



THE FUTURE IS NOW

India is ascendant as a player on the global stage, and this is translating into marquee projects that reflect the newly established status of the country. For proof, look no further than the Jio World Convention Centre and Nita Mukesh Ambani Cultural Centre. The facility aims to put the city of Mumbai on the world map as a premium destination for events and entertainment.

Nita M Ambani says: “Jio World Centre is a tribute to our glorious nation and a reflection of the aspirations of New India. From the largest conventions to cultural experiences to pathbreaking retail and dining facilities, Jio World Centre is envisioned as Mumbai’s new landmark, a point where we come together to script the next chapter of India’s growth story.”

To fit out the Jio World Centre facility with the requisite technology and AV systems, Sigma AVIT was appointed as the system integrator and Swee Lee served as the engineering consultant.

The project comprises of multiple spaces with varied functions, and Ian Stott, project director (AV) from Swee Lee, talks about how the partnership between Swee Lee and Sigma AVIT was formed: “The whole

multi-use project can be broken down into a convention centre, a performing arts centre, an office tower, two residential towers, a retail space, a country club, and an art gallery. It is a big project where the performing arts centre added a unique element, so Swee Lee and Sigma AVIT formed a partnership to augment Sigma AVIT’s AV skills with Swee Lee’s experience in specialist performing arts projects. They wanted a world class venue, and this is really where Swee Lee, together with Sigma AVIT, stepped into the picture. The brief was to ensure that the vision of the end user for the performing arts venue, as well as the other spaces, was realised.”

We start with infrastructure

The end user had a vision to not only create one of the best possible venues for events with the Jio World Centre, but to ensure that it remained the best venue for years to come. To achieve this, there was a focus on infrastructure to ensure that the core of the venue was futureproof and this was one of the primary aspects of the projects.

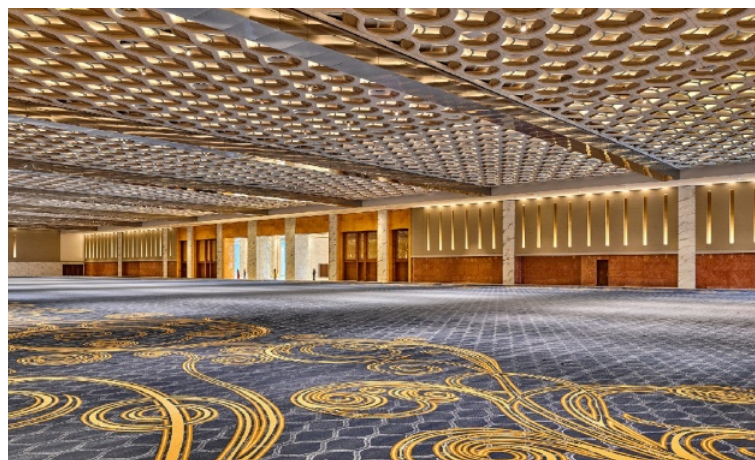
Stott from Swee Lee details: “What makes the exhibition halls, and in fact all the spaces, unique is the unusual degree of developed

infrastructure that has been created. There are floor boxes with AV fibre, and we are talking 12 core fibre, at the edge. When the project was being conceptualised, we were discussing the copper sunset and the fact that the bandwidth required to transmit signals with low latency, deep colour 8K, displayed on large screens, would grow to a point where copper wires would not be able to support that. There are significant challenges to overcome when it comes to copper for transmitting signals over long distances as well. But with the level of fibre that has been deployed, the spaces are ready to transmit raw, high-definition video, at any resolution over the network without any issues. The infrastructure capability at Jio World Convention Centre is unmatched in India and possibly across the world.”

Stott continues: “One of the possible use cases the infrastructure was developed for was esports or gaming, where you have the requirements for high-quality video and low-latency together with extremely large amounts of data that need to be transmitted. These kinds of events can be easily supported and staged by the Jio World Centre.”

Sigma AVIT and Swee Lee provide a detailed look into the technology deployed at the Jio World Centre. The tech sets a new standard for event venues and ensures that the Jio World Centre stays ahead of the curve for years to come.





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Ian Stott, Swee Lee

Creating this futureproof infrastructure was not as simple as selecting the best solutions available. As always, there are integration challenges to be overcome. Balamurugan S from Sigma AVIT details a specific problem that had to be solved: “The floor boxes are particularly large in size, measuring 1.2m by 0.75m. The floor boxes have to be this size because of the level of function they have to perform and the technology they have to house. However, it was extremely difficult finding space in the floors to situate them and make sure that the infrastructure that was required was effectively deployed. We were able to do so by working together with the other trades and ensuring that the work was properly completed.”

Ahead of the curve

Keeping in line with the end user’s drive to have the best function technology could offer networked audio and video is a core part of the Jio World Centre.

Stott talks about how the right AV-over-IP solutions were chosen: “AMX SVSI already had an AV-over-IP product on the market and Crestron, along with a few other brands, was on the verge of releasing networked video streaming products in late 2017. We realised that when the project was to be implemented, everybody would have video streaming products available. From a use case perspective and considering the timelines, it was practical to migrate point-to-point UTP wiring to a wholly networked-based solution and that was the focus of the initial work we did. The decision was made by

Reliance to go with network streaming because they really did not want to construct a flagship building with legacy signal transmission and this decision to ensure that the infrastructure was futureproof meant that we have a phenomenal amount of fibre all over the building for AV.”

Stott continues: “We selected AMX, because at the time of procurement, competitors were only just releasing their first generation of AV-over-IP products while AMX SVSI was already established in the market. We were concerned about the risk of deploying a product in its initial release period, where considerable on-site support from the manufacturer is often required. Of course, if we had known that the pandemic was going to happen, we could have made a different decision. But, based on the information available to us, we selected the least risky product available at the time.”

Why was the decision to upgrade to a more modern AV-over-IP product not made as the project progressed? Stott answers: “Everyone has adopted some proprietary version of encoding. And while each vendor claims that their system is better, we did not see any material benefit. The AMX SVSI products were established and working, and we did not believe that there would be significant improvement by switching to a different product introduced to the market after that.”

On the side of audio, Dante is used for signal transmission. Stott says: “BAI was the US-based AV consultant and they had introduced Dante to the design,

but the system design dated back to 2014, so there was still considerable amounts of analogue cabling present. As the end user had made a decision to go wholly network based, the remaining analogue audio infrastructure was changed to a network-based solution. The final system design accommodated a number of audio streaming protocols, including Dante, AES67, and QLAN.”

Stott adds: “Q-SYS is used as the DSP for central routing. It was really about selecting a product that matched the requirements of the different applications while also providing the functionality that the end user needed.”

Delivering audio and visuals

Audio systems and end points have been standardised across the Jio World Centre unless the space required additional functionality. Overall, Tannoy ceiling speakers with Lab.gruppen amplifiers are employed.

Stott explains how the speakers were chosen: “We ran shootouts for the Reliance management team when it came to ceiling speakers. We picked a range of the best options available on the market, put them into a mock-up ceiling along with proof-of-concept work allowing Reliance to have a degree of confidence that they had picked the right product after the evaluation process. We did a shootout and asked the end user to mark the different options out of five for intelligibility, musicality, and a bunch of other categories. The Tannoy speakers averaged the highest across all the categories and were marked significantly higher than the rest of the competition.”



Displays in the different spaces of the Jio World Centre have been selected according to the requirements and intended function of the spaces.

In the exhibition halls, Extreme LED videowalls with 1.5mm pixel pitch have been built.

Additionally, the concourse of the exhibition hall has been split into four zones and each has its own LED videowall to serve as the display.

Deploying audio and visual solutions in the exhibition hall posed a unique challenge. Bala provides additional details about the obstacles faced by Sigma AVIT during the course of the project: “One of the main challenges for us was the health and safety procedures and requirements. The exhibition has triple the ceiling height of a regular space and this meant that the health and safety requirements were more stringent than what we were used to. It made the installation and deployment of AV technology a challenge as well and we had to navigate this.”

The convention hall follows a similar concept as the rest of the spaces at the Jio World Centre and it is heavily populated with floor boxes and high-quality ceiling speakers.

Visuals are provided by a Milan 193-in projection screen and Epson EB-L1505UNL projector with an ultra-short throw lens. Stott explains why projection

was chosen: “LED technology is changing so fast that a product can be out of date 12 months after its launch. The end user decided to go with projection and adopted a strategy to bring in specific display technologies for events and proceedings when required through rental and staging companies. This gives them the flexibility to meet the specific needs of the event in question.”

The Jio World Centre also boasts meeting rooms that are equipped to host 25 to 50 people and are fitted out with AV systems to enable this.

Once again, projectors are chosen as the display of choice and a lectern has been created in the meeting room spaces so that users can plug in a laptop to present.

Stott explains once again why projection was selected: “We actually did a shootout for different display technologies, LED, LCD flat panels, and projection. The client felt that the best overall usability was actually the projectors and they also fit the space well, so we chose projection. You have to remember that these spaces were being designed in 2017, and at that time active LED for smaller meeting spaces was still a technology that was maturing. The client was concerned that the presenter would become uncomfortable due to the heat generated by LED walls. Also, there were and still are challenges due to manufacturing

processes and the issues of pixels falling as well as the range of pixel pitches available. These factors meant that LED was not as strong of an option for indoor usage as it is today. Furthermore, we weren’t fighting against the sun in the spaces, so the brightness delivered by the projectors was more than sufficient.”

He continues: “Wireless presentation and modern videoconferencing were also undergoing rapid technical changes. We took the viewpoint that a wired connection is always going to be more reliable than a wireless connection, so the connectivity was provided for third-party rental companies to provide the convention user’s preferred wireless solution. For videoconferencing, we followed the market research done by Barco, Microsoft, and others and equipped the smaller meeting rooms BYOD soundbars.”

Perfect performance

The Nita Mukesh Ambani Cultural Centre is a core part of the Jio World Centre and serves as one of the crown jewels of the facility. BAI was the consultant for this part of the project while Sigma AVIT and Swee Lee worked to implement the vision for the performance venue.

A Christie CP4230 DCI-compliant digital cinema projector has been used as the main display.

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Ian Stott, Swee Lee



Tech-Spec

Audio

d&b audiotechnik
d&b Yi10P, V-Sub,
Ti/V-Sub, Yi10P,
V-Sub, speakers
Lab.gruppen
amplifiers
Q-SYS 510 Core
DSP
Shure Axient
digital series
microphones
Tannoy ceiling
speakers

Video

AMX SVSI
encoders and
decoders
Christie CP4230
DCI-compliant
projector
Epson EB-
L1505UNL,
projectors
Extreme LED
1.5mm tiles
Milan projection
screens

Performing arts spaces of this level are rare. We were incorporating so many different technologies that communication between all parties was quite a challenge.

Balamurugan S, Sigma AVIT

Special consideration has been paid to the audio in the space and it is completely networked, in line with the requirements of the end user to have a high-quality, high performance, futureproof space.

Stott starts the conversation by explaining the characteristics of the space: “For lack of a better term, the performance venue has ‘electronic architecture’. All the acoustics can be adjusted electronically.”

First, it has a fully certified Dolby Atmos system with approximately 250 speakers for the cinema which comprise d&b Yi10P, V-Sub, and Ti/V-Sub speakers. The speaker density was required to fulfil the requirements for the coverage pattern over three levels of seating, instead of a single level of seating experienced in most Atmos theatres.

The Nita Mukesh Ambani Cultural Centre also boasts d&b speakers which include Vi8, Yi-8, and Vi-Sub models for the front of house system with processors and it features a SIAP system. A Q-SYS 510 Core DSP is used for routing between the three different audio systems based on the requirements of the event.

Bala says: “One of the biggest challenges we faced was accurately fitting the performance venue out. It is a cinema, a performance venue, and much more at the same time. Fitting a Dolby Atmos system, which is meant for cinemas, into a space that would also be a theatre was tricky. We had to work with all the parties involved for testing and

commissioning as well. There was very little room for error as all the audio systems required precision. There was also the fact that the systems chosen were specialised and we were relatively unfamiliar with them. So, there was a lot of learning on the job.”

Stott explains the function of the SIAP system: “Dolby Atmos requires an acoustically dead space onto which you can then superimpose the audio signature of the movie and to do this you have to heavily treat the acoustics of the room. This means the special effects and the ambience can come across well. The problem is, if you want to do musical theatre, you need a room that provides amplification. Both of these use cases are at odds with each other. So, we have gone down the route of adding the acoustics back in electronically with the SIAP system. There are a number of microphones up in the ceiling that take the signature of the room and reinforce it through complicated processing.”

Bala adds: “Performing arts spaces of this level are rare. We were incorporating so many different technologies that communication between all parties was quite a challenge. And getting everything delivered and deployed within the designated time frame was another challenge. We were often working on one system while the other system was still pending and we couldn’t really test out if certain functionality was enabled until all the system was complete.”

Bala concludes: “The good thing was that we were all working together towards the same objectives. There was a lot of internal communication and processes developed to make sure that we were all pulling in the same direction.”

Partnership dividends

The Jio World Centre project is complete, and the venue has already hosted multiple events. Speaking on the collaboration between Sigma AVIT and Swee Lee to successfully complete the work and deliver the project, Bala says: “We have amazing capabilities at Sigma AVIT, but for a project of the scale of Jio World Centre we wanted to make sure we had that support and global perspective which is why we partnered with Swee Lee. Our collaboration together on the stringent aspects of this project, especially on the side of health and safety regulations, was really instrumental in us delivering the service required and meeting the expectations of the client.”

Stott from Swee Lee concludes: “Sigma AVIT’s knowledge and persistence is second to none. I would be surprised if we could have found a better partner in India to work on this project with. The senior management of Sigma AVIT made a commitment to completing this project well and that made a difference. The standard of quality set at the top filters down to all levels of Sigma AVIT’s organisation.”