SYSTEMS INTEGRATION ASIA

systems integration asia

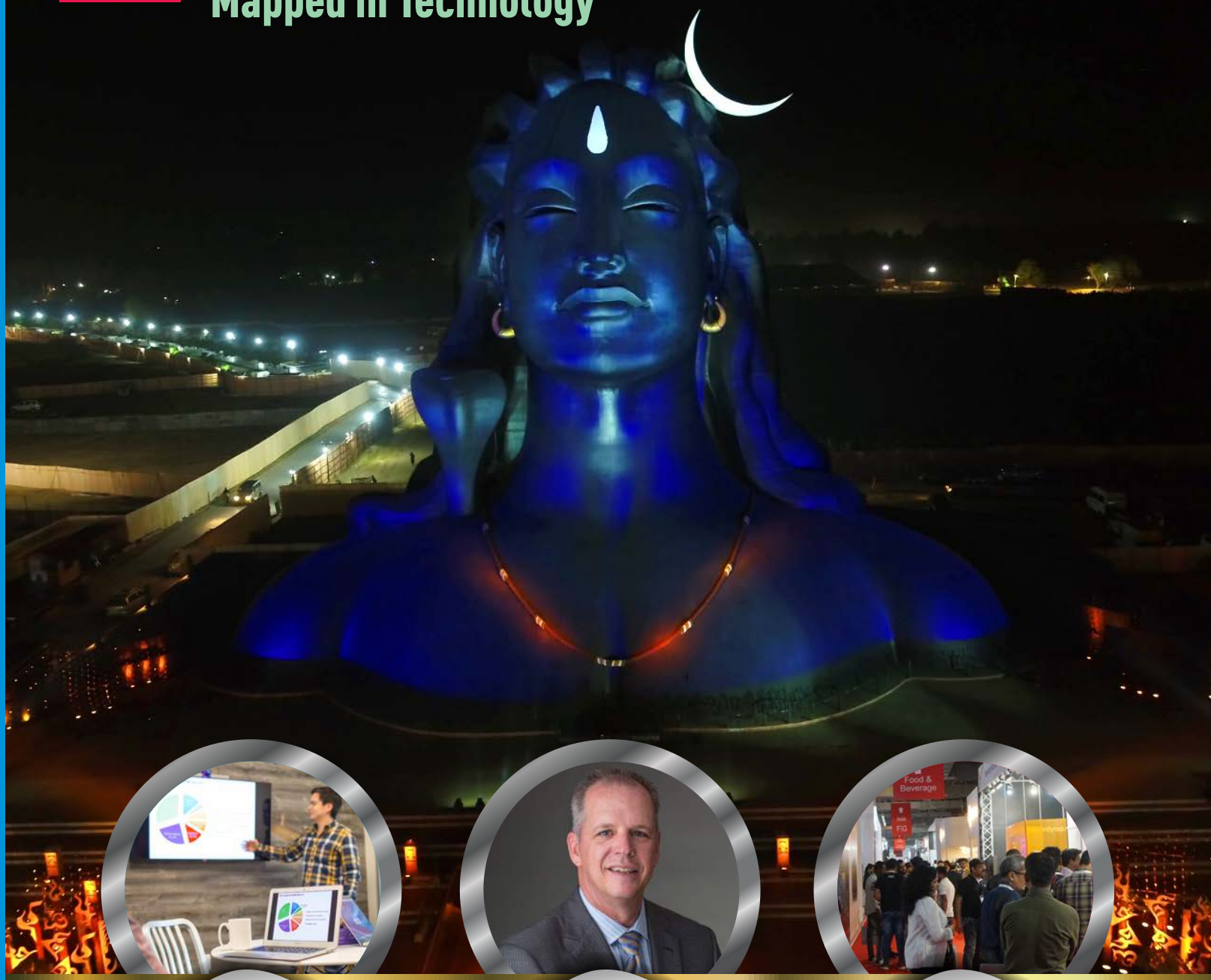
Vol. 19 Issue 1
Oct-Nov 2019

AUDIO • VISUAL • CONTROL • COLLABORATION • UNIFIED COMMS

MCI (P) 034/04/2019 PPS 1669/08/2013(022992)

[COVER] STORY

The 'First (of His Kind) Guru' Mapped in Technology



Feature: The Future of Meeting Rooms

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Adiyogi: A New Dimension in Projection on an 'AXIS' of 3D

The 'First (of His Kind) Guru' Mapped in Technology

Every weekend, as the dusk settles thick along the high slopes of Velliangiri mountain range – some 30 km from the industrial city of Coimbatore in the Southern Indian State of Tamil Nadu – there raises a gigantic Yogi Form, from the plains of Ishana Vihaar inside the Isha Yoga Complex steeped in the foothills of Velliangiri. Primordial in posture, galactic in scale and 'Guinness-esque' in sorts, Adiyogi – as the Form is etymologically called – is a story as massive as the bust sculpture is.

As many as 24 EPSON 3LCD High Brightness Laser Projectors are made to glow it up three-dimensionally; powered from inside by domain leader Dataton, and pulsating 5.1 immersive audio by Pulz- together scripting a first-of-its-kind project in Indian AV, if not beyond.

An SIA exclusive:

By Ram Bhavanashi

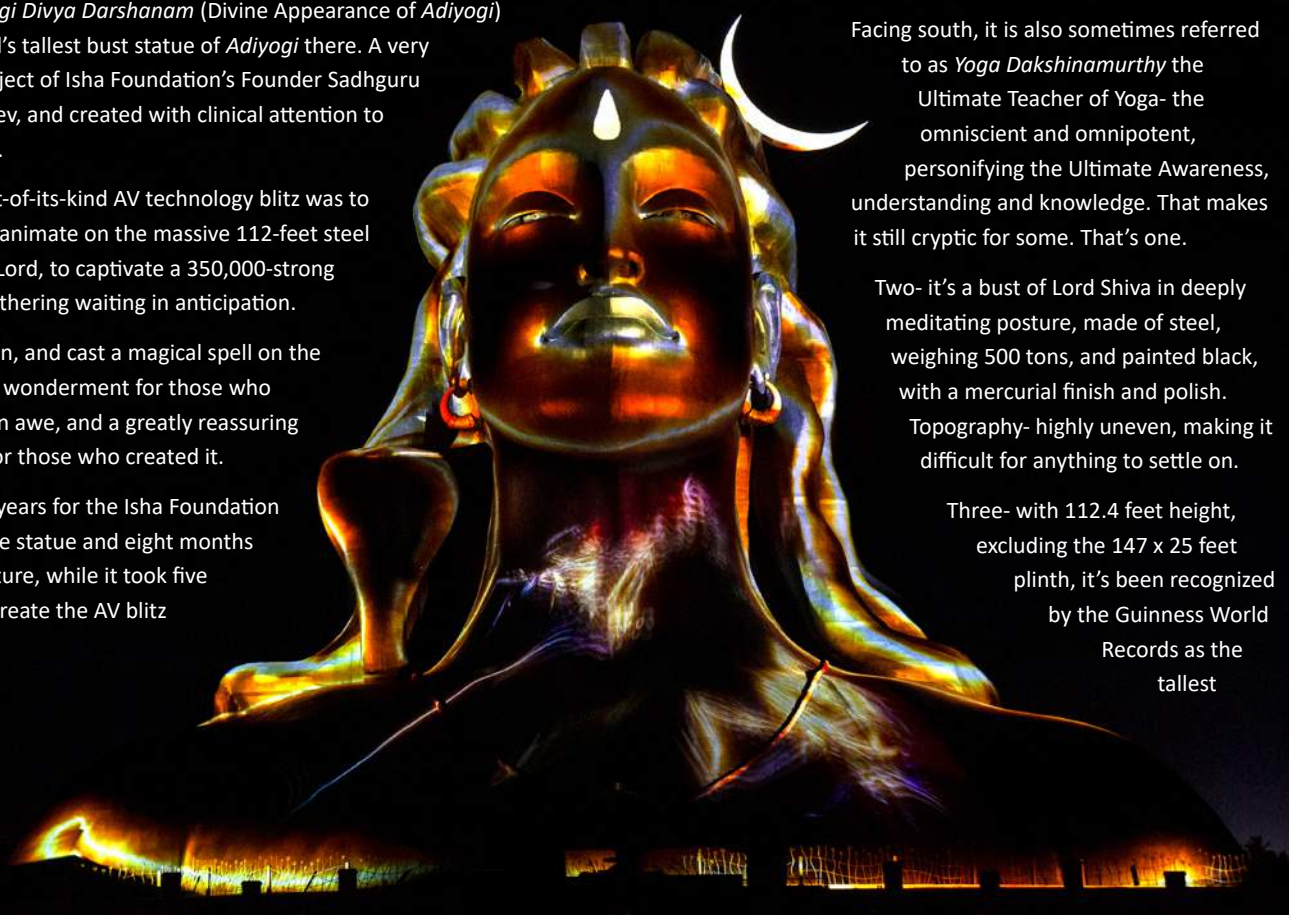
On 4 March this year – the big Indian festive day of *Maha Shivaratri* (Lord Shiva's Incarnation) – the Isha Vihaar ground on the premises of Isha Yoga Complex, given the same name as the festival, bore an unprecedentedly super surcharged atmosphere. An indefinable fervour- for all the spirited reasons!

President of India Ram Nath Kovind was to inaugurate the big festive event *Adiyogi Divya Darshanam* (Divine Appearance of *Adiyogi*) at the world's tallest bust statue of *Adiyogi* there. A very prideful project of Isha Foundation's Founder Sadhguru Jaggi Vasudev, and created with clinical attention to every detail.

More, a first-of-its-kind AV technology blitz was to vibrate and animate on the massive 112-feet steel bust of the Lord, to captivate a 350,000-strong Shaivaite gathering waiting in anticipation.

It did happen, and cast a magical spell on the devotees. A wonderment for those who watched it in awe, and a greatly reassuring fulfilment for those who created it.

It took two years for the Isha Foundation to design the statue and eight months to manufacture, while it took five months to create the AV blitz around it.



Adiyogi – Primordial Principle of The Self!

Adiyogi– the very name spells magic, transcends common comprehension, and connotes an esoteric wisdom. Primordial Self (unto Liberation), one might want to equate it with, but even that may not fully satisfy one who presumably knows Him. It can be that cryptic.

Facing south, it is also sometimes referred to as *Yoga Dakshinamurthy* the Ultimate Teacher of Yoga- the omniscient and omnipotent, personifying the Ultimate Awareness, understanding and knowledge. That makes it still cryptic for some. That's one.

Two- it's a bust of Lord Shiva in deeply meditating posture, made of steel, weighing 500 tons, and painted black, with a mercurial finish and polish. Topography- highly uneven, making it difficult for anything to settle on.

Three- with 112.4 feet height, excluding the 147 x 25 feet plinth, it's been recognized by the Guinness World Records as the tallest

The glory of the Lord: Sea of humanity at the Adiyogi on the Maha Shivaratri day

bust in the world. It is also said that the 112 feet symbolize as many *Chakras* (nerve circles) that are in human body, and also that many possibilities of Liberation.

With that subtlety of the matrix, when Sadhguru (Jaggi Vasudev), the Founder of Isha Foundation – the parent institution of Isha Yoga Centre – ideated to weave in the timeless tale of *Adiyogi* with equal subtlety by means of pervasive audio-visual technology, it presented both a prideful opportunity, as well as a challenge of rarest kind.

Team Project Adiyogi

Sadhguru – erudite as he is – chose his team with such discretion that the team composition spoke for it all.

"The brief itself was amazing," recalls Avijit Samajdar, CEO of Kolkata-based AXIS Three Dee Studios Pvt. Ltd., the Content Creator and Project Owner for Adiyogi projection mapping. Entrusted with the task of executing the prestigious project, Avijit produced and directed the project, assisted by his team, and supported by domain experts.

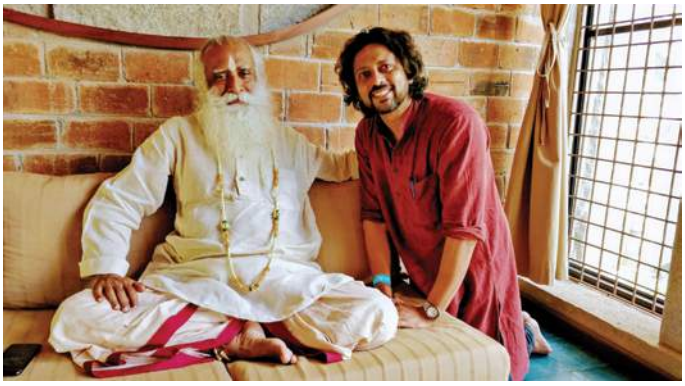
"We were tasked to create a spell-binding projection mapping on the 112-feet massive statue to narrate the timeless tale of *Adiyogi*," explains Avijit, "to create it in a way that would touch people deeply within, using state-of-the-art technology for an immersive amalgam of light, visuals and sound."

According to him, the theme was to narrate the story of *Adiyogi* who became *Adiguru* (the First Teacher), when He first imparted the ancient science of Yoga to *Sapta Rshis* (Seven Sages) – His seven disciples; to His Consort, *Devi Parvati* and to His constant companions, the formless *Ganas* (Shaiva army ranks) in three different ways.

For the content part, Three Dee Studios took on board

- Overseas Producer : Sangman Lee
- AV System Integration, Programming & Project Management: Sirvinder Pal (Lucky) Singh, Purple Vector, from Chennai
- Projection Mapping : Manesh (Manu) Kadam from Bengaluru

It was a task cut out for each of them. While Sangman Lee – the visual effects expert who handles Three Dee Studio's office in the South Korean capital of Seoul – produced all those special visual effects for the project from Korean office, the AVSI and projection specialist worked with Three Dee Studios locally.



Avijit Samajdar with Sadhguru: A genius connect

A good part of the rendering was also handled by Lee, and to much appreciation.

For the AVSI, it was to handle complete installation of projectors and mapping of *Adiyogi* statue- right from rigging of projectors to configuration of complete hardware setup, underground cabling, audio and laser integration with server

systems. The programming part of projection mapping and integration of lasers with audio was handled by specialist projectionist Manesh (Manu) Kadam.

"It was an experience of a lifetime as this project was one of the most complicated projects that anyone would have ever done in India," says Lucky Singh. "First, the black surface of the bust; second, the environment that we worked under."

Says Manu Kadam, a Dataton-certified projection specialist: "It was a very unconventional way of projection mapping; starting with a bust that is unique for both structure and texture." According to him, the size and surface finish of the statue and placement limitations of projection equipment posed a distinct set of challenges.

For the hardware part, it was decided to work with:

- Projection Systems: Epson Laser projectors
- Audio Systems: Pulz Electronics Ltd.
- Projection/Media Servers: Dataton (WatchOut, WatchMax)
- Music: Sounds of Isha

"The entire project was a complex coordinated effort spread across content development, projection mapping and system integration," says Harish A K, General Manager-Visual Products at Epson India. "Epson had a very prideful contribution to the project, for the very way it was fashioned."

"The WATCHOUT system was chosen due to its strong track-record in the industry as a reliable and versatile tool for cutting-edge mapping applications," prides Ashok Sharma, Regional Director-SAARC at Dataton. "As the first performance of the show was to unfold in front of none other than the Honorable President of India, there was absolutely no room for anything less than perfection."

Visualizing Adiyogi Subtlety

As the deliberations with Sadhguru went deeper, Avijit quickly realised that the intended story telling had to transcend all known understanding of Time and Space. For, the simple fact that the very concept of *Adiyogi* itself is beyond all time and space. Yet, it had to be created in a way that is lucid enough for everyone to understand.

So, the Content Producer-Director decided to work with the Five Eternal Elements of nature- Earth, Space, Water, Wind and Fire. That they embody everything that people see around, it was pertinent these five elements formed the connecting tread to traverse through the storyscape.

Adiyogi during daylight conditions

"There is an immense sanctity to *Adiyogi*; it was not some building or monument where we could show sudden cracks happening, walls crumbling, and creepers climbing or striking multi-coloured geometric forms," reminisces Avijit. "We had to very cleverly weave these elements into the story telling, and that's what we did. That actually made our story telling deeply immersive."

The total surface of the statue to be shone in projection measured as many as 8,000 square feet of highly uneven topography explains the magnitude of the project.

Mapping Adiyogi

While Sadhguru himself took the scripting and story narrative part, the content design, and production had to be executed by AXIS, which was an arguably challenging task, given the intricacies involved.

In order to map the massive task in tune with Sadhguru's vision, AXIS team recreated and remodelled an exact replica of the original statue in their studio in Kolkata, with exact dimensions in 1:16 ratio with seven feet height.

"We did all our trials and tests on this replica," explains Avijit. "That helped us to do any rectifications and plug-ins."

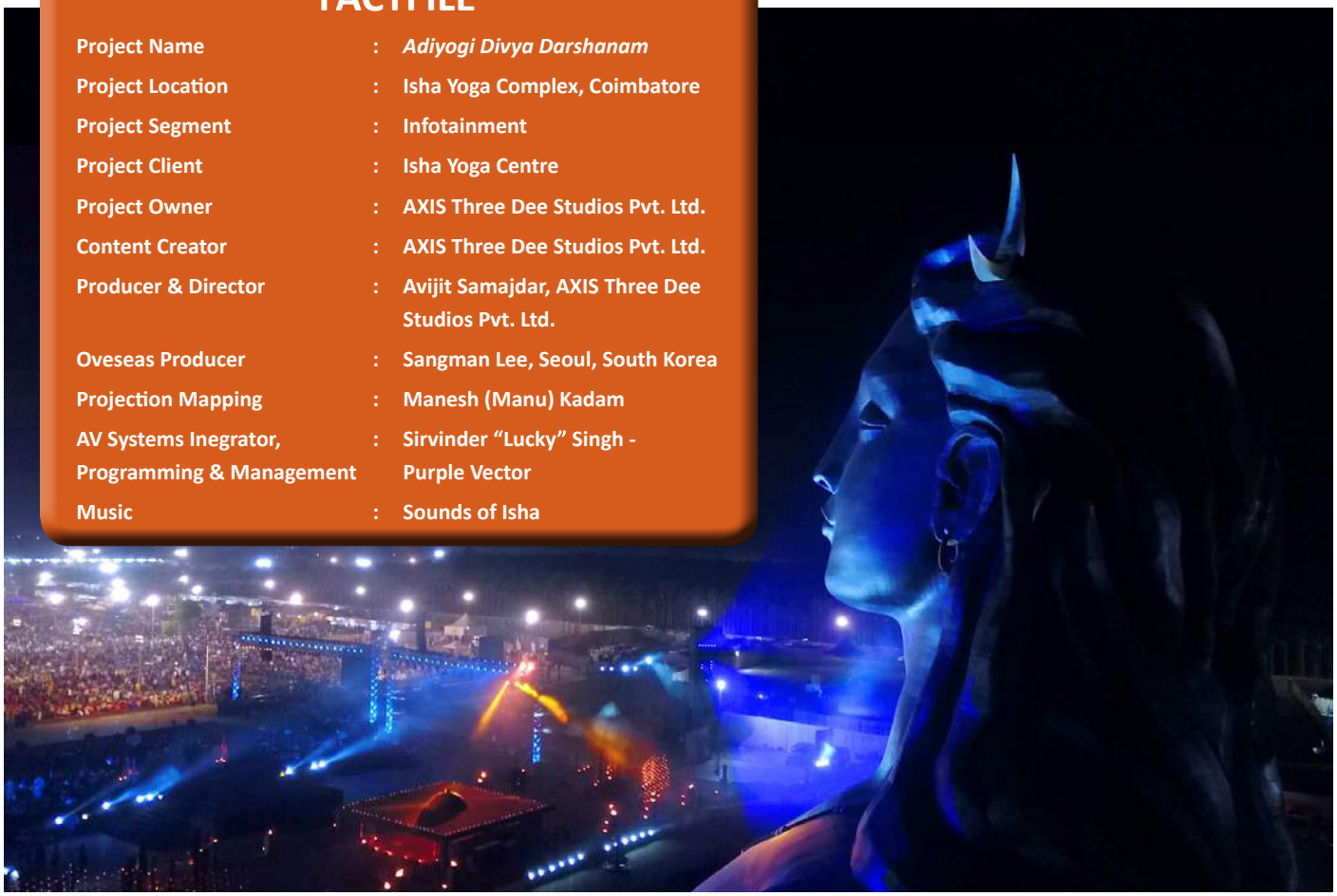
The *Adiyogi* is made of steel and the surface is painted black. According to Avijit, black is never a preferred projection surface for a simple fact that no colour can be seen (technically, black absorbs everything; it reflects no colour for the human eye to capture). So, they had to choose a projection system that will overcome the

THE CG TECH TEAM

Studio Head	:	Ms. Mayuri Dutta
VFX, Rendering Supervision	:	Arijit Haldar
Creative Design & Art Supervision	:	Priyam Modak
IT Supervison	:	Gautam Mondal

FACTFILE

Project Name	:	*Adiyogi Divya Darshanam*
Project Location	:	Isha Yoga Complex, Coimbatore
Project Segment	:	Infotainment
Project Client	:	Isha Yoga Centre
Project Owner	:	AXIS Three Dee Studios Pvt. Ltd.
Content Creator	:	AXIS Three Dee Studios Pvt. Ltd.
Producer & Director	:	Avijit Samajdar, AXIS Three Dee Studios Pvt. Ltd.
Oveseas Producer	:	Sangman Lee, Seoul, South Korea
Projection Mapping	:	Manesh (Manu) Kadam
AV Systems Inegrator, Programming & Management	:	Sirvinder "Lucky" Singh - Purple Vector
Music	:	Sounds of Isha



THE LORD LOOKS DOWN ON HIS SUBJECTS: A grand view of the setting from a high point. Observe the lighting fixtures aimed at Him from the ground.

challenge and produces a reflective brilliance that can be seen and appreciated.

"We chose Epson's laser projectors of 15,000 lumens, and they worked brilliantly," informs Avijit. "It is anybody's guess that people want best technology available within the budget; we tested various brands and types, including DLP and LEDs," he explained. "But we chose Epson's 15,000 lumens EB-L1755UNL WUXGA Laser projectors for their vivid images and strikingly beautiful rendition of colours. Especially on a black surface, these projectors worked commendably well."

The black surface colour posed one more challenge. It does give a very deep sheen, and glow beautifully on the statue when light falls on it. Though this makes it look very beautiful during day and evening when sun or moon light falls on it, projecting vivid colours onto it is a real big challenge. Most colours appear differently when they fall on that surface.

"We devised a unique method of '*real-time colour cancellation*' by creating a Primary, Secondary and Tertiary colour palette used as 1st, 2nd, and 3rd layers" the Three Dee Studios chief revealed. "That's why the colours on *Adiyogi* stand out so vivid and vibrant," he explained. "All interfering colours of light, reflected off the surface of *Adiyogi* get cancelled out in real time by the different layers."

The very positioning of *Adiyogi* on the Isha Vihaar plain actually required two towers to house the projectors to be ideally positioned

Mission Project Adiyogi : The project teams working out different aspects of the project at different levels

in front, or slightly off the centre of the statue. They required to be permanent structures, but the project team could not do it as it would obstruct the view of the devotees coming to see *Adiyogi* everyday.

The projection team, therefore, had to move the two towers far apart from each other at an angle that would be at 45 degrees to the surface during projection.

"The location of projector placement towers as advised by the Ashram team gave us very little tolerances to work with," recalls projectionist Manu. "Two towers at 90° apart from the centre of the bust, with the focal point being off the AXIS of audience view point was really challenging."

Explains the SI Lucky Singh: "we had custom designed the projector frames in order to stack them with interlocking facility. We, however, used industry standard equipment to integrate the audio and laser equipment which was a further set-up with the Watchmax Server."

The projection team therefore worked out a unique stacking layout of projectors so that they could achieve an optimum angle of incidence of light without casting any interfering shadows on the surface. The 24 laser projectors therefore are stacked in a 4x6 configuration.

"That's a total of 360,000 Lumens of light, or as many as 90,000 Lumens illumination on every point on *Adiyogi*," recounts Harish. Epson projector professional tools facilitated surface mapping while overlaying as many as six images accurately, point wise."

In essence, two sets of six projectors each are stacked vertically mapping the upper sides of *Adiyogi*'s visage on both sides while another pair of six projectors each are horizontally stacked mapping the lower sides of *Adiyogi's* bust.

"The installation dispelled the popular myth that it is near impossible to do mapping on black surfaces," Harish declares. "We did that."

It was, therefore, multi-layered 4K content at 30FPS and 5.1 Surround Sound to be distributed across the two towers at great distances. They needed a hardware that is able to take that whole AV content forward absolutely seamlessly.

"That's why we chose two Dataton WatchMax WX9100 servers," informs Avijit. "Plus, the WatchOut software enabled mapping and smooth edge-blending on the highly contoured surface."

The projection stack: A very typical structural array of projectors on the site

Says Ashok: "the technology competence of Dataton WatchMax, came up, perhaps, for one of the best showcases ever. The conditions couldn't have been tougher, for the very intricacies." According to him, the show creators appreciated the easy-to-navigate interface in WatchOut and how smoothly changes could be implemented, even on the day of the launch.

While a majority of the focus appeared to be on the projection side, a matching audio couldn't be discounted. It, therefore, had its own challenging 'ground' to play and prove. As it is, people famously say 'half of AV experience comes from sound.'

Chips in Ramakrishnan M K, Chairman of Pulz Electronics Ltd, the Mumbai-based manufacturer of audio brand Pulz that went into the design and install: "We had to custom-design/develop the audio system for the *Adiyogi* project. The very environment of the setting made it all the more demanding."

According to him, the open-air nature of the place, and the exposure of audio systems to the weather vagaries was one big challenge. It had to be portable, to be able to be moved as per the Ashram people's choice, and yet give adequate coverage of at least 3,000 audiences. Besides, it had to be of compact form factor to avoid restriction of viewing angles. The spec was to make less number of units cover the same audience area.

So, Pulz specially designed and manufactured the audio systems that met the requirement- audio with controlled and well defined directivity, plus withstand day-to-day outdoor weather conditions.

"We did it with dedication," informs MK.

The system thus comprised five main speakers IAM12X4 for a 5.1 Surround Sound setting that is augmented by a Subwoofer channel, powered by nine units of dual 18-inch SIC 218 subwoofers, strategically positioned in a cardiod configuration, to beam low frequencies to the audiences, and at the same time avoid spreading

The Spirit of Adiyogi: Devotees thronging the site for that grand view at the Lord

of those sound waves to undesired areas. These systems are driven by Pulz high efficiency DPT Series amplifiers and digital signal crossovers capable of delivering 40,000 Watts for maximum impact and dynamics.

"We also worked very closely with the content producers and integration team, as our audio component was integral to the whole experience," explains Anirvan Ghosh, Managing Director of Pulz. "The system application did demand certain nuances of calibration without which the experience couldn't have been immersive."

Observes Lucky Singh, the integrator: "it was practically a monumental effort, with so many intricacies and people with never-before challenges, and more, for the aura surrounding the project."

The projection mapping, lasting 12 minutes every time, is a visual depiction of transmission of Yoga by Lord Shiva to His consort, Goddess Parvathi with a powerful voice over from Sadhguru Jaggi Vasudev himself. The 350,000 plus audience were spell bound to witness the wonderment of sound and light on the metal of rare mettle.

Admits Avijit: "In fact, on that day, of *Maha Shivratri* when the 350,000-strong audience were screaming in frenzy, to show their appreciation, awe and sheer wonder, it made every effort of the over 150 personnel, including our staff, partners, vendors, Indian and overseas professionals as well as volunteers from Isha Foundation, who worked tirelessly for over six months, seem all so worthwhile."

Understandably, the production team from Three Dee Studios played central to this monumental effort. Staying at the head of all that was the Studio Head Mayuri Dutta, who handled various areas of pre- & post-production, including close liaison with the Director, the Korean and Indian teams. The VFx, compositing and rendering supervision was done by Arijit Haldar, while the creative design and art supervision was rendered by Priyam Modak. Gautam Mondal as the IT supervisor, ensured that the entire production pipeline, for the systems hardware and software functioned smoothly and seamlessly in India and remotely in Seoul.

Challenges of Adiyogi Scale

With such efforts going into it, the *Adiyogi* project was a success in every sense of the effort. "We did succeed; but the purple patch has many factors, says the Purple Vector chief- Lucky Singh. "It was an experience worth a lifetime."

The main challenge, according to the integrator, was during the demos, due to the non-availability of infrastructure at the site. They had just three nights to get all the projectors aligned and be ready for the launch. With all the other vendors working side by side, it made the job even more difficult.

"The demo sessions were most stressful," chips in Manu, the 3D projectionist. "After every demo, we had to uninstall the projectors and reinstall again; I had to move around constantly on site to get the right point-of-view for the alignment."

Sums up Avjiit- the owner-producer of Adiyogi project.

This project is result of the coming together of some of the best technologies and finest professionals in contemporary AV technology, mapping, sound as well as visual creative. It's a getting together to create an audio visual spectacle, the likes of which was never attempted on such a scale, and for a surface with such unique attributes so far."

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