and similar technologies."

Powering an immersive auditorium experience

A space created for education, knowledge sharing, and entertainment, Manikk describes the state-of-the-art auditorium as a versatile venue for various events, including annual programs, live performances, and lectures.

"We used Bose line array speakers, front-fill speakers, stage monitors, and subwoofers, all powered by robust digital amplifiers, to deliver exceptional sound quality. The audio setup also included a digital signal processor, digital wireless microphones with an antenna distribution system, and a robust mixing console to manage sound effectively," he explains.

"Four Sony AMU108 front-fill speakers placed on the stage cater to the audience in the front rows sitting close to the stage. The line speakers, placed about 15 feet above the floor, are designed to provide sound for the entire audience. However, when the front-row audience looks towards the stage, they may feel the sound coming from above because of the position of the main speakers. So, we strategically placed these front-fill speakers to maintain the perception that the sound originates from the stage. Played at a low volume, they act as filler speakers to the main speakers, aiming to create an illusion of the sound coming from the stage," Manikk elaborates.

The entire system is fully digital, giving users complete control at their fingertips through an iPad touch panel. With just a press of a button, the presets allow users to activate the system, control the volume, select inputs, and manage the whole show from the hall without returning to the control room. The user-friendly interface ensures that anyone without technical expertise can operate it easily. They can make the selections in their control room, but we've provided this additional add-on provision, and the users are happy with it." he adds.

For the video setup, the team used a large motorized screen, a high-lumen Christie projector, and

a complete camera recording and presenter tracking system in place. "We also equipped the Auditorium with Leksa special effects stage lighting solutions with motorized curtains to bring life to the many cultural programs hosted in this space," Manikk continues.

Manikk shares us why the Christie DWU23-HS 18500 ANSI lumens projector was the right choice for the project. "We've had a positive experience working with Christie, and this is a reliable product with excellent commercial and technical support. If it was a 5000 lumens projector, we might have considered other brands, but when it comes to high lumens, I think Christie rules the market, and they are one of the best in the industry in this segment. We aimed to use the best, which is why we chose Christie,"

Rising to the challenge

By keeping lines of communication open and holding regular coordination meetings with contractors, the team worked through the infrastructure limitations to keep the project on track.

Manikk shares how the lack of scaffolding made mounting ceiling equipment like the Christie projector and PTZ cameras difficult. "We used innovative methods like lifts and temporary supports to safely install and seamlessly integrate these devices with the existing electrical setup. We have used lifts in other projects like the Pragati Maidan and the ITPO project because the ceiling heights were so high that scaffolding was impossible. But here, the challenge was different; the floor tiling was already done, so the lifts helped us work faster."

Cable management was a challenge, too, as it required detailed planning and execution by the team. "We needed to ensure reliable connections for HDMI, Cat-6, and other cables while avoiding clutter. On-site electrical work was not allowed, so we worked within the existing electrical setup, which meant carefully routing power cables and ensuring all connections were compatible without making any modifications," he explains.

"Our local team carried out the majority of the technical installations. However, for specialized tasks such as touch panel programming, testing, and commissioning, we brought in our teams from Delhi and Bombay to ensure certain programming was tested," he adds.

A bright future

Undoubtedly, technology is integral to the future of higher education, and AV technologies will continue to play a powerful role in creating transformative spaces for learning at institutes like IISER Tirupati.

"The Institute's enhanced in-person and remote learning experiences and future-proofed AV infrastructure will allow them to adapt to change and stay ahead of the curve. This positive impact is a testament to our team's expertise and dedication to going the extra mile. Seeing the immediate improvements in the learning environment and knowing our work has made a difference makes this project particularly rewarding," he says with pride.

Manikk also emphasizes the massive focus of the Indian Government on education in recent years. "The establishment of new IITs, IIMs, and AIIMS campuses reflects significant progress being made and the government's commitment to advancing the education agenda. These institutions are highly esteemed and internationally recognized, attracting students and faculty worldwide."

In conclusion, Manikk highlights how AV is integral to the education experience at these institutions, and collaborating with international institutes has made them realize the need to meet international AV standards. "This is a huge opportunity for AV industry, especially with government clients. Given this focus, I believe they will continue to upgrade their AV systems in the future to continually enhance the overall teaching and learning experience.

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"Client centricity will be our differentiator."

Interview with Vega Global CEO Steven Medeiros

Steven Medeiros, CEO of Vega Global, recently visited India to spend quality time with his team, clients, and partners. A dynamic and visionary leader, Medeiros has been instrumental in leading Vega, a global leader in audiovisual, collaboration, and dynamic display solutions, into a new era of AV technology since joining

AV Today had the opportunity to chat with him at Vega's new office in Bangalore.

Excerpts from the interview:

"An Overview of Vega Global and Its Specialized Industry Verticals"

We've been in the industry for nearly 40 years, operating in 30 cities across 19 countries. Laurie Chow, our founder, had a vision, and Vega Global originated in Hong Kong. With a focus on client-centricity, we continued to grow, and the big push was about 13 years ago when we expanded into different geographies to support our high-tech customers and major banks. We took on local government projects in some countries, especially in Hong Kong, our home base.

We focus on banking, FSI, high-tech clients, education, and hospitality. We are dominant among the multinationals in Asia, and our goal is to work with more local businesses. Every geography has a specialization; the common thread is how we deliver through the one Vega platform. Our client-centricity will be our differentiator. We believe in starting from the client and working backward. We have a three-year growth strategy to double our business, which relies heavily on our ability to deliver and expand in India as China becomes more and more China for China.

Exploring India: Unique Market Dynamics and Cultural Insights

I have been here many times and love coming to India. I spent ten years with SAP and worked for Hyderabad-based Kony, which exposed me to the local business landscape in India.

I believe India stands out because of its work ethic. The level of urgency and the quality of work delivered are world-class. Earlier, India was perceived to reach 80% of the quality level, but now we're seeing 105%; I am speaking from my experience and client feedback in the industry. We see pride in the execution, and the quality is beyond world-class; this is where India will absolutely dominate. The beauty is that India is friends with everybody and knows how to operate with the rest of the world. India is accepted in other geographies, and that's its strategic advantage. India will continue its leadership position as the center of excellence, pushing outwards to the rest of the world.

We want to get the word out and share the Vega story with clients, showcase our excellent portfolio of work, and highlight what sets us apart and how

we can help them. Our largest market is Hong Kong, but I see India surpassing it soon.

Vega Global's Culture and Expansion Strategies for Team Growth in India

We have been in India for 13 years and have about 150 employees across our main offices in Bangalore and Mumbai, with a smaller presence in Chennai, Hyderabad, Pune, and Delhi.

Culture is my focus, and it's what's unique about Vega Global. When you create an environment where people feel comfortable and confident, knowing that they have a place where they can grow and be recognized for their value to our clients and other employees, when you get that - the wood behind the arrow, and you can't stop it. Blessing Joseph (Managing Director and Head of India & MEA) has done an amazing job building this culture here while continuing to deliver and not giving in. He has built a great sales engine and brought in some great, talented individuals. The energy our people bring to a project and the prioritization of the client experience is number one. That's what's making us grow the way we are. If you give a great employee experience, the client experience will be 10x better.

Global mobility for employees is a big change at Vega. We encourage global mobility to accelerate our team and culture and have a highly mobile workforce, especially in India. In the past, it was siloed within the countries, but within India specifically, it's fluid. We go where the demand is. We're already talking about where our next offices should be.

Future Prospects: Vega India's Shift Towards Managed Services

From a global perspective, why wouldn't we focus on what India does best? Our clients say you've done an amazing job from an installation perspective; can you do more for us? So, we're seeing more and more clients asking for Megacare, so we can offer post-level support, whether on-site or remote. I see the vision and strategy for all that to be managed and operated out of India. We're also discussing how Vega's back-office operations, HR, finance, project management, and even design could be managed out of here.

When I talk about the center of excellence coming out of India, I'm referring to the increasing influence and power base here. Yesterday, I met a large tech client who asked, "Where's the gravity now?" Sometimes, it could be North America or Singapore, but you only find out once you get to know your client. At Vega, we go deep, understand client requirements, and provide value. That's what makes us unique.

Vega Global's Vision for AI Adoption

AI is a hot topic; I think the software industry will drive these advancements. We can already see AI being used for tasks such as transcribing, auto-scheduling, and powering down things automatically. This is extremely helpful, especially as people need to report their carbon impacts. Manufacturers are also starting to incorporate AI technology, but AI is not a standard conversation today, except for real estate professionals looking five or ten years into the future.

Before I heard about AI, I heard about ESG (Environmental, Social, and Governance), analytics, and dashboards. ESG components are becoming increasingly important. At Vega, we start client discussions by asking what they want to do with their old products. Can we donate them or find a second life for them? Clients ask about minimizing packaging for new products. Manufacturers now exclude power supply cables due to differing standards, such as UK versus US plugs. Clients appreciate this approach, and those will be the next discussions on how we work collaboratively.

As an SI, we should be the first to spot the demands and work with the clients, manufacturers, and governments to ensure supportive policies. We need to be here another thousand years, so we must do our part now, pass it on to generations, and set the expectation. This needs to be at the front and center of discussions, and Vegas is driving that.

Navigating Competition: New Brands Entering the Indian Market

When it comes to competition, our local touch makes us unique. We bring local culture and execution, and we are differentiated by our people and the outcomes we deliver. Competition is good and an opportunity for us to be better and more proactive, hire the right people, and invest in them. When I hear from the country teams about a competitor opening an office, I see it as validation that we are in the right place. ■

Echoes of Freedom

The Enchanting Transformation of Azad Park

In the heart of Prayagraj, Chandrashekar Azad Park has undergone a breathtaking transformation, blending mythological reverence, rich history, and freedom struggle into a modern marvel of artistry and technology. This revitalization is not just an enhancement of a public space; it represents a harmonious fusion of historical homage and innovative flair, celebrating the great city of Sangam.

The park's metamorphosis into a vibrant cultural hub is anchored by the spectacular Water Screen Light and Sound Show with dancing fountains and lasers. As visitors approach, they are welcomed by a grand display that seamlessly integrates historical significance with state-of-the-art technology, turning Chandrashekar Azad Park into a canvas where the past and present converge in awe-inspiring fashion.

"We're thankful for the chance to transform Chandrashekar Azad Park. Merging advanced technology with historical storytelling has been a rewarding experience, enabling us to honor Azad's legacy and create a powerful, immersive tribute."

– Harbir Singh (MD, Pan Intellecom Ltd.)

At the core of this transformation are sophisticated technological components that deliver an extraordinary sensory experience. The selection of high-performance hardware was intentional, ensuring that both audio and visual elements of the show are exceptional. Dynacord amplifiers and Electro-Voice (EV) speakers were chosen for their crystal- clear sound quality, ensuring that every note of the soundtrack resonates with perfect clarity.

For the visual spectacle, Digital Projection's TITAN LASER 33000 4K projector and AniLazo 10W laser systems were utilized to create a vivid and intricate light display. These cutting-edge technologies project high-definition visuals onto a water screen, crafting a mesmerizing canvas where light, laser, water, and sound interact. The projector's 4K resolution provides sharp, vibrant images, while the laser systems add dynamic effects that transform the water's surface into a living work of art.

The success of the show also relies on its compelling narrative. Collaborating with historians and scriptwriters, the creative team crafted a storyline that journeys from the Kumbh's sacred significance to the historic importance of Prayagraj, culminating in the legacy of Chandrashekar Azad. This narrative intertwines the city's legends—from its mythological roots to Azad's heroic deeds—into a tapestry of patriotism and bravery that resonates with diverse audiences.

Advanced multimedia software enhances the experience with interactive elements that complement the water displays and laser effects. These visuals serve as educational tools, immersing visitors in the mythological and historical aspects of India's independence struggle. The show invites

audiences to explore the sacredness of Kumbh and the courage of Azad in an engaging and enlightening format.

One of the project's major challenges was balancing the reverence for the city's mythological and historical importance with the need to captivate a modern audience. Highlighting Azad's pivotal role in India's independence required a presentation that honored his legacy while engaging contemporary viewers. Achieving this balance involved extensive collaboration with cultural experts, historians, and scholars to ensure historical accuracy and respect.

Simultaneously, the team needed to appeal to modern tastes by employing contemporary storytelling techniques, engaging visuals, and relatable narratives. This careful blend of authenticity and modern presentation ensured that the city's legacy was both preserved and revitalized, inspiring audiences today.

The Water Screen Light and Sound Show has become a beacon of cultural enrichment, drawing visitors from near and far. Locals and tourists alike flock to the park to witness this innovative celebration of the city and its national hero. The show has revitalized the park's cultural significance, transforming it into a landmark where history and modernity merge in a spectacular display.

The show's positive reception extends beyond the public sphere, garnering praise from government officials and cultural critics alike. It stands as a testament to Prayagraj's commitment to enhancing public spaces with meaningful and innovative art forms. By celebrating Chandrashekar Azad's legacy and showcasing the city's rich heritage, the project has solidified Prayagraj's reputation as a hub of impactful cultural experiences.

Ultimately, the Chandrashekar Azad Park Light and Sound Show does more than entertain; it inspires. By weaving themes of mythology, patriotism, bravery, and national unity into its fabric, the show fosters civic pride and strengthens cultural identity. It serves as a powerful reminder of India's rich history while embracing modern technological possibilities.

This visionary project, which blends heritage with innovation, sets a new standard for cultural presentations. It not only honors the past but also engages and inspires contemporary audiences, ensuring that Prayagraj's legacy continues to shine brightly for generations to come. Through this captivating fusion of history and technology, the show at Chandrashekar Azad Park stands as a testament to the power of public art to celebrate, educate, and inspire.

"Diving deep into the essence of Chandrashekar Azad has been an immensely inspiring journey for me. The most challenging aspect was seamlessly weaving together the historical and mythological facts of the city with the valor of Chandra Shekhar Azad. Azad holds a special place in my heart as a personal hero, and the opportunity to bring his story to life alongside other elements in our innovative production has been truly gratifying. This project has allowed us to pay homage to his legacy in a way that harmoniously combines artistry and technology, resulting in a tribute that is both captivating and profound."

- Aman Arora (Founder and Creative Director, Magical Theatre)

"This project holds a special place in my heart. Working on the Chandrashekar Azad Park transformation has been incredibly meaningful, allowing us to blend advanced technology with a tribute to a national hero. I'm proud of what we've achieved and grateful for the opportunity to contribute to such an important cultural landmark."

– Sankalp Srivastava (Manager, Pan Intellecom Ltd)

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Enhancing Employee Wellbeing
The Role of Circadian Lighting in Modern Workspaces

Sachin K Jain, Technology Design Architect: Experienced Technology Architect with a demonstrated history of working in the ELV industry. Skilled in Audio-Video, Electronic Security Surveillance, Smart Automation, IoT, Lighting, Data-Voice, IBMS and Life Safety (PA & Fire Alarms).

As work culture continues to evolve with increasingly flexible schedules, the long-term impact on employee health is often overlooked. While few consider the consequences of irregular work hours, there is a solution that can help employees maintain good health, regardless of their location or schedule. Circadian lighting, already embraced in many Western countries for its health benefits, is making a significant impact in workplace environments. However, its importance has yet to be fully recognized and implemented in India.

Circadian lighting mimicks the natural daylight cycle and supports the body's internal clock, enhancing both physical and mental health in professional environments.

Modern workplaces are prioritising employee well-being and productivity. Circadian lighting is one such solution towards that objective that aligns artificial light with the natural rhythms of the human body.

Circadian lighting is designed to mirror the natural progression of sunlight, from the bright, cool light of morning to the warm, dim hues of evening. This lighting concept is rooted in the circadian rhythm, a 24-hour internal clock that governs various physiological processes, including the sleep-wake cycle, hormone production, and cognitive function. The human body relies on light cues, particularly from the blue light spectrum, which signals our bodies to stay alert and awake during the day and prepare for rest in the evening, to regulate this rhythm.

Traditional office lighting often provides a static level of illumination, which can disrupt the body's natural cycles, leading to issues such as eye strain, fatigue, and even sleep disorders. Circadian lighting, on the other hand, adjusts dynamically throughout the day, providing bright, cool light during peak energy hours and transitioning to warmer tones as the day ends.

A lot of job roles require employees to spend the major part of their day indoors thereby reducing their exposure to natural daylight conditions. Indoor spaces that are not exposed to natural daylight through windows, skylights, etc can benefit from artificial lights using circadian rhythm.

By aligning lighting with natural energy peaks, circadian lighting helps employees stay alert and focused when it matters most. The right light at the right time can improve cognitive performance and reduce mid-afternoon slumps. Exposure to proper lighting during the day helps regulate melatonin production, leading to improved sleep at night. This not only benefits employees' health but also ensures they come to work refreshed and ready to perform. It can positively impact mood, reducing stress and anxiety while promoting a sense of well-being.

While the benefits of circadian lighting are clear, effectively integrating this technology into the workplace requires expertise in both lighting design and automation. This is where AV professionals can offer the technical know-how to create and manage dynamic lighting systems that enhance the work environment. Through the use of advanced lighting control systems, they can program tunable lights to automatically adjust throughout the day, ensuring that the lighting environment evolves in sync with the natural circadian rhythm. AV experts can design a tailored circadian lighting system by integrating smart sensors that detect natural light levels and adjust artificial lighting accordingly, or setting up customizable schedules that cater to the varied work patterns.

Sachin K Jain, Technology Design Architect: Experienced Technology Architect with a

demonstrated history of working in the ELV industry. Skilled in Audio-Video, Electronic Security Surveillance, Smart Automation, IoT, Lighting, Data-Voice, IBMS and Life Safety (PA & Fire Alarms).

Adoption of the WELL building standard by a lot of corporations is a natural step towards circadian lighting system. Integration of natural light and artificial light to create lighting strategies focused on mental health, well-being and biological response can create happier, healthier and more productive environments.

A Technical Overview:

From a technical standpoint, circadian lighting systems are typically based on advanced LED technology, which allows for precise control over both the intensity and color temperature of the light. LED fixtures can be programmed to emit cool, blue-enriched light in the morning, which is known to stimulate alertness and enhance cognitive performance. As the day progresses, the lighting gradually shifts to warmer, amber tones that help reduce stress and prepare the body for rest.

One of the key components of a circadian lighting system is the control system, which automates the changes in lighting throughout the day. These systems often incorporate sensors that monitor ambient light levels and adjust the artificial lighting accordingly. For example, on a sunny day, the system might reduce the brightness of the indoor lighting to save energy, while on a cloudy day, it might increase the brightness to compensate for the lack of natural light.

Moreover, circadian lighting systems can be integrated with building management systems (BMS) to optimize energy use and provide data on lighting performance. This integration allows facility managers to monitor and adjust the lighting in real-time, ensuring that the system operates efficiently and effectively.

Implementing circadian lighting in an office requires a comprehensive design approach that considers the unique needs of the workspace and its occupants. The process begins with an assessment of the existing lighting setup, identifying areas for improvement based on factors such as natural light availability, workspace layout, and the specific tasks performed in different areas. This assessment is often conducted by a lighting designer or an engineer with expertise in human-centric lighting solutions.

Conclusion: Lighting as a Pillar of Office Design

Lighting is a cornerstone of office design, with the power to influence everything from employee productivity to energy consumption. Circadian lighting represents a significant advancement in this area, offering a solution that not only meets the functional needs of a workspace but also supports the health, well-being, and energy efficiency goals of a business. As companies continue to prioritize the creation of positive, productive work environments, the adoption of human-centric lighting systems like circadian lighting is likely to become a standard in modern office design.

By aligning office lighting with the natural rhythms of the human body, businesses can create spaces that are not only more efficient but also healthier, more sustainable, and more enjoyable for everyone involved. As the technology behind circadian lighting continues to evolve, its impact on the workplace will likely grow, offering even greater benefits in terms of employee satisfaction, performance, and overall business success.

Nagpur's Rising Star
The Spirited Spot

The Spirited Spot, Nagpur's newest mixology bar, is located on the 19th floor of Ved Solitaire. Offering a unique blend of eclectic cocktails, live music, and breathtaking city views, it has quickly become a top destination. With high-end sound systems and a vibrant atmosphere, it's redefining nightlife in Nagpur

The city of Oranges or the Tiger capital – Nagpur is known by many names. Situated in the center of India, Nagpur has had the distinction of being connected with all parts of the country through an excellent road, rail and air network.

Of late, Nagpur is claiming its place in the sun as an entertainment and lifestyle destination. With world class infrastructure, an relatively laidback lifestyle, friendly people and an increasingly diverse populace, Nagpur is becoming a city of choice for business and casual traveler alike. With several infrastructural projects connecting Nagpur like the 750 km long Samruddhi Expressway from Mumbai, the North-South Dedicated Freight corridor and high speed rail links to Mumbai and Kolkata, Nagpur is more accessible than before.

An aspirational set of young entrepreneurs, artists and professionals who call Nagpur home is seeking more lifestyle and entertainment options. A quiet retail revolution is underway with many of the premium lifestyle brands, gourmet restaurants, lounges and clubs have opened in what is being touted as the new entertainment quarter.

The Spirited Spot (TSS), launched in April 2024 is a unique concept, one that of a mixology bar that prides itself on serving up eclectic cocktails amidst an energetic ambience. Situated on the 19th floor of Ved Solitaire, the tallest commercial building in Nagpur, The Spirited Spot offers a bird's eye view of the city and beyond, making it the destination of choice for sipping a Gin and Tonic, in style as the sun goes down.

Ashish Ukey, the owner of TSS says "Nagpur never had a true-blue mixology bar that is a combination of a Speakeasy and a high profile cocktail bar, where one could sample the widest variety of say, whiskies or gins or artisanal liqueurs, with authentic ingredients and mixers served as they are meant to be. There are many watering holes, but none that combines the ambience and the experience of listening to live music as you sip your favorite drink. Integral to this experience is music, not just any music. Live music by both mainstream and indie artistes that elevate your experience from the ordinary to extraordinary."

So naturally, an ordinary sound system would not suffice. Ashish was keen to explore beyond the conventional DJ setups that had proliferated across the city, that catered to the collegians and

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party set, whose sole mantra is "its good as long as its loud!"

A good sound system should allow patrons to have a conversation while also being clear and distortion free. This belief led Ashish to Generation AV, a specialist manufacturer's rep firm that offers differentiated products and solutions even for regular applications. After a brief consultation and demos with Optimal Audio, LEA Professional and NST Audio products in Mumbai, Ashish was convinced that this was the sound signature he was looking for.

Generation AV introduced Ashish to Royston Noronha and Malay Jhaveri, of Integrated System Design – a design consultancy and specialist AV integration firm, to undertake this project; as it involved setting up a multifunctional audio system with multiple scenarios in an acoustically challenging space, given that three sides of the venue are glass facades.

Careful planning was undertaken to layout the venue with a stage for live music and a DJ area for after-parties and events at the mixology bar. Once the EASE plots were made, the choice of products narrowed down to the Cuboid 12, point source loudspeakers for FOH and fills, the Cuboid 10 for back fills and bar area sound reinforcement, with active subwoofers from HH Electronics that provided the necessary heft in low frequency to both live and DJ scenarios. Amplification is LEA Professional due to the in-built 96K processing and the control options. LEA professional also offers a unique power optimizing feature in its Smart Power Bridge option, which doubles power on any one channel without losing a channel as most conventional bridging options work.

Routing and signal processing duties are handled by NST Audio's VMX88 and VMO16 processors controlled by VR1, PoE enabled wall remotes for setting presets and system control.

Malay and Royston's vast experience in setting up nightclubs and lounges across the country came handy in time aligning and tuning the system, given all the acoustical challenges. The moment of truth was when the system went live in April, to a private invite only event that saw many of Nagpur's who's who partying into the wee hours of morning.

"The Optimal Audio Cuboid 12 and Cuboid 10 come from Martin Audio's rich legacy in creating robust, versatile products that deliver the goods while not breaking the bank. Tonality is sweet, with clean mids and crisp highs, characteristics of its British lineage. Powered by highly efficient LEA Professional amplifiers, that boast of advanced Class-D design, the system sounds crystal clear with very low distortion even at very high SPLs." says Prashant Govindan of Generation AV, the firm that supplied the products. "Complementing the British tone are the subwoofers from HH Electronics, another name to be reckoned with. Old timers swear by HH Electronics MOSFET amplifiers that powered many a concert in the 70s and 80s. Processing by NST Audio is second to none with studio grade pre-amps, 96K processing and FIR filters delivering an astounding 119dB dynamic range, generally unheard of in the professional audio world. The resulting solution is one that ticks all the boxes, all within a tight budget" adds Prashant.

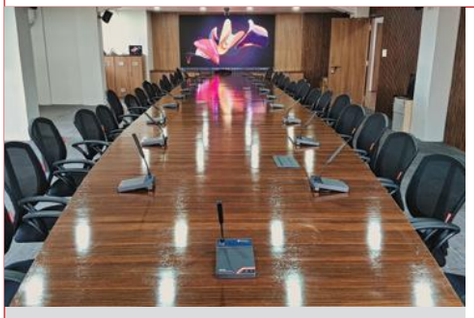
Ashish is thoroughly satisfied with the sound, and buoyed by the response is bringing more live talent to perform on the TSS stage. "We want TSS to be known as the go-to venue for live events, not just in Nagpur, but across India." As part of "The Working Elements", a production and event management firm that manages large scale events, roadshows, concerts and political rallies, Ashish has several decades of experience of creating the right buzz and knows when a sound system sounds right. Word has already spread, it seems as customers drive in from as far as Pune, Nasik and Mumbai to savor all that The Spirited Spot has to offer. We raise a toast to Ashish and here's wishing The Spirited Spot many more spirited times ahead!

Equipment list

2x Optimal Audio Cuboid 12 – FOH, 2x Optimal Audio Cuboid 12 – delay fills, 2x HH Electronics TNA1800S – bass reinforcement, 6x Optimal Audio Cuboid 10, back fills and DJ fills, 1x LEA Professional 1504 – main FOH and subwoofers, 2x LEA Professional 704 – delay fills and back fills. 1x NST Audio VMX88, 1x NST Audio VMO16

Meghalaya Government

Successful Conferencing Solution Installation for I-PAC, Meghalaya



Consultant: Erthpot Electronics Pvt. Ltd

Integrator: Cineworth Sales & Service

Category: Government

Client: IPAC, Meghalaya Basin Development Authority

Contact: www.erthpot.com

Erthpot Electronics Pvt. Ltd., in partnership with Cineworth Sales & Service, successfully completed a critical project installation at I-PAC, Meghalaya Basin Development Authority, Government of Meghalaya, Shillong. The project aimed to deliver a stable and high-quality conferencing solution for a seating capacity of over 30 participants. The client required a system equipped with Chairman and Delegate units, Audio IO on USB for seamless integration with software-based video conferencing, and the essential "Look-at-Me" feature.

To meet these requirements, we installed Erthpot's advanced NCS-C Chairman Mic alongside 20 units of the NC-5D Delegate Mic, ensuring clear and reliable communication for all participants. The system was anchored by the NCS-110CU controller, providing robust control over the entire setup, while the Keyer 44 Digital Signal Processor (DSP) handled audio processing, delivering exceptional sound quality.

This combination of carefully selected products created an efficient and cohesive conferencing environment tailored to the unique needs of the Meghalaya Basin Development Authority. The chosen equipment ensured that every participant experienced clear and uninterrupted communication, meeting the client's high standards for audio quality and system reliability.

Remarkably, despite the system's complexity, the installation was completed in just four days, underscoring the team's efficiency and expertise. This project not only highlights Erthpot's commitment to high-quality audio solutions but also sets a new standard for conferencing installations in government settings across India.

Rajasthan Hospitality

Comprehensive audio-visual integration overcoming resort acoustic challenges

Consultant: NA

Integrator: AV Acoustics

Category: Hotels and Resorts

Client: IShourya Nature Way Resort, Shri Ganganagar

Contact: www.avacoustics.in

The primary objective was to integrate a high-quality audio system throughout the resort, enhancing the visitor experience and supporting various activities, from live performances and DJ events to creating ambient sound. The resort's architecture, characterized by extensive glass use and high ceilings, presented complex acoustic challenges. The U-shaped design of the main club required precise speaker placement and tuning to reduce reverberation and delay. Ensuring audio and video connectivity across six distinct zones demanded an advanced networking solution. Our system integrators deployed VX 18 speakers for powerful, clear sound and installed corrugated metal sheets with absorbent materials to manage reverberation.

A sophisticated video and audio matrix system was also implemented for seamless content sharing across zones. Durable Turbosound iP1000 speakers were chosen for outdoor areas like the swimming pool. The system includes automation features such as Spotify integration and automated DJ setups for continuous operation. The resort's audiovisual setup is further supported by Tannoy, Panasonic, Cisco, Audiopro, Atlona, Kramer, and Behringer, ensuring a cohesive and high-quality experience across all areas.

Tamil Nadu Entertainment

Rox DNC in Salem
A State-of-the-Art Cinematic Experience

Consultant: Studio Soundscape
Integrator: Studio Soundscape
Category: Multiplex & Cinema
Client: Rox DNC Cinemas, Salem
Contact: www.studiosoundscape.in

DNC Theatres, headquartered in Dharmapuri, Tamil Nadu, has expanded its cinema chain with the launch of Rox DNC in Salem, following the success of their 5-screen property in Dharmapuri. Rox DNC is a 4-screen multiplex that features advanced technology to deliver a superior cinematic experience, including 2 Dolby Atmos screens and 2 7.1 surround sound screens. All screens are equipped with 4K projectors, comfortable seating options like recliners and loungers, ensuring top-tier viewing comfort.

Mr. Prem and Mr. Girish from Rox DNC aimed to create a technologically advanced cinema in Salem that would set a new standard in audience experience. To this end, they equipped all four screens with QSC Speakers, supported by QSC Q-Sys processors and amplifiers for exceptional sound quality. The cinema also uses Christie projectors and Galalite screens for its 4K projection, offering unparalleled visual clarity.

The lobby of Rox DNC is designed to be both spacious and aesthetically pleasing, enhancing the overall experience for moviegoers. It features integrated displays and an LED wall using LG Commercial displays, adding to the modern and immersive atmosphere of the multiplex.

Mumbai Restaurant

Seamless Audio Integration Enhances
Day-to-Night Ambiance at Gigi

Consultant: NA
Integrator: Premier Pro Group
Category: Hotels and Resorts
Client: GIGI, Chrome Hospitality, Bandra
Contact: www.premierprogroup.com

To enhance its vibrant atmosphere, Gigi sought to integrate top-notch audio solutions that catered to both its daytime and nighttime vibes. Premier, in collaboration with Audio Technik, delivered an audio system that seamlessly blended with the restaurant's decor while overcoming the challenge of short ceiling heights.

Audio Technik began with a thorough assessment of the space, working closely with Premier and Alphatec to develop a customized solution. The system was designed to be inconspicuous yet perfectly tuned to the room's dimensions, meeting the diverse audio needs of a café by day and a lively bar by night

The setup included Turbosound's Milan series speakers—MILAN M12 and MILAN M10 for tops, and MILAN M15B for the subwoofer—known for superior sound quality and sleek design. A Behringer Xenyx series mixer was installed for precise audio control, enabling seamless transitions between the relaxed daytime ambiance and the energetic evening vibe.

The result was an immersive auditory experience that enhanced the dining and social atmosphere, with powerful, clear sound subtly integrated into Gigi's stylish interiors.

Gurgaon Corporate

Seamless AV Integration for Maersk's Delhi Gateway Office in Gurgaon

Consultant: Solutions India Systems Pvt. Ltd.
Integrator: Solutions India Systems Pvt. Ltd.
Category: Corporate
Client: Maersk line India Pvt. Ltd., Gurgaon
Contact: www.sispl.co.in

Maersk, a global leader in shipping and logistics, entrusted SISPL with the AV solutions for their new "Delhi Gateway" office in Gurgaon, following the success of our collaboration on their Mumbai facility. Our involvement began as AV consultants, where we meticulously designed, seamlessly integrated, and commissioned the entire system. This state-of-the-art facility includes various zones such as the Reception, Meeting Areas, Huddle Room, 22-Pax Board Room, 55-Seater Training Setup, Breakout Area, Cafeteria, and Digital Signage.

The client required a user-friendly, consistent interface across their offices, with all meeting spaces equipped with Microsoft Teams-based conferencing systems integrated with Office 365. Despite facing stringent security protocols, tight timelines, and logistical challenges, we ensured punctual deliveries, competitive pricing, and strict adherence to security measures by maintaining a consistent team throughout the project.

Our solutions were developed in close collaboration with Maersk's IT and projects teams, as well as end users, fine-tuning the design to meet their exact requirements. The result was seamless continuity between their Mumbai and Gurgaon offices, with all systems meeting Maersk's global and Microsoft Teams standards. Our comprehensive approach allowed us to not only meet but exceed Maersk's expectations, delivering a flawless project within the agreed timeline.

Kerala House of Worship

Revitalizing Worship Advanced Audio Overhaul at St. George Pilgrimage Center

Consultant: NA
Integrator: ZACS AND PHILS
Category: House of worship
Client: St. George's Forane Church Edappally, Kochi
Contact: www.zacsnphils.com

Asia's largest pilgrimage center dedicated to St. George, with a history dating back to 593 AD, faced significant audio challenges in its new church, built a decade ago. Despite its iconic architecture, issues such as poor speech intelligibility, excessive reverberation, phase cancellations, and standing waves plagued the space, compromising the worship experience for both the choir and clergy.

To address these problems, Fr. Antony Madathumpady, along with Trustees Josekutty Pallipadan, Joy Kalambadan, and Mr. Joby Thattil, enlisted the expertise of Zacs and Phils. The church's architectural design, particularly the high central dome and extensive granite flooring, posed acoustic challenges. After a thorough study of the space, a redesigned audio system was implemented.

The new setup features MA12 speakers for front-of-house sound, paired with a Bose PM8500N amplifier, and the advanced Behringer Wing console and S32 Stage Box for precise audio control. Audio-Technica microphones and finely tuned DSP units ensure clear, immersive sound, enhancing the overall worship experience.

New Delhi Healthcare

Transforming Healthcare at ILBS
The Impact of Advanced AV and IT Solutions

Consultant: ASK Consultants

Integrator: APSK Enterprises Private Limited

Category: Healthcare

Client: Institute of Liver and Biliary Sciences - ILBS

Contact: www.askconsultantsindia.com

The Institute of Liver & Biliary Sciences (ILBS) in Vasant Kunj, New Delhi, is India's pioneering institute-cum-hospital dedicated to liver and biliary sciences. Recognized among the top 10 medical institutes in India by the National Institutional Ranking Framework (NIRF) and accredited by NABH, ILBS has expanded its facility to include state-of-the-art ICT, AV, IPTV, security, kiosk, and disaster recovery services, enhancing patient care, education, and research.

The expansion presented challenges in achieving seamless connectivity, necessitating a robust infrastructure to ensure reliable fiber optic connections and secure network integration across the campus. The solution implemented included advanced microphones for clear communication, videoconferencing codecs for real-time telemedicine consultations, and IPTV systems to deliver educational content to patients and training materials to students. Interactive kiosks were introduced to streamline patient check-ins, appointment scheduling, and navigation within the hospital.

Additionally, wireless remote controls and HD cameras were integrated to optimize AV equipment and document complex procedures, transforming them into valuable learning resources. This cohesive infrastructure underscores ILBS's commitment to advancing healthcare delivery, making the institute a leading example of the transformative power of advanced AV and IT solutions in the medical field.

Bengaluru Visitor Attraction

Creating a State-of-the-Art
Audiovisual Experience at Pyramid Valley

Consultant: Sonics

Integrator: AVFx Solutions Pvt. Ltd.

Category: International Meditation Centre

Client: Pyramid Valley International

Contact: www.avfx.in

Pyramid Valley features a striking 45-meter tall pyramid structure with a vast 2,500 square meter area dedicated to spiritual meditation. The client sought a state-of-the-art audiovisual experience similar to a TEDx stage. Among numerous concept designs, the client wanted to evaluate the audio before final approval. Tannoy QFlex 64 dual towers with Turbosound subwoofers were demonstrated and selected based on their performance, effectively addressing the acoustic challenges of the space with superior STI through Tannoy QFlex beam steering speakers.

For stage coverage, a massive 217-inch Samsung P2.0 LED and a 130-inch Samsung P1.5 floor-standing display were installed. Atlona Omnistream was used for switching on a 1G platform, with 10 encoders and 12 decoders, all managed by a Velocity control system via iPads. Four Minrray 25x optical zoom PTZ cameras with Blackmagic Atem Mini Extreme ensured comprehensive camera operation.

The audio setup included dual Tannoy QFlex 64 FOH speakers, Turbosound subwoofers, and a Behringer X32 compact mixing console with Dante. Audio-Technica mics supported performances and Q&A sessions. The PC-based conferencing system facilitated Zoom/Teams calls, cloud recording, and live streaming on YouTube and Facebook, all controlled by the Atlona Velocity system on iPads.

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