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## Special Feature: The Simulation Era



• The World's First Hajj Simulator



• Country Analysis

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**INDIA AND MIDDLE EAST  
EDITOR**

Ram Bhavanashi  
ram@spinworkz.com


**ASSISTANT EDITOR**

Shireen Ho  
shireen@spinworkz.com


**ASSISTANT EDITOR**

Elissa Nadine  
elissa@spinworkz.com


**DIGITAL PLATFORM  
EDITOR**

Rosalind Tan  
rosalind@spinworkz.com


**ADMIN & CIRCULATION**

Julie Tan  
admin@spinworkz.com


**DESIGN AND  
PRODUCTION**

Jimmy Chin  
jimmy@spinworkz.com


**MEDIA REP IN NORTH AMERICA**

Broadcast Media International  
Michael J. Mitchell  
Tel: +1 631 673 0072  
mjmitchell@broadcast-media.tv

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Spinworkz Pte Ltd  
51 Bukit Batok Crescent  
#06-10 Unity Centre, Singapore 658077  
Tel: (65) 6316 2716 Fax: (65) 63162715 www.spinworkz.com

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The first half of the year generally seems to move a little faster. I am guessing this is simply because of the many exhibitions that happens from January to June. We expect ISE that is being held from 10 to 12 February to continue its momentum of growing every year in terms of visitors. The show itself has also grown so much in recent years that in 2016, the exhibition will be held over four days instead of three. For those of us travelling from Asia, the current lower valuation of the Euro should help ease our expenditure.

Visitors to the exhibition can expect more 4K solutions brought to the fore, more instantaneous interactivity being displayed and of course, even better collaboration tools. We look forward and hope to be dazzled by some of the solutions on exhibit.

Staying with exhibitions, InfoComm China will be upon us in April. This year will be its largest showing with more than 400 exhibiting companies occupying 7 Halls at the China National Convention Center, Beijing. InfoComm China has been increasingly seen as THE AV SHOW not just for the China market, but for the Asia Pacific market as well. This is perhaps due to the fact that it is after all the largest gathering of AV manufacturers and suppliers in the region by far and has been growing each year since 2006 without interruption. With the Asia Pacific AV market poised to become the largest in the world next year, we expect InfoComm China to also grow in tandem with the region and become the fulcrum of technology change for the world. It is for this reason that the organisers are introducing English language sessions in the InfoComm China Summit this year and promoting the show to AV Channels in all the other Asian countries in the region.

Speaking of AV business in Asia Pacific, our recent survey of the Philippines market indicates high optimism amongst the Philippines AV industry that 2015 should be a good year for them. Enjoy our graphic presentation about the industry, in the inside pages.

We were also privileged to be invited to the showcasing of the World's First Hajj Simulator in Kuala Lumpur, Malaysia. It is indeed an interesting proposition. Axon 313, the company responsible for the simulator, saw the issues being faced first hand, had gone through the seminars that one had to attend before going to the Hajj, and then devised a solution that they feel will enhance the learning as well as the experience of those going to the Hajj. The Simulator is still continuously evolving and considering that millions attend the Hajj every year, we think it could become an essential tool.

Enjoy the read.

**Thomas Richard Prakasam**

*Publisher/Editorial Director*

thomas@spinworkz.com

# World's First Hajj Simulator

*Axon 313 offers an interesting proposition*



It has taken Axon 313, based in Kuala Lumpur, Malaysia, four years to design and present the first version of the Hajj Simulator. The concept is indeed unique. For those not in the know, the Hajj is an annual Islamic pilgrimage to Mecca, and a mandatory religious duty for Muslims that must be carried out at least once in their lifetime by all adult Muslims who are physically and financially capable of undertaking the journey, and can support their family during their absence. The Hajj gathering is considered as one of the largest religious annual gatherings of people in the world. It is estimated that about 3.2 million Muslims perform the Hajj every year. These numbers are projected to grow to 10 million when further infrastructure expansion in Mecca is completed in the coming years.

Pilgrims can also go to Mecca to perform the rituals at other times of the year. This is sometimes called the "lesser pilgrim-

**"This simulator will not be a luxury but a necessity"**

*H.E. Dr. Osama Bin Fadl Al Bar, Honourable Mayor of Makkah*

age", or Umrah. However, even if they choose to perform the Umrah, they are still obligated to perform the Hajj at some other point in their lifetime if they have the means to do so.

## Why the Simulator?

As a religious ritual that is taken very seriously by Muslims, those going to the Hajj need to attend training courses prior to the actual pilgrimage. The reason is due to a series of rituals that need to be performed in order to be considered to have successfully completed the Hajj. The training is to help those going to the Hajj to better prepare themselves not only spiritually but also psychologically as to what to expect and how to go about the series of rituals. "For many this would be the first time that they would have stepped into Mecca. It can

simply overwhelm them. Thus the training is essential to ensure that they get to perform the rites proper," said Nasir Hashmi, Managing Partner at Axon 313.

Thus far the trainings have been traditional in nature as it generally entails the use of Powerpoint presentations. Nasir and his partner Faisal Khawaja, who have both already performed the Hajj, felt that there could be a better way to train those going to the Hajj. "We felt that if they could actually visualise the space and the rituals, it might help them to be better prepared," continued Nasir.

Most importantly, what Axon 313 wanted to create is a total immersive experience. "We literally wanted to recreate the whole space and process into a simulated environment. This would allow us to

**“We train Hajis for months and still they come back with blank faces. We need something like this where our words can be given the visual backing while teaching them”**

*Chief Imam Ustaz Hj Hazarudin Bin Hj Baharudin, Tanku Mizan Zainal Abidin Mosque in Putrajaya, KL, Malaysia*

project much larger and detailed images that would offer a 360 degree view. In effect, it would be a realistic presentation of what those going to Hajj would see. With the simulation software, the trainers could then manipulate the “Avatar” character so that the audience can better understand where they need to go and what they need to perform at each stage of their Hajj pilgrimage.” Thus began the quest to create the simulator.

Named as the Axon Hajj Training Simulator (AHTS), it is a training tool for those going to perform the Hajj and even the Umrah. Beyond that the partners felt that it would also be an edutainment medium for Muslims who cannot afford to go for Hajj or Umrah and also for non-Muslims who want to get the feel of Hajj – one of the largest holy gathering in the world.

### Technology Involved

AHTS is based on multi-projection technology with 3D imagery projected on a curved screen. The curvature of the screen is intended to create a virtual immersive reality environment thus creating an experience for the audience as if they are actually at the location itself. Axon 313 also created what they call an Axon Image Generator Rack that comprises high-end CPU and GPU based workstation, custom rigged to handle 4K multichannel simulation data, as well as the interactive simulation software, with the DVI signals connected to the projectors. Blending and geometric algorithm equipment for the projectors are all within the rack with an audio mixer and wireless microphone transmitter completing the set-up.

For demonstration purposes, Axon 313 has a customised screen measuring 18ft. by 6.2ft. The screen is portable and can be set up within 36 minutes. For a two projector set-up, Axon 313 expects that it would take about an hour to get the systems fully set-up with edge-blending and the geometric algorithm of the image projection taken into account.

Faisal who is responsible for the technical aspect of the project highlights, “The way we designed the set-up is to make it modular so that we can expand on the screen size according to space availability.” He added that the system is configured so that it can easily adapt more projectors if needed. “What is key is that the system is built around high performance projectors.”

### The Content

The content is the heart of the entire project. Engaging the services of celebrated photographer Omar Faruk Aksoy, the simulator features seemingly realistic visuals. Omar is renowned for his many documentaries on Hajj which he had filmed and photographed for the National Geography Channel, BBC, Discovery Channel and IMAX to name a few. Omar together with Nasir and Faisal took many trips to Mecca to take photos of all the buildings as well as the textures, “Interestingly we had the buildings up even before they were physically up,” adds a smiling Faisal, referring to the fact that some of the buildings are still undergoing construction.

With so many photos and textures which were then translated into the animation software, it was important that the system was fully optimised. “We had to pay careful attention to this aspect as we needed the entire graphics to be optimised or it would have taken up too much space and would probably not work effectively. We also had to ensure that we did not compromise on the quality at the same time. Our graphics team had to work overtime to help us

achieve what we needed and they did an admirable job.”

The end result was the ability to show the animation in full 4K resolution with smooth flicker-less interactivity.

Looking ahead, Axon 313 realised the potential for the simulator to attract attention from different parts of the world. Thus from the beginning they also ensured that the content in terms of the words in the graphics as well as the voice over could easily be adapted to different languages, different school of thoughts, without much hassle. “We even have the ability to change the movement and if necessary the dressing of the characters within the animation to accommodate the practices of people from different parts of the world,” said Faisal. This would take not more than a month depending on the complexity to accomplish.

Currently trainers can use the keyboard keys to manipulate the Avatar character in relation to the interactivity aspect of the simulator. However Axon 313 is already working on a Joystick for easier manipulation.

### The Business Aspect

Axon 313 has two options for potential users to consider. The Axon Hajj Training Simulator could be based as a mobile rental or as a fixed installation. The company makes it a point to supply the simulator as a total solution. Thus Axon 313 would supply the following components:





The Axon Image Generator Rack

- The Axon Engine which comprises of the Image Generator and Simulation system.
- 4K/8K WUXGA projectors with dual lamp with 300 feet long fiber optics DVI cables for two units of projectors.
- Complete 1000 watts per channel sound system with 2 Shure cordless microphones, a Mixer and two speakers with stand.
- Portable Curved Screen (Optional) and
- AHTS Software.

The above components can manage a maximum screen size of 40ft wide and 16ft high screen with the minimum screen size being 18ft by 6.2ft.

If necessary the system components can be easily upgraded to manage an 120ft wide and 48 ft. high screen.

Philip Hay who has been following the project for the past few years has been roped in by Axon 313 to help develop the business. Philip had spent many years as the regional representative for projectiondesign and is familiar with both Nasir and Faisal. "The simulator is a novel idea as it will help those who want to perform the Hajj to be well prepared. But more than that I also think the simulator could be a tool to help inter-religious understanding. Nasir and Faisal have known me from my projectiondesign days and I am happy to be involved in this project," remarked Philip.

## Key Contributors

Helping Axon 313 realise their vision were a number of key personnel. These included H.E. Dr. Osama Bin Fadl Al Bar, Honourable Mayor of Makkah. "His assistance in getting the accurate data, approvals to take textures, visas to Saudi Arabia, etc., is nothing less than a treasure for us," said Nasir. "Also Saleem Bukhari's contribution in getting the historically factual demography of Makkah helped us tremendously because our Hajj Simulator is all about accuracy both in terms of dimensions as well as historical facts," said Nasir. Saleem is an architect living in Makkah who recently wrote a book on Makkah which was published by the Mayor's office.

"In addition Multimedia Development Corporation (MDeC) of Malaysia's sup-

port both in terms of funding, technical support (through networking) and trust in our ability to develop this simulator was a real force behind us in making of this simulator. Of course Omar Faruk's keen eye for details and his photography enabled us to create an almost life-like replica of the space and we also want to acknowledge the Axon 313 Sdn Bhd team."

During our first demonstration of the Hajj simulator at Tanku Mizan Zainal Abidin Mosque in Putrajaya, the words of Chief Imam Ustaz Hj Hazarudin Bin Hj Baharudin was like a dream come true. "He said, we train Hajjis for months and still they come back with blank faces. We need something like this where our words can be given the visual backing while teaching them" said Nasir with great pride.

"This is a 100% made in Malaysia product and we are proud of it and we hope that this simulator will be of immense help to all those going for Hajj."

The Simulator is indeed an interesting concept that has been turned into reality. Axon 313 expects that there will be interest and in fact has started to demonstrate the product to Mosque leaders as well as System Integrators. For System Integrators who see the business potential of the simulator, they can get in touch with Philip Hay at [philip@a313s.com](mailto:philip@a313s.com)

[www.a313s.com](http://www.a313s.com)

**"This is a 100% made in Malaysia product and we are proud of it and we hope that this simulator will be of immense help to all those going for Hajj"**

*Nasir Rizwan Hashmi, Managing Partner, Axon 313*



Faisal Khawaja and Nasir Hashmi, Managing Partners of AXON 313 with Philip Hay