

34

**Grand Bazaar shops
bring placemaking
and stylish shopping
to Vegas**





ARTISTIC
ENGINEERING®

An Innovative Subsidiary of 

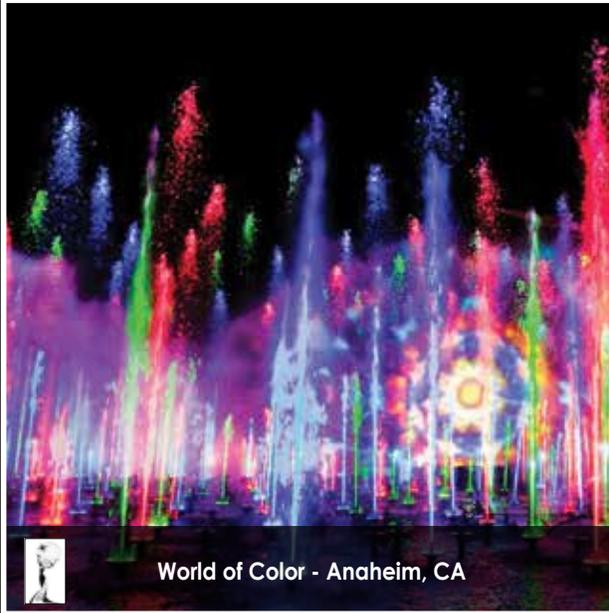
jbace.com



Grand Bazaar Shops - Las Vegas, NV



DreamPlay - Manila, Philippines



 World of Color - Anaheim, CA



 The National WWII Museum - New Orleans, LA

ACOUSTICS • ARCHITECTURAL & SHOW LIGHTING • AUDIOVISUAL • 3D PROJECTION MAPPING & SYSTEMS
CLIENT TECHNICAL DIRECTION • DIGITAL SIGNAGE • EXPERIENTIAL AUDIO ENVIRONMENTS
INFORMATION & COMMUNICATIONS TECHNOLOGY • SECURITY DESIGN CONSULTING
SHOW CONTROL SYSTEMS • SOUND REINFORCEMENT • SPECIAL EFFECTS CODE CONSULTING

ATLANTA | HO CHI MINH CITY | HONG KONG | IRVINE | LAS VEGAS | LOS ANGELES | MACAU | NEW ORLEANS | PHOENIX | SHANGHAI

Las Vegas (702) 362 9200 | New Orleans (504) 830 0139

Why the UAE matters

Martin Palicki,
IPM editor



Nestled on the Persian Gulf, the UAE has been an expanding market for decades. With a rich and ancient history, the modern country of the United Arab Emirates is only the same age as Walt Disney World. Interestingly, their trajectories have been surprisingly similar. With Dubai and Abu Dhabi leading the way, the UAE has become an entertainment and relaxation destination for Europe, Asia and Africa.

Setbacks have been a part of the process. Our industry rushed to the UAE to design massive projects, until the economy stalled. But even while cranes stood idle in Dubai, Abu Dhabi opened Ferrari World (p38). More recently, though, global giants like Farah Leisure and 20th Century Fox have announced expansion in the region. Scott Ault, President and CEO at Rethink, refers to Dubai as having “long term growth potential.” (p45)

But what makes this time different? In many ways, the Middle East is providing opportunities for the industry that don't exist elsewhere. Its proximity to Europe gives that more mature market an outlet that is in early growth stages. While geopolitical realities make any sustained growth difficult to assure, it is safe to claim that the opportunities are there, for those willing and able to look for them.

In the short-term future, things look even better. Having been selected to host Expo 2020, Dubai is now entrenched as a global cultural and entertainment destination. Once again, the creative and design leaders of our industry are rushing to the UAE. Because while most of them are known for their expertise in designing theme parks, museums and attractions, many also claim Expo pavilions in their credits.

The importance of Expo 2020 to Dubai and to the themed experience community cannot be overstated. The connections between how our industry is impacting these various, and at times seemingly divergent, projects is a story that isn't being told elsewhere. With our own in-house World's Fair experts Jim Ogul (p14) and Judith Rubin, InPark is bringing the insider knowledge of these synergies to light.

For those preparing to head to DEAL in Dubai (April 19-21) for the first time, expect the event to be about more than just the state of the industry in the Middle East. Look at it as the first collaborative event leading up to Expo 2020. While you're there, don't forget to grab a copy of InPark Magazine, and keep an eye out for me.

Museums: All in the attractions family

Judith Rubin,
IPM co-editor



Museums around the world are in a state of crossover, convergence and dramatic growth.

Cinematic content is better than ever and can travel from one platform to another, thanks to digital tools. Will it play in a planetarium or a science museum? On a flat screen or a dome? Or outside, on the building façade? Many facilities have multiple digital exhibition spaces. A distributor's job is to find the right fit. AV and integration specialists are guiding museums to tap today's tech sweet spot of reliability, quality and affordability in everything from exhibition to retail, never forgetting the power of audio.

We focus a lot on museum projects in these pages, and the people and companies helping them realize their visions and fulfill their missions. It may surprise some, but the stories reveal a very porous border between museums and theme parks. There are parallel cycles playing out with very much the same tools, technologies, creatives and suppliers. The same need to constantly re-invent/re-invest; to differentiate from home leisure options and motivate people to make the trip out.

Increasingly, both sectors draw on like content, IPs and operational models. An exploration of exhibitors and sessions at, for instance, the American Alliance of Museums (AAM) Museum Expo backs this up. But there's more. Every year, museum projects receive honors at the prestigious Thea Awards of the Themed Entertainment Association, held at Disneyland. Museum Day is part of every IAAPA Attractions Expo, in Orlando.

Our perspective as a media outlet is similar. Museums and theme parks all exist within the family visitor attractions market.

That's a vital, expanding market. As Asia and especially China develop major cultural hubs, an historic and dramatic surge in the quantity and quality of museums is underway. And in Asia - just as in the Middle East, Europe and North America - there are clear parallels in entertainment and leisure, with extensive crossover. It's all part of the global market that InPark is pleased to chronicle and to serve.



InPark News Editor Joe Kleiman (joe@inparkmagazine.com) corresponds for IPM online and in print, specializing in design and technology for attractions, museums and giant screen cinema. He lives in Sacramento with his dog, Bucky.

EXPLORE THE

WORLD OF MIXED REALITY

AT **DEAL** 2016



Holovis[®]

ATTRACTIONS MEDIA

BE THE STAR OF YOUR OWN MIXED REALITY ATTRACTION IN THE WORLD'S FIRST INTERACTIVE AND IMMERSIVE EXTENDED EXPERIENCE

DISCOVER OUR TURN-KEY MEDIA, INTERACTIVE AND MOTION BASED EXPERIENCES FEATURING REAL-TIME MEDIA, SCALABLE FROM FECS TO E TICKET ATTRACTIONS

UNLEASH THE POWER OF BESPOKE & IP SPECIFIC APPS & GAMING CONTENT DELIVERING UNIQUE MULTI-PATH GUEST CONTROLLED EXPERIENCES

WWW.HOLOVIS.COM  [@HolovisInt](https://twitter.com/HolovisInt)

- 6** A great time for the industry
Paul Kent, Senior Consultant Entertainment, Electrosonic • *interview by Judith Rubin*
- 8** Beyond the arena
Sports brands reach out in new ways to engage fans • *by Aimee Roy*
- 11** Miami's big bang
Frost Science prepares to open new state-of-the-art facility in Museum Park • *by Joe Kleiman*
- 14** World's fair update
Astana 2017, Dubai 2020, and a postscript on Milan 2015 • *by James Ogul*
- 18** Sound design for special venue
ImagesInSound founder Brian Eimer on the industry and audio post-production • *interview by Martin Palicki*
- 20** The house that Ben built
nWave steps up to new heights in the cinema world with "The Wild Life" distributed by Lionsgate
interview by Judith Rubin
- 24** A dome for all seasons
New installation by Mad Systems reveals how accessible digital dome theater technology has become
by Maris J. Ensing
- 29** Bowuguan
China's dramatic growth in the museum sector yields obstacles and opportunities • *by Joe Kleiman*
- 33** Go with the glow
A glowing report of Garden Glow at Missouri Botanical Garden • *by Anna Musun-Miller*
- 34** Building mystery and excitement
Las Vegas Grand Bazaar Shops rely on JBA Artistic Engineering • *by Martin Palicki*
- 38** Flying Aces
The story behind the steel at Ferrari World • *by George Walker*
- 45** Cinema IP becomes theme park
Greg Lombardo & Scott Ault talk about Fox World • *interview by Judith Rubin and Martin Palicki*
- 48** Perfecting petroleum
Permian Basin Petroleum Museum calls on JRA to tell its educational story in entertaining, modern formats
- 50** Making Macau family friendly
Thinkwell Group collaborates with Warner Bros. Consumer Products to bring Warner Bros. Fun Zone to Studio City Macau
- 52** Thoroughly modern museums
Scott Arnold talks about how museums can best take advantage of interactive technology
interview by Martin Palicki
- 54** Giant screen universe
BIG & Digital's "Space Next" CGI documentary from Afterglow Studios navigates a galaxy of special formats up to 8K resolution • *by Judith Rubin*

staff & contributors

EDITOR
Martin Palicki

CO-EDITOR
Judith Rubin

CONTRIBUTING EDITORS
Joe Kleiman
Jim Ogul,
World's Fair Editor

CONTRIBUTORS
Maris J. Ensing
Anna Musun-Miller
Aimee Roy
George Walker

DESIGN
mcp, llc

InPark Magazine (ISSN 1553-1767) is published five times a year by Martin Chronicles Publishing, LLC, 2349 E Ohio Ave. Milwaukee, WI 53207. Shipping address: 2349 E Ohio Ave. Milwaukee, WI 53207. Phone: 262-412-7107. Printing by Short Run Printing

Contents © 2016 InPark Magazine. All rights reserved. Nothing in the magazine may be reproduced or used in any manner without the prior written permission of the magazine. InPark Magazine is not responsible for

unsolicited manuscripts, photographs or illustrations. Such material must be accompanied by a self-addressed and stamped envelope to be returned.

Postmaster: Send address changes to InPark Magazine 2349 E Ohio Ave. Milwaukee, WI 53207. Subscriptions are available annually for \$45 per year (\$70 international).

Opinions expressed in editorial matter are not necessarily those of InPark Magazine or its publishers, Martin Chronicles Publishing, LLC.

COVER: The Grand Bazaar shops in Las Vegas bring light and sound shows to a new retail experience on the strip. **Full story on p 34** *Cover credit: JBA*

A great time for the industry

Paul Kent, Senior Consultant Entertainment, Electrosonic

interview by Judith Rubin

Electrosonic Inc. recently marked its 50th anniversary. This international leader in audiovisual solutions serves a wide range of markets including theme parks, museums, control rooms, and corporate meeting rooms. Beyond complete integrated systems, Electrosonic provides a comprehensive scope of services including technical design, projector lamp sales, maintenance and operational support. The company maintains offices in the US, the UK, China and the UAE. Paul Kent is based in the UK.

Where do you see today's key markets for themed entertainment?

All markets are important, and in most regions they are expanding. The focus is on the new, big from-the-ground-up developments in the Far and Middle East. However, markets in the USA and Europe are just as strong, with clients and parks looking for new concepts and developing their own or imported IP.

The market that has expanded the most over recent years is that of multi-player online gaming, with revenues exceeding those of the traditional cinema markets. This has opened up a new breed of guest experiences that are now being planned into attractions and Family Entertainment Centers. The technology and storylines involved in these experiences are certainly going to shape some of the upcoming developments in the next few years, as they are developed from a single-person experience into a multi-person experience, with group experiences becoming more immersive.

Are these fertile markets for Electrosonic?

As an international company, Electrosonic has worked in many of these regions and markets over its 50+ year history. The level of design and integration that is needed to achieve a great storyline and experience, presents many great opportunities for Electrosonic. Together with our technology partners, we can drive and shape the technology, to successfully exceed visitor expectations every time.

Tell us about some recent projects you are most proud of. What were the special challenges and achievements?

I'm not going to get too specific because so many projects these days carry heavy non-disclosure mandates. All of the projects that we approach have different challenges, but it is the internal team and knowledge pool inside of Electrosonic that I am probably most proud of. The attitude of "it's never been done before... well then let's get on with it and make it happen!" is a great part of the company resource. It can often mean bringing people with different skillsets together from multiple locations. Working with a client to bring a project to life based on this knowledge is great. Some of the biggest projects in the last few years have all started with a small test and mock-up, in everything from sub-zero temperatures to a room full of "tools" that are utilized to create a workable and reliable solution. In the end, my favorite place to stand is at the exit of an attraction or show and watch happy people leaving - validating a successful project.

You recently became President of the Europe & Middle East Division of TEA (EME). What are the primary goals you hope to achieve during your term?

It is a great time to be in the industry. My main goal is to continue improving the level of education within the industry, both for those who have been involved with it for many years and for the next generation. The NextGen initiative from the TEA is one area of focus for the EME



At Discovery Cube LA kids get to explore the science behind the sport of hockey in a truly hands-on way. Photo courtesy of BaAM.

Beyond the arena

Sports brands reach out in new ways to engage fans



Aimee Roy
BaAM Productions

Managers of sports brands, as in any fan-based industry, are constantly thinking about how to connect with the next generation. The transformational use of mobile and digital technology has maximized fan connectivity and interaction with teams and brands, which continues to be a huge focus for teams in all professional sports. This includes finding innovative ways to move beyond the physical space – to reach beyond the stadium walls, merging tech and guest experiences for something more than a passive spectator sport. This offers the chance to engage new, curious, and/or passionate fans. After all, sports content makes for great storytelling.

A recent Goldman Sachs Global Investment Research report stated that Millennials - the next generation of patrons, and the biggest generation in US history – are more interested in “Access, not ownership.” This idea of access is essential to developing and maintaining a fan base. To that end, sports brands are also connecting with existing fans and potential fans by finding synergies and partnering with institutions such as museums and science centers to create interactive, branded spaces that offer a variety of benefits to visitors. These exhibits are ultimately crafted in a way that grants access to a sought-out team and introduces the public to a brand’s particular fan lifestyle.

Science of Hockey: Access granted

Projects like the award-winning LA Kings “Science of Hockey” at Discovery Cube LA [DCLA] illustrate how sports brands are rethinking fan outreach beyond their typical spaces and creating more access to grow and provide value to their fan base. DCLA

and the LA Kings teamed up to create the 2,500 sq. ft. permanent exhibit that immerses guests in the hockey experience to explore the game on and off the ice, giving them an opportunity to touch aspects of the game that are not always available to the public. Everything within the exhibit is modeled after existing properties of LA Kings or STAPLES Center (the team's home arena), and current players are a key feature in images and media throughout - providing a strong sense of access to sports heroes such as Drew Doughty and Jonathan Quick.

The exhibit has the look and feel of an arena, which comes from the use of authentic materials throughout the space – HDPE rink boards capped with black, rubber matting and ice-textured flooring inset with the authentic center line from STAPLES Center. It also features thoughtfully-designed replicas such as the iconic Zamboni, the scaled version of the massive STAPLES Center scoreboard, and the reproduction of the LA Kings locker room that captures the essence of this exclusive inner sanctum of the STAPLES Center. The experience works as a whole to put the guest in the middle of their own story, where they can walk in the shoes – or skates – of current players. From entering through the Player Tunnel with fans cheering them on, to sitting in the locker room modeled after the one used by the team today, the exhibit connects guests with all the sights and sounds that they would experience at an LA Kings hockey game.

The inspiration behind the design was all about sharing the team's passion for the game in a way that positively influences all aspects of visitors' lives. The experience builds excitement and anticipation for those who have never watched a game of hockey or put on skates; not to mention the learning that takes guests through the mathematics of the game, the physics of Newton's laws of motion, the art of color theory, the neuroscience behind goalie reaction time and the chemistry of ice-making. Science of Hockey provides guests with an up-close look at the sport of hockey and the team while discovering the fascinating science behind the game.

"We know we're going to gain a lot of fans." Luc Robitaille, NHL Hall of Famer and current President of Business Operations for the Los Angeles Kings, confidently commented in an interview following the grand opening of Science of Hockey in March 2015.

The exhibit has been a popular success. With strong attendance numbers from the general public and school groups, positive guest feedback, fan-endorsed media and social media coverage and a reported reduction in crime within the local area, the science center and its exhibits are already delivering on objectives. Kafi D. Blumenfeld, DCLA Executive Director, Science of Hockey enthused, "I believe we have created a best-in-class attraction that will further science learning and foster future

The Nationals at 10 exhibit was also incorporated into the Washington Nationals Winterfest fan event this past December. *Photo courtesy of BaAM.*



hockey fans!" Science of Hockey was designed and produced by BaAM Productions.

Take me out to the Newseum

The Washington Nationals baseball club recently joined forces with Newseum in Washington, D.C. to create the "Nationals at 10: Baseball Makes News" exhibit, which ran July-December 2015. From Barack Obama's opening pitch for the 2010 season to the Presidents' Race tradition at Nationals Park, the exhibit celebrated the Nationals' achievements and newsworthy events on and off the field over the course of the club's 10-year history.

In addition to the exhibit, Newseum, in partnership with the Washington Nationals, developed complementary programming such as "Newseum Nights: Game On" to create immersive environments for fans and soon-to-be fans. With hotdogs and pretzels and an open bar on offer, guests could take in the exhibit while channeling some favorite aspects of the ballpark. To help fans connect the dots and move from the museum to the ballpark, the Nationals offered fans who visited the exhibit a special discount of up to 25 percent on select game tickets purchased online – using the museum experience to build their in-stadium crowd. BaAM produced Nationals Winterfest in December 2015 which included some of the exhibits featured at "Nationals at 10."

Innovation through fan input

Technology can also be harvested to extend beyond the typical field of play for a sports brand. As digital natives, Millennials have grown up with new and evolving tech and have an inherent affinity for technology. Developing fan outreach through tech is a matter of creating empowered consumers who have new expectations unlike any previous generation. This point was reinforced at the Themed Entertainment Association's (TEA) 2015 SATE Conference on experience design. There, speaker Erik Watts (Senior Director, Technology for the Pittsburgh Penguins) expanded on the new ways that the team is harvesting tech and its capabilities. He introduced the team's pillars of: Drive, Energy, and Innovation. In his remarks, he observed that "Innovation" isn't necessarily a pillar associated with a hockey team, but that for the Penguins, it's a conscious priority to remain cutting-edge and do things that haven't been done before.

So how do they do that? How do the Penguins position themselves as innovators aimed at improving their fan experience by thinking outside the box? One of the ways they incorporated these big ideas and acted as a tech incubator in the past year took them beyond the arena and even beyond their team offices. The Penguins partnered with the Pittsburgh Technology Council and asked the public to submit new ideas for software, hardware, data analysis techniques or other products to give the team a technological edge over its NHL competitors. The top submissions would then be brought in to meet with the Penguins to present their pitches and explore how their ideas might be fully realized.

Social loyalty is a major focus for developing a core fan base, especially for young teams that may not have the benefit of decades-old franchises. While mobile tech is a key way to engage existing fans, innovative approaches are needed to continually expand the fan base and reach new audiences. Community outreach and partnerships with museums and other institutions are some of the things to be explored to introduce sports brands and engage supporters.

"Diehard sports fans are where it's at," said Larry Blocker (Senior Director, Game Presentation & Events, Miami Marlins), speaking at TEA SATE 2014. "You have to have those or your attendance is going to be nothing..." By offering access to the team in new ways, fans are empowered and granted the access they desire, and the sports brand can develop and maintain a relationship with them outside the stadium, arena, or ballpark, whether in-season or during the off-season. . . .

As Communications Manager, Aimee is at the hub of business development and company communications for BaAM Productions, a creative production company that specializes in entertainment, cultural, tourism, and sports experiences. Clients include the National Hockey League, Major League Baseball, Discovery Cube Orange County and Discovery Cube Los Angeles, TORONTO 2015 Pan Am Organizing Committee, and more.

RELIABLE SHOW CONTROL ROCK SOLID PLAYBACK



Engineering for the unique demands of
Themed Entertainment for over 30 years.

V16Pro/WinScript Live 4

Extensive device library
No-charge support
Available for Mac and PC

A/V Binloop Uncompressed

Truly solid-state uncompressed video player
High frame rate (HFR) playback up to 60fps
Synchronous, scalable design - 2K, 4K, 8K, AnyK!

**Alcorn
McBride
Inc.**
alcorn.com



The Moon Garden at the Patricia and Phillip Frost Museum of Science will allow visitors to look into the night sky.

Miami's big bang

Frost Science prepares to open new state-of-the-art facility in Museum Park

by Joe Kleiman

From 1976 to 2010, Jack Horkheimer, Executive Director of the Miami Space Transit Planetarium, gained national renown by taking PBS viewers on televised tours of the night sky. Six years after his death, the successor to his planetarium is set to take visitors not only to the stars, but inside the mind as well.

The new Frost Planetarium, featuring cutting edge, high resolution (8K, a super-high pixel count) digital dome cinema ("fulldome") will be a focal point of the \$305 million Patricia and Phillip Frost Museum of Science. The museum chose the system for its visual quality and its programming flexibility. (At press time, the museum had not yet announced the name of the system provider.) The "Frost Science" facility is the new incarnation of the former Miami Museum of Science, which housed the former planetarium. Its projected opening is late 2016, in downtown Miami's Museum Park, formerly Bicentennial Park.

In earlier days, Frost Science President & CEO Gillian Thomas was a planetarium operator at Paris' Cité des Sciences et de l'Industrie. "I was one of two people programming the planetarium. I felt very privileged and I want others to experience that feeling," she said. As part of its mission, the new planetarium will feature multimedia programming lessons to the public. There will be other unique experiences beyond traditional planetarium programming. For example, Thomas envisions the New World Symphony playing outside the museum in Museum Park while the live performance is streamed into the planetarium with brainwaves projected onto the screen, showing viewers how the brain reacts to musical composition.

Redefining the museum space

Frost Science, as a cornerstone of an expanding performing arts/museum complex in downtown Miami, is an example of rethinking what a museum space should entail and developing new exhibits for that space based around its strengths.

For more than 50 years, the Miami Museum of Science stood in a small enclave at the rear of the Villa Vizcaya estate, the 1915 home of businessman James Deering. Over the years, there were plans to expand on the Vizcaya property, but they never came to fruition. Things started to change around 2003. The Board knew that museums perform much better when part of a cultural center, and the Miami-Dade government was looking to reinvigorate the Museum Park area with arts and culture development. The Miami Art Museum (now the Perez Art Museum Miami) agreed to build a new facility at the location. The Miami Science Museum would as well.

"I joined the museum in 2003," says Thomas. "There were two things in place to do at the time – to secure the land in Museum Park and to obtain a general obligation bond, which we did in

2004. We received funding from the state for a feasibility study which showed how we will drive the economic region of the surrounding area."

Living Core

Among the many new exhibits at Frost Science is the Living Core Aquarium with a 500,000-gallon central tank. "We always had popular marine science programs with good links to University of Miami and Florida International University," said Thomas. "When we were looking at how to develop a new science museum, we evaluated our strengths, and we wanted to develop something specific for the South Florida region. Because of our demographic, it was important to move from a program to an aquarium. One floor of the aquarium is the introduction; the floor below simulates a dive. We've been developing flexible "furniture" for the aquariums so we can easily change out fish and content. The third floor is called The Deep. This aquarium simulates being deep underwater and you will not be able to see the walls. Our aquarium experience is also tied into science and physics components."

Proposed design renderings of the Patricia and Phillip Frost Museum of Science.
All photos courtesy of the Patricia and Phillip Frost Museum of Science.



To design the Living Core, museum staff and Thinc design explored San Francisco's California Academy of Sciences for its integration of a major aquarium into a science museum, as well as other aquariums, including Monterey Bay. They worked closely on the aquarium concept with Grimshaw Architects, design architect on the new building. Lyons/Zaremba designed and Jeff Kennedy Associates fabricated the underwater environments. This floor will also feature a 90-foot interactive digital wall for exploring South Florida marine animals not in the museum's collection, such as whales and dolphins. Using a concept from Design I/O, South Africa's Formula D designed the interactive media wall of The Deep level, along with another interactive media installation in a children's gallery.

Exhibits throughout the museum adhere to one of three key themes: People, Planet, and Prosperity. Global themes of water, light, energy, and time, will also be found throughout the galleries.

Galleries

The Baptist Health People & Science Gallery will concentrate on health and education. "We all make decisions in life that impact how our lives turn out," said Thomas. "This gallery will concentrate on choices we make in eating, relaxing, learning, exercising, and connecting." The People & Science Gallery, designed by Ralph Appelbaum Associates, will double as an exhibit area and a socializing space. Among its social components will be a stage where museum visitors are encouraged to exercise.

The Feathers to the Stars exhibit designed by Casson Mann, will tell the story of flight from the dinosaurs to the Space Age, with a special emphasis on South Florida aviation. A key exhibit will include both interactive horizontal and vertical wind tunnels. Frost Science is continuing its longstanding relationship as a Smithsonian Associate and will be obtaining artifacts from the Smithsonian for inclusion in this exhibit.

Another key exhibition area is the Innovation Center. According to Thomas, this area will explore the "process of science and research, and place you in it. It will feature visiting scientists, mobile links, and concentrate on the challenges of South Florida. The Innovation Center will link to the jobs of the future."

10,000 square feet are set aside for traveling exhibits and the museum plans free events throughout the year both inside individual galleries, outside in Museum Park and Knight Plaza, and within public areas of the building.

Keep looking up

Plans are in the works to expand the museum to Florida International University's north campus. In addition to housing classrooms which can be used to educate both students and teachers, the museum's raptor center will relocate to this facility under its new name of the Batchelor Environmental Center.

There is also space for expanding the main museum in Museum Park by either building its four towers taller or expanding out into the wetlands.

For its first year, the museum anticipates 725,000 visitors. Approximately 100,000 will be students, with the remainder split between tourists and locals.

Jack Horkheimer would end his shows by telling his viewers to "Keep Looking Up." With its rooftop Sun and Moon Gardens, visitors to Frost Science will be able to look up into the night sky. At The Deep level of the Living Core Aquarium, they'll look up into the ocean from below and see sharks swimming overhead. In the Frost Planetarium, they'll look up at the highest resolution images in Miami. And with the museum's emphasis on the visitor, their lives are likely to look up as well. •••

Patricia and Phillip Frost Museum of Science

Designers, consultants and fabricators

Grimshaw Architects – design architect

Rodriguez and Quiroga Architects Chartered – executive architect

Visual Acuity – technology consultant; A/V and IT for building infrastructure

Ralph Appelbaum Associates – concept design and development, The Baptist Health People & Science Gallery

Casson Mann – concept design and development, Feathers to the Stars

Thinc Design – concept design and development, Living Core

MWH – Living Core life support systems

James Corner Field Operations – designer for museum project; joint project with Perez Museum of Art

ArquitectonicaGEO – landscape architect

Atelier Ten - LEED management

Lord Cultural Resources – museum planning

ORCA Consulting – visitor flow and circulation

Randi Korn & Associates – exhibit evaluation

Lyons/Zaremba – exhibit habitat designer

Jeff Kennedy Associates – exhibit habitat fabricator

Design I/O – interactive multimedia conceptualization

Formula D – interactive multimedia design

World's fair fair update

Astana 2017, Dubai 2020, and a
postscript on Milan 2015

by James Ogul

Kazakhstan's energy showcase

World's fairs are still with us, and still relevant to a wide range of global interests in our modern age including trade, diplomacy, travel, land development and culture. Countries compete to host them, nations step up to participate in them, and visitors buy tickets and wait in lines to attend them. Milan Expo 2015 demonstrated all that. The Milan world's fair attracted 21 million visits and 29 Heads of State. Its theme was "Feeding the Planet, Energy for Life" and the food theme turned out to be a great hit throughout the six-month event.

At this writing, in early 2016, we look forward to the next Expo, opening a little over a year from now in Astana, Kazakhstan. This time the theme is "Future Energy," a topic that has significant impact world wide. Astana Expo 2017, officially sanctioned by the Bureau International des Expositions (BIE) will run June 10-September 17, 2017. This Expo is a three-month event as opposed to the six-month run of the Milan Expo. There are two types of world's fairs; larger, six-month events that take place every five years (the next is Dubai Expo 2020) and smaller, three-month events scheduled in between the larger ones (the most recent was Yeosu Expo 2012 in Korea).

Astana Expo 2017 will achieve some "firsts." It will be the first international exhibition of this kind held in a country of the former Soviet Union. It also marks the first time energy has been the theme of a world's fair since Knoxville Expo 82 - and a lot of developments have taken place in the energy field in the past 34 years. The theme will offer Kazakhstan and the participating



Renderings from Astana 2017

countries a platform to showcase energy developments in the unique, hands-on manner characteristic of world's fairs dating all the way back to the first one (London's Crystal Palace Exhibition of 1851).

The Astana organizers project attendance at 3 million, which is a reasonable figure for a three-month, smaller expo. So far, 76 countries have made a commitment to participate. Expo officials expect that number to grow to over 100.

In keeping with the "Future Energy" theme, the Astana site will apply best energy practices, looking to renewable sources such as solar, wind, biomass, hydropower and geothermal. The buildings themselves will be power plants that collect and use solar and wind energy and store heat underground.

Construction of the pavilions began April 2014 with 20 companies from Kazakhstan and 49 companies from around the globe involved. The giant sphere at the center of the site will serve as Kazakhan's National Pavilion.

After the Expo ends in September of 2017 the site will live on. Plans call for an International Centre for the development of green technologies and investment projects under the auspices of the UN. The site will also be the home of the new Astana International Financial Center, which is being developed along the lines of its counterpart in Dubai.

Dubai: "Clock is ticking"

On November 15, 2015, the 158th general assembly of the BIE in Paris officially ratified Dubai to host the 2020 world's fair, the next six-month world expo to follow Milan 2015. And with that, preparations in the host country officially began. Expo 2020 will run October 2020-April 2021. The year 2021 will mark the UAE's 50th Anniversary Golden Jubilee celebrations. As Reem Al Hashemy, Minister of State and director general of the Expo 2020 Bureau, told delegates, "The clock is ticking and the countdown has begun to Dubai Expo 2020."

And on March 13, 2016, the winning architects for the three theme pavilions of Expo 2020 Dubai were announced. Thirteen of the world's leading architectural firms took part in a global competition, launched in July 2015. The competition sought to identify the designs for the pavilions representing Opportunity, Mobility and Sustainability, each a subtheme of the Expo's main theme "Connecting Minds, Creating the Future."

The trio of buildings are designed to be located at the central Al Wasl meeting plaza, the heart of Expo 2020. (Al Wasl means "connection.") Mohamed Alabbar, Expo Higher Committee member and Chairman of Emaar Properties, was quoted in Trade Arabia (March 15, 2016) saying, "The winning theme pavilion designs further build on the UAE and Dubai's proven record in iconic architectural design, particularly when considering their

long-term functionality, sustainability and contribution to Expo 2020's legacy and Dubai's long-term development."

The firms that won the competition:

- Opportunity Pavilion - BIG (Bjarke Ingels Group), a group of architects, designers, builders and thinkers based in Copenhagen and New York
- Mobility Pavilion - Foster + Partners, an internationally renowned practice, based in London
- Sustainability Pavilion - Grimshaw Architects, with offices in New York, London and Melbourne. After closing day, this is intended to serve as a center for innovative technologies.

Dubai's master plan calls for the expo site to be divided into three zones, each dedicated to one of the fair's sub-themes of Mobility, Sustainability and Opportunity. The three zones will converge at the central Al Wasl Plaza. In the Plaza, a central semi-covered events space will host grand performances, spectacular displays and international pageantry day and night.

Expo 2020 Dubai will be the first world's fair to be held in the MEASA (Middle East, Africa and South Asia) region. Organizers see the "Connecting Minds" theme as addressing the need to collaborate across cultures and regions in order to achieve sustainable solutions to global issues.

Dubai competed with other countries to gain BIE approval to host in 2020, winning a deciding vote over Yekaterinburg, Russia; Izmir, Turkey and São Paulo, Brazil. Dubai Expo 2020 will be located on a 438-hectare site of which 200 hectares (500 acres) will be devoted to a gated Expo site.

Thinkwell Group, a global experience-design and production agency has been appointed as the content master planner for the 200-hectare (500 acre) site of Expo 2020 Dubai. Craig Hanna, Chief Creative Officer of Thinkwell stated, "The nations and organizations that take part in Expo, and the millions who visit, will be able to witness the power of connections through a range of interesting, immersive and entertaining journeys. We look forward to contributing to an incredible, world-class guest experience."

The Expo is expected to draw 25 million visits with daily visits of up to 250,000 of which 70% will be international arriving primarily at nearby Maktoum International Airport. For comparison, attendance at other World's Fairs this century were 18 million at Hanover Expo 2000, 22 million at Aichi Expo 2005, 73 Million at Shanghai Expo 2010 and 21 Million at Milan Expo 2015.

Admission will be by ticket (price has not yet been set). By BIE regulations visitors pay no additional fees once inside the Expo

site other than any retail expenditures. The area outside the Expo grounds will include residential, hospitality and logistics zones. The site will be located on the southwestern edge of the emirate, equidistant from Abu Dhabi and Dubai. It will be accessible by a new metro line being built expressly to serve the Expo.

\$26M shortfall of US pavilion at Expo Milano 2015 highlights need for a better process

How could the US improve its participation in world's fairs?

Recent financial issues with U.S. Participation at Milan Expo 2015 left contractors \$26 million in debt due to budget creep and fundraising difficulties (described in detail by Sarah Wheaton in a Feb 24, 2016 article for Politico.com).

Many cite restrictive budgetary language from Congress in 1994 and later in 1999 as cutting off federal funding for these endeavors. That is not true. The actual wording of the Congressional language states: "Except as provided in subsection (b) of this section and notwithstanding any other provision of law, the Department of State may not obligate or expend any funds appropriated to the Department of State for a United States pavilion or other major exhibit at any international exposition or

world's fair registered by the Bureau of International Expositions in excess of amounts expressly authorized and appropriated for such purpose."

This language does not rule out federal funding. It merely states that you have to request funding in order to get it. But for some reason, the State Department has not requested any funding for expos since this language was put into effect and has relied entirely on private sector fundraising which has proven risky for every expo.

Not only is it difficult to raise the large amounts needed, but cash flow can be a killer. Work that must be done early on comes at a time when fundraising is just ramping up. In many cases contractors have been asked to work on the promise of later being paid as apparently was the case at Milan. In other cases, contractors have taken the justifiable approach of just stopping work until they could be paid. These work stoppages on complicated and intertwined tasks have sometimes had a crippling effect on getting the project done on time and within budget. In the days when Federal funding was the sole source, the money was all there upfront, eliminating these issues.



Rendering from Dubai 2020

And so I feel strongly that if the US is to avoid continuous embarrassment, it needs to revert to Federal funding – with corporate sponsorship for perhaps special events or even product placement, but not rely on sponsorship to fund bricks-and-mortar or operations.

Another issue is the lack of experienced staff at the State Department. These are complex projects and are best handled by people who have been through the process, can anticipate problems before they happen and effectively deal with them from past experience.

A major step forward would be to create a permanent office to oversee these projects. In the past there was a World's Fair Office in the United States Information Agency, which was folded into State, but that office was abolished in the early 1990s. While it existed, a core group of three or four people with hands-on world's fair experience developed oversight expertise and kept records for each expo. This enabled them to apply lessons learned to future expos. Everything from long range planning on future expos, complete with expected budgets to how to prepare an RFP for a pavilion, to how to go about the process of appointing

a Commissioner General, to knowing which corporations have been enthusiastic past supporters, to managing an ongoing expo project could be handed by this office.

Establishing a permanent office would be an enormous help to these projects. Since the large-scale (Registered) world's fairs happen every five years and the smaller ones (Recognized) happen between the larger ones, there would be ample work to keep the small, dedicated unit busy.

With Astana 2017 and Dubai 2020 coming up, let's hope that this recent US embarrassment at Milan can be a catalyst to restructure the State Department role in US Participation in world's fairs. Other countries are taking full advantage of world expos with their multi-million audiences as a venue for international diplomacy and so should we. . . .

Since retiring from the US State Department in 2011 after a 30+ year career in world expos, James Ogul has remained on the scene in an advisory and consulting role. He writes regularly for InPark Magazine about world's fairs. His book, "Tales from the Expo" is free online at inparkmagazine.com.

inTHEMED ENTERTAINMENT

inWATERPARKS

inMUSEUMS

inDOME THEATERS

inAMUSEMENT PARKS

what are you into?

Subscribe for free @ inparkmagazine.com



Sound design for special venue

ImagesInSound founder Brian Eimer speaks with InPark Editor Martin Palicki about the industry and audio post-production

First off, tell us a little about your expertise and what ImagesInSound does.

I have over 20 years experience in sound design, designing for all genres of motion pictures, including themed attractions, ridefilms, IMAX films, features and television. I've done work for Chimelong, Wanda, Prana, SimEx-Iwerks, and IMAX Ridefilm. I've also designed and installed sound environments at Oltramare in Italy, and Camões in Portugal.

ImagesInSound is a sound design company that handles all the sound design needs of any attraction. We do SFX (sound effects), music (if required), premixing, and on site mixing. The on site mixing is one of the most important services we offer. Themed attractions almost always have unique speaker configurations. In order for the soundscape or sound design to have the most impact on the visitor, it's necessary to be on site to make final adjustments.

One of your niches is special venue. But you also have done film and TV work. What are the unique elements of working in special venue?

Yes, I've done a lot of TV and a few feature films. What makes special venue really unique is that it doesn't need to conform to standard speaker layouts. Because you're designing for the speaker configuration you have a lot more creative freedom. I have just upgraded my facility to Dolby Atmos and IMAX 12, so



Brian Eimer
ImagesInSound

that extended creative freedom is now finding its way into the mainstream, but with 27.1, or 26.2 speaker configurations you can have a lot of fun.

You've done some work in Asia recently. Tell us about some of your recent international projects.

In terms of Asia, I've done two projects for Chimelong: Alien Attack in Guangzhou, and Kaka's Big Adventure in Zhuhai. I also worked on Power of Nature for Wanda Movie Park. These were all very unique. The speaker configuration and technical set up on site were quite different for each one. Also, working in China, you usually can't locally source the "bits and pieces" related to the location mixing gear. I have to think of every possible scenario and make sure I bring the necessary pieces, otherwise I may not be able to do what I needed to do while mixing on site.

How does the Asian market approach sound design differently?

My experience is that attractions being put in Asia are using North American people and skills. So the approach to sound design for me is the same, because I'm doing it for North American project managers. That being said, when I have worked with the Asian clients on site, there has been a bit of education needed on what the overall focus of the soundtrack should be. They sometimes get hung up on small details, but once the attraction is in full swing, often those little details become irrelevant. Of course there will always be small details that will make a difference, but the secret is in educating the client on which small details need focus.

You mentioned the Power of Nature theater for Wanda that featured a wide array of speakers. What were some of the challenges and successes with that project?

The first challenge of any location mix is the integration into the on site system. For the Wanda project I need to make sure I had all the necessary gear to interface with the local system. The theater configuration was smaller than the Chimelong installs and the project included Butt-kickers™ (transducers that respond to low frequency audio to give the guest a vibration) in



each of the seats. So I had to identify where in the film we wanted to use this effect, then find the best frequency to get the seat to vibrate. The venue also had some acoustical challenges because of the theming of the space. I needed to compensate with the mix and the output EQ to make the soundtrack have the most impact.

You worked on Alien Attack for Chimelong. That type of surround screen immersive attraction seems to be gaining popularity. With guests basically in the middle of a large tunnel, how do you handle the sound design where the stage is all around the guest? How do you keep the sound crisp?

It is challenging. The key to designing sound for this type of space is to keep the track "clean". With these screen immersive attractions, the individual screens are unique, or have unique content playing. So by keeping the track clean and more about hitting the specifics of each screen, you can give impact to the whole space. It's when like elements are coming from all speakers in the space it becomes messy. This is what makes mixing the music challenging. You want the cue to be immersive and play throughout the entire space, but you have to be careful you're not making it sound muddy by having acoustical issues. For Alien Attack, we hit specifics on each side of the tram, even for things like the warp tunnel. With the music, I had the composer deliver individual stems, so I could control how the mix was placed in the space, giving an immersive feel, while minimizing the acoustic issues.

How has A/V equipment compatibility improved over the last five years?

It has become a lot easier to interface with install. Now that we are using digital we don't run into analog issues that come

with using a long analog snake (ground hum, intermittency etc. the analog snake is heavy and very cumbersome to bring, etc.). With digital, it's cleaner, more compact, and easier to interface both the mix system and on site equipment. For Alien Attack I used Cobranet, for Power of Nature it was AES, and for Kaka's Big Adventure it was MADI. My favourite was MADI, it is real easy to interface with and very clean.

Technology is shrinking. Tell me how that is impacting sound design and audio mixing.

The more compact technology makes location mixing more and more feasible. Clients can really understand the value of it. It also affects your workflow for each project. Now I can be as creative as I need to be before heading to the site. Then once on site, my work is closer to where it needs to be. Now on site, I can use my time creating the biggest impact possible with the sound design.

What do you think operators and developers don't understand about sound design that would help them conceive and execute their projects better?

A good sound design can elevate the "WOW" factor of any attraction. Good sound design, with the proper on site setup, will create an immersive experience that will blow audiences away. The bar keeps getting raised as to visitor expectations, and this includes how you build and promote the sound design. ...

For more information, www.ImagesInSound.com

The house that Ben built:

nWave steps up to new heights in the cinema world with
“The Wild Life” distributed by Lionsgate

Judith Rubin interviews Ben Stassen

Based on the classic novel Robinson Crusoe, the new release from nWave Pictures in partnership with StudioCanal Group marks a new level of success for nWave with Lionsgate acquiring US distribution rights to the movie for the mainstream cinema market under the title, “The Wild Life” opening in theaters September 9.

Over the course of 20+ years, nWave founder Ben Stassen has built a reputation for innovation in the business of specialty cinema, producing and distributing content in a variety of formats for museums, visitor attractions, educational markets and most recently, mainstream cinema. The company has challenged traditional models and pioneered new ones, championed digital production to facilitate multi-platform distribution, helped establish a modern vocabulary of 3D cinema and set the bar of quality for 3D and animated moviemaking. nWave has distributed films to more than 12,500 theaters globally (including cineplexes), garnering attendance to its shows of more than 50 million – cineplex numbers alone being over 30 million).

The nWave tree today includes distinct company branches for production, distribution and marketing. InPark co-editor Judith Rubin interviewed Ben Stassen and also spoke to longtime company executives Janine Baker and Eric Dillens for this look at Robinson Crusoe, and the history and future of nWave.

How did the Robinson Crusoe story wash up on nWave’s shores?

I love castaway stories - and they provide good, family-oriented subject matter with good themes. Robinson Crusoe is a classic that lives in the public consciousness – a recognizable IP. Most people know at least the basics, even if they haven’t read the book by Daniel Defoe. It was ideal for our purposes, and this was such a new and original angle – seen from the point of view of the animals on the island where the hero is shipwrecked. It was a real find. Chris Hubble had written the original script on spec. He’s a retired Disney staff writer now in his 70s, and had worked with us before on the script of Sammy & Ray, part of nWave’s Turtle Vision series. I fell in love with it. We worked on it for about a year, reshaping and rewriting to make it our own and combine production of a feature with that of a theme park attraction.



Tell us more about how nWave modernized and repositioned the story.

In this version, the main character is a parrot. And there’s no Friday [the native in the original story who becomes Crusoe’s right hand man]. But as a nod to Friday, the parrot is called Tuesday. We begin on the island before Robinson Crusoe arrives, where Tuesday is a restless inhabitant. He’s like a bored teenager. He wants to see the world. The other animals are complacent, but he’s convinced there’s something better out there. He finds clues here and there in the form of things that wash up on the beach. He has tried to fly away but always returns exhausted.

And Robinson Crusoe’s arrival changes Tuesday’s world?

Yes – one day there’s a big storm on the island, and that night the animals hear strange noises but there is no visibility. In the morning, they see the wrecked ship, and they see Robinson Crusoe and his dog, whom they take for sea monsters. For his own part, Robinson Crusoe is dreading cannibals, and that’s what he mistakes the animals for. So our story and our characters develop out of these wrong first impressions and this clash between two different worlds. The themes are very different from the original story, but then again, they’re not – and they work.

The playful, slapstick comedy of the movie is also quite different from the mostly solemn tone of the book. It has the feeling of classic zany cartoons.

It works – not just for the way we wanted to tell the story but as a valid interpretation of this castaway character trying to



Photos courtesy of nWave.

survive and adapt, facing challenge after challenge, and failing repeatedly until he succeeds. It's also characteristic of how we approach cinema and one of the things that differentiates nWave from the mainstream, as we produce movies from our allegorical desert island in Brussels, Belgium. nWave comedies are like sitcoms, as opposed to the typical North American dialog-driven comedy. We try to create a unique world, and our characters exist within that world.

That doesn't mean there aren't serious events and even tragic moments in the movie and nWave's other movies. There are.

How do you approach production with both distribution platforms – mainstream animated feature, and attraction film - in mind? What are the target markets?

Multiple distribution platforms give us more sources of revenue, and that's why we've always worked this way, even before we moved into features. Digital production has opened things up and even 3D is much simpler to produce – although not all 3D is good 3D.

It's not just about making a long version and a short version. We serve two very different distribution markets, and each of those

markets has subcategories. Success in one doesn't automatically guarantee success in the other, but our track record is good.

The theme park and educational attraction markets are important markets for us and we offer them a very competitive product. Having a feature-sized budget to work with – although we spend perhaps 25% of what an American studio spends - and the backing of a studio sustains great production values and means we have high-quality digital material from which to extract attraction films. Any new material we create for the attraction films is based on the existing digital assets, so it costs less to produce than if we were starting from scratch. The Robinson Crusoe attraction is 13 minutes long, for 2D, 3D and 4D exhibition in theme parks, zoos and aquariums, science centers and museums. The ecological angle of the story gives it huge crossover potential. [See sidebar for more on nWave and attractions markets.]

Attraction films tend to be part of a park's new offerings for the season. While they have splashy premieres, they are allowed time to grow throughout the season or the year and build the market. Word of mouth is important. With attraction films, it's about stimulating repeat visitation to an immersive experience.

The feature distribution model is such that a movie has to succeed when it premieres – it has to have a great opening and first weekend. It's about the public, the end user. On the features level, we have proved ourselves as well. Initially it was tough. We're a small company, but our alliance with StudioCanal - which began with their picking up the distribution/sales agency rights of the first TurtleVision feature - was a huge leap. Our output has accelerated from six features in nine years – starting with Fly Me to the Moon in 2008 - to one per year. That's an output unheard of outside of North America and proves we're here for the long term. With that plus The Wild Life being distributed by Lionsgate, we have total credibility.

Tell us more about working with StudioCanal and Lionsgate and how that has affected your company.

Working with a studio means we have a strong financial partner to bankroll our productions, as opposed to financing on our own. Our staff has grown from 30 to 120 people – 115 of them in Brussels, and the rest on the ground in Los Angeles and Asia. It takes two years to do a film. We start a new one every year, which keeps the animation team busy. We see new proposals coming in every week, and are able to attract first class talent.

We're very happy about Lionsgate picking up Robinson Crusoe. They're one of the largest film sales companies in the world. StudioCanal made a deal with their North American distribution unit.

There may be a fair amount of controversy in the initial discussion stages of a project, but once the project is greenlit, they let us

have our heads and the process is very smooth. Being relieved of the financial challenge, we can focus on the creative challenge, and we have the means to acquire outside projects, such as our next title, Son of Bigfoot, in addition to developing our own films internally.

We were also able to add co-director Vincent Kesteloot, who started when we had the Sammy and African Safari projects in production at the same time. It's been great to have him on board. I can still remain the big-picture guy and be involved in the story, while sharing a lot of the day-to-day responsibilities. It is always a very collaborative process: You have to give people room to do what they can do; leave them room to be creative. That's a key aspect.

Will there be more Robinson Crusoe tales from nWave after this one?

It is part of the plan. In our film, after three years on the island, Crusoe is retrieved by a pirate ship. He thinks at first he's being brought back to England, discovers he is not and returns to the island, along with Tuesday. In Dafoe's original story Crusoe lives on the island for 27 years. So there are many more adventures that await.

Doesn't Tuesday want to join the pirates and see the world?

Our restless parrot discovers the value of what was in his own backyard. They both do. But the movie itself is traveling the world, to theaters everywhere! •••



nWave and the attractions market – an emphasis on quality

**Janine Baker,
SVP Distribution &
Development**

TECHNOLOGY

"What takes us to new heights and places is the growth of technology. Today it's all about the best digital technology, and that's moving and changing quickly, all the time. A site simply has to install a system that fits their space and their budget – and today, they have lots of options to choose from. As often as we upgrade our home computers, that's about how often sites have to upgrade the systems in their theaters. On our end, the quality of content now has to be better than ever because the resolution is better than ever. One reason nWave has been successful for so long is that we work very hard to keep up with that - we're always looking forward to where the market is going, on a multi-platform distribution level. As a producer/distributor nWave continues to lead successfully in all its markets because Ben made that jump into the features world and insisted on high quality, and because we understand our clients."

LONGEVITY

"Robinson Crusoe can play for 10-20 years in attraction theaters. There are sites that still play Superstition and other nWave titles that have been around since the 1990s. Many of our clients have been with us for 10+ years. We keep up with technology and ahead of it; we listen, we visit, we understand that each site and each client is unique."

LIBRARY

"nWave introduces at least two new attraction films a year, along with one or two ride films, and one or two giant screen releases. Being in features has not changed our commitment to the attractions market – it has put us in a position to serve it better. Clients stay with us because we have the highest quality product for the family entertainment markets. Our 3D is pristine, the best in the market. We have been called the European Pixar."

nWave's Greatest Hits

Source: Eric Dillens, Chairman, nWave Pictures Distribution

LONG TERM CLIENTS AROUND THE WORLD INCLUDE:

- Futuroscope, France
- Europa-Park, Germany
- Isla Magica, Spain
- OCT Parks, China
- Ancol, Indonesia
- Tycho Brahe Planetarium, Denmark
- Aquarium of the Pacific, Los Angeles
- Discovery Cube Foundation, Los Angeles

MOST PIRATED FILMS

- Haunted Mine Ride
- Cosmic Coaster

LONGEST RUNNING ATTRACTION FILM

PandaVision (2000) was nWave's first attraction film and it still runs at Efteling in the Netherlands

TOP-LEASED RIDE FILMS

- Haunted Mine Ride
- Glacier Run
- Snow Ride

TOP-LEASED ATTRACTION FILMS

- PandaVision
- Haunted House
- Fly Me to the Moon
- TurtleVision
- The Little Prince
- Pirates

FILMS THAT HAVE ACHIEVED CULT STATUS

- Haunted Mine
- Haunted House
- Haunted Castle

Eric Dillens: "The common factor, of course, is 'Haunted.' Haunted stories have a strong, enduring attraction appeal and that is demonstrated by these shows' continuous popularity over 10-20 years."

INDUSTRY BREAKTHROUGHS

- SOS Planet's success as a pioneering 4D attraction film opened the door for other successful films in this genre.
- Dillens: "E3D & Haunted Castle changed the way giant screen clients licensed films. nWave has been the first producer to bring pure entertainment and fun to the giant screen. It started with 'Thrill Ride, the Science of Fun' (1997) followed by E3D (1999), 'Alien Adventure' (1999) and 'Haunted Castle' (2001)"
- "Fly Me to the Moon opened the door for the company's success and growth in the feature film world and gained the attention of partner StudioCanal"
- "Multi-platform distribution model: Ben Stassen's pioneering strategy of creating a feature and breaking out other versions to distribute through other markets has been so successful that it has been copied by other companies and competitors in the markets of giant screen, 4D attractions and rides."



A dome for all seasons

New installation by Mad Systems reveals how accessible digital dome theater technology has become

by Maris J. Ensing, Mad Systems



Maris J. Ensing

Mad Systems

One interesting new development we came across recently when designing and installing a system for one of our clients was the negative pressure projection dome. A negative pressure dome is based on a geodesic dome that is built using rods that slot into interconnecting custom pucks. A structure with a near-ideal spherical shape results. An outer layer of material is then stretched over this structure, and an inner projection screen is mounted inside of the geodesic structure and connected to the outer surface. The air in the space thus created is then pulled out using a very quiet pump, and the resulting reduction in pressure (negative pressure) then causes the inner projection screen to be pulled towards the geodesic structure. The shape of the tensioned projection screen is such that this provides a semi-rigid surface that very closely approximates a dome shape, onto which images can be projected.

This method, a new way to provide a dome-shaped projection surface, turns out to be a rather nice and a very affordable dome theater solution (often referred to as "fulldome") for museums, visitor centers and a host of other venues. Think about gaming, dark rides, 360-degree cinema and simulation. Use it to do a theater performance, surrounding your audience with imagery without needing any physical set changes. Surprise your guests by setting up a dining location where you take them into another space. Have a party, and use the dome to completely surround your audience as you dance the night away. Consider presenting your new building or gallery design such that it properly surrounds your audience.

Experience a rock concert, or consider this for just about any application where you want your audience to be completely submerged in your story.

From aerospace to ocean depths, possibilities abound. A low-cost solution, it provides a number of distinct benefits when compared to other dome theater solutions. To start with - it doesn't need a dome-shaped building or another huge custom-built space - it will fit right into your venue (or outside it), and it's free-standing. These domes are essentially 'portable'; moving one around is certainly an option. Getting the basic structure built and the dome in is normally between a day and a few days of labor with another day or so to get the equipment in, finessed and your staff trained. The projection system provides at least 3K video into the dome, and with the included surround sound audio system, the result really can be rather stunning.

Basic size options range from a diameter of 10' up to well over 100' diameter, with seating capacities up to nearly 1,000 visitors and standing room for considerably more. Video resolutions range from around 3K up to 8K, depending on the size of the dome and the projection hardware installed. Lower cost options typically include conventional projectors, but laser projector options are also available. Options to use PVC, fiberglass or solid aluminum panel outer shells exist, so domes for outdoor use are available as part of the repertory. The decorative dome cover can be customized with full color printing, making for a very attractive exhibit. In the case of our installation, we used a simple black cover that makes the dome disappear into the ceiling and is hardly seen. A completely free-standing dome can be supplied and installed with a variety of different door options and even heating and cooling should it be required.

Controlling the dome is simplicity itself. Using an iPad with several options including an automated play-list feature means that you do not need a full time operator. Should you want for someone to present a show or show sequence, it's easy: since the controller is portable, there is no need for a fixed operator position. The presenter or docent is free to join the audience and present from wherever works for them.

The total weight is relatively minor. No huge structures or vast amounts of infra-structure are required. For this installation we mounted a 15' diameter aluminum ring into the space, and built the geodesic structure on top of that. Power requirements for this dome were minor, and the dome comes with everything you need to get it up and running. A 10'-15' diameter dome only needs a single main socket. Another nice plus point with this system is that there is no longer a need to have equipment

Right: Optical patterns projected onto the dome's surface during the automatic calibration process.

Opposite: The basic geodesic structure in place.

Courtesy of Mad Systems

sitting in the middle of the room, as the projectors are mounted on the rim of the dome. This means that it is quite acceptable to have it as a free-standing exhibit that just runs movies or tells a story. Guests can walk in and out; there is nothing in the space that people can trip over. Once the projectors are installed, calibration of the imagery onto the dome is a breeze: A camera is set up in the middle of the dome for the calibration process, and a couple of button presses later the alignment is done and perfect.

Another nice feature is scalability. With a height requirement that is marginally over half of the diameter, and various different sizes being viable options, there is always a dome that will fit. In fact, even in cases where the remaining space below the dome might be marginal, there is usually no reason not to tilt the dome, and adjust the seating accordingly. Even in rooms a little over 10' high there is an option to use a small dome to provide an immersive viewing environment. It is also easy to add another dimension - adding moving seats and special effects is quite feasible and relatively simple as there is no dome equipment to get in the way.

In the past, providing media for a dome has been expensive - but this is no longer as much of an issue. With a horizontally mounted dome and visitor seating arranged in a circle, it is obviously still important to provide media that looks good and is relevant no matter from which location it is viewed. However, with a tilted dome, and seating arranged on one side of the



dome, this is much less of a concern. The dome we installed comes with a few short movies and a host of sample movies, and more material is available including the obvious space based media, but there is also a range of other interesting and good looking movies. Samples of electron microscope based imagery had the audience reacting well, and asking for more, and shoots of the Albuquerque Balloon Festival provided for a really nice alternative. Thousands of other titles for a range of genres are available, and with a movie conversion facility for (ideally) 4K material, it is easy to show client provided or purchased material in the dome. Our client obtained free content from NASA and converted it for the dome. With more and more 4K material being available, and wide angle lenses and 4K cameras likewise, even custom shoots are getting more affordable.

An add-on computer provides for a planetarium type capability. The "Event Horizon" software that was provided as part of this particular package allows for a host of basic planetarium-like functionality, with images of stars, the Milky Way and options to overlay names. You can control the magnitude of stars to be shown. Images of animated planets and planetary orbits are all part of this software, and covers all the basics. Event Horizon, however goes a lot further. It allows for options to see the sky not only in the visual domain, but in different spectra ranging from gamma-ray imagery to infra-red with a number of options in the middle. It is easy to control too, with the same iPad that is used to control all the other functionality of the dome. If this

software is not enough, or if your educators have their own preference for an astronomy package, the computer that runs this software is Windows based, so that it is possible to install any of the 'usual' (and mostly free) astronomy software including Worldwide Telescope, Celestia, and any other suitable software package that you are used to working with as we did for this installation.

Talking about planetaria - the system is not equivalent to a traditional optomechanical "starball" projector, because it is a video system - but that's why it is so flexible. Many planetarium type shows today are heavily dependent on projectors to provide the basic story, and if they employ a starball, it is only during part of the show. In this case, it is possible to do the same, and with video edit software now affordable for just about any platform, many operators have learned to create their own custom dome content in addition to drawing on distributors' libraries. The software that controls the dome can run automatically after setting up a playlist - so not only is the dome itself affordable, but running it is also simplified. Dome projection of this kind is today within the reach of any museum, visitor center, theme park, special event or corporate client. ...

Maris Ensing is CEO of Mad Systems, a technology company specializing in audiovisual and interactives, based in Orange, California, with an office in Beijing, China. Visit www.madsystems.com.

BaAM

CREATIVE | PROJECT MANAGEMENT | EVENT PRODUCTION AND OPERATIONS | BRAND ACTIVATION





WE SOLD A
**RECORD
NUMBER**
OF SEASON PASSES
AS A DIRECT RESULT
OF OUR NEW
**LOG
FLUME**

Bob Williams
General Manager, Calaway Park
Calgary, Canada

博物館 Bówùguǎn

China's dramatic growth in the museum sector
yields obstacles and opportunities

by Joe Kleiman

At the time of the founding of the People's Republic of China on October 1, 1949, it was estimated that there were no more than 25 museums in the entire country. 65 years later, in 2014, there were 4,500 museums, an astounding 17,900% increase.

This accomplishment was not an easy one. In addition to increases in the number of museums, there were setbacks that saw a decade long shutdown within the museum sector and questions as to what constitutes a museum.

Bowuguan is a transliteration of the Mandarin Chinese word for Museum.

History

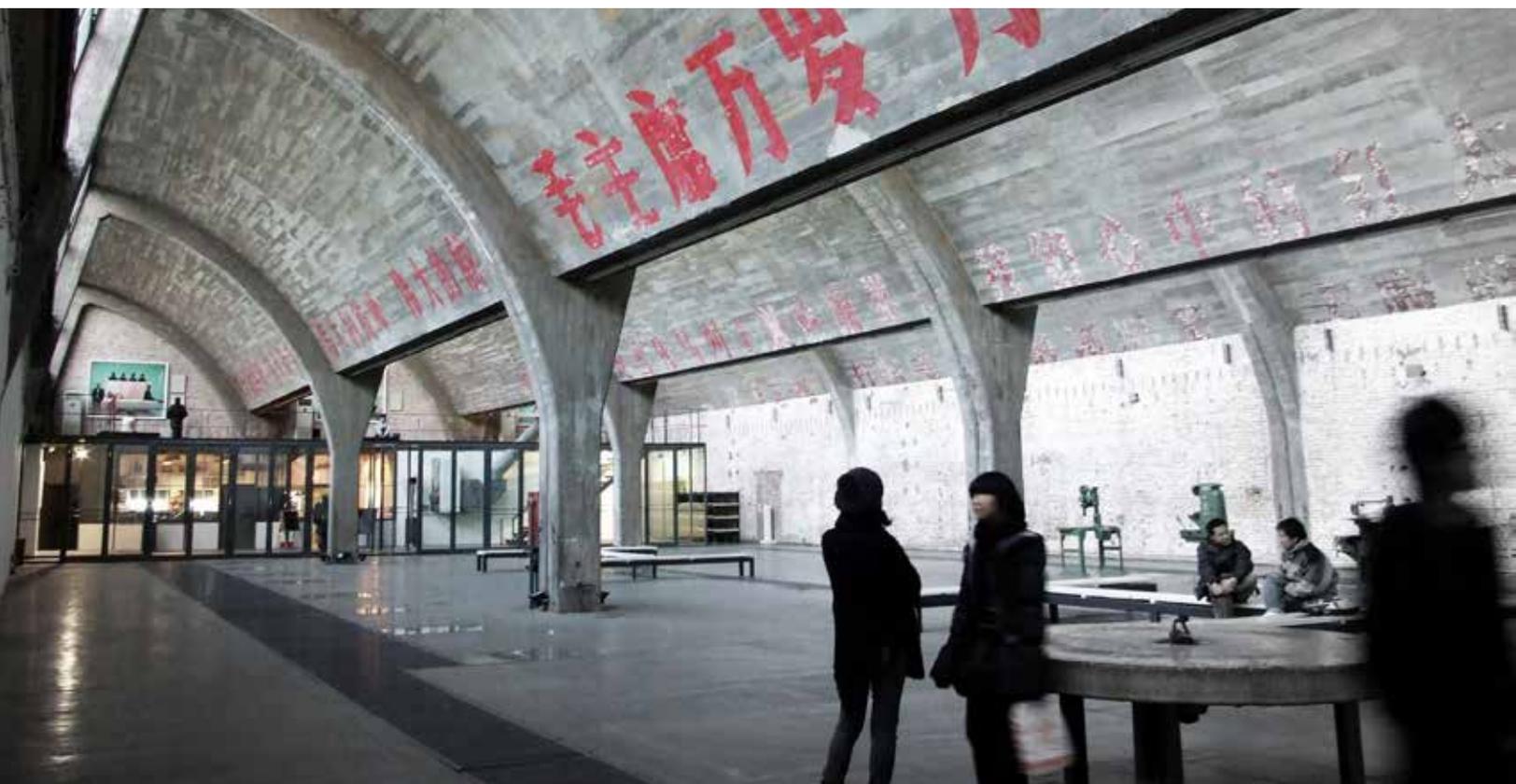
As part of China's first Five Year Plan (1953-1957), the government began opening provincial museums showcasing themes such as "Land Reform" and "Revolutionary History." The second Five Year Plan (1958-1963), also known as "The Great Leap Forward," led to the establishment of a network of National Museums and an expansion of museums on the regional level. This endeavor was accompanied by the slogan, "Every province must have its museum, every community its exhibition hall."

A growth spurt such as this can lead to uneven quality. Professor Feng Chengbo of Tianjin's Nankai University wrote that "...almost overnight, thousands of museums emerged without collections, professional staff, or buildings." (Prof. Feng was quoted in the 2014 book, "Museums in China: the Politics of Representation Under Mao," published by Boydell & Brewer and authored by Marzia Varutti, Ph.D, an expert on Asian museums and Chinese culture who is affiliated with University of Oslo and the University of Leicester museum studies program.)

The Great Leap Forward was followed by the Cultural Revolution (1966-1976), during which Communist party dominance and social re-engineering caused thousands of museums to be closed and thousands of artifacts and works of art either quarantined or destroyed.

Dr. Varutti has chronicled how an open-door policy instituted in the late 1970s began to change the Chinese museum sector, with the beginnings of international cooperation, the institution of Chinese museum associations, the establishment of museum studies courses at universities throughout the country, and the acceptance of international museum standards.

798 Space gallery in the 798 Art District, Beijing. *Photo credit: Charlie Fong under Creative Commons license.*





National World War I Museum and Memorial

Our technology solutions have captivated and entertained audiences around the world for over 50 years. We specialize in interpreting your design ideas and carefully selecting the technologies that complement your story.

YOUR STORY
— OUR —
**TECHNOLOGY
SOLUTIONS**

Complete Audio Visual Solutions

- Technical Design Consulting
- Systems Integration
- Service & Maintenance
- Global Reach



Capital Museum Beijing. Photo courtesy International Copper Association.

By the turn of the new Millennium, expansion of the Chinese economy and growing middle and wealthy classes would create a boom in the museum sector.

The 12th Five Year Plan (2011-2015) called for 3,500 museums by 2015. That goal was met three years early and exceeded by more than 1,000 museums.

Private museums

A major factor in that growth has been in the private sector. According to Christian Aaen, a founding principal at Economics + Culture Advisors (ECA), 22% of Chinese museums are privately owned.

Beth Chang, Regional Director of Economics for AECOM, points out that these private museums tend to fall into a number of categories. The vast majority are small galleries where wealthy Chinese can showcase their art. She anticipates that in the future they may not be characterized as museums by the government. Aaen pointed out that art districts have popped up in larger cities such as Shanghai and Beijing, centered around cafes, artist studios, and these private galleries.

There are also larger edifices. Developers of mixed-use projects are often required to include a museum space as a cultural anchor, which is then often donated to the government. Aaen said, "Companies may also develop a private museum at their factory or headquarters, showcasing their company's products, history, or art collection."

According to Chang, "The latest trend is that developers are planning museums on their own and just giving them to the government." This has resulted in buildings designed by some of the world's top architects but with little to no collection inside. "In exchange for obtaining prime developable land, local governments may require that developers incorporate a 'world-class' cultural element."

Chang adds, there's a saying in China that, "If you're not rich enough to own a museum, you're not rich enough."

What people want to see

Aaen reports that ECA recently conducted a breakdown of the types of museums that were in place at the end of 2014, the last year for which full data were currently available. He said, "41% were history museums, 39% general - meaning they covered a variety of topics - 10% were art, 7% were a specific topic unique to that museum, and 4% were natural science. We will likely see more growth in the art, science and natural science such exemplified by Shanghai Art Palace (former China Pavilion at Expo 2010) and the recent opening of the new Shanghai Natural History Museum."

AECOM's Chang estimates that 30-50 large museums open in China each year. "Most of these new museums are art museums because the government still owns a lot of relics," she said. Moreover, the Chinese people have strong interest in art. According to Chang, Chinese are more interested in art and cultural displays, especially Asian and European art, than other

museum topics. That interest drives Chinese tourism to foreign museums. This is exemplified by two of the top-attended museums in the 2014 TEA/AECOM Museum Index, the National Palace Museum in Taipei, Taiwan and the National Museum of Korea in Seoul, South Korea.

In her written analysis within the 2014 TEA/AECOM Museum Index, Linda Cheu, Principal/Vice President at AECOM, attributes museum attendance growth in both countries to the strong Chinese tourism market.

Free admission in the Mainland and Hong Kong

One of the largest markets for Mainland Chinese to visit is Hong Kong, designated as a Special Administrative Region. Hong Kong has recently experienced a number of events that have had a negative effect on incoming tourism. These include an unfavorable exchange rate between the Hong Kong and US dollars, a new restrictive policy for issuing permits to Mainland Chinese for visiting Hong Kong, and a series of high-profile events involving unscrupulous group tour operators that resulted in a death and murder charges. The result has been an overall drop in tourism along with a significant drop in 2015 attendance at Hong Kong theme parks - notably Ocean Park and Hong Kong Disneyland - as well as smaller attractions such as Madame Tussauds Hong Kong.

According to Chang, Hong Kong's museum scene has largely been unaffected by the drop in tourism. The Regional government Leisure and Cultural Services Department (LCSD) operates 19 museums within Hong Kong. The majority of these are small in scale and narrow in scope, such as the Hong Kong Film Archive and the Lei Cheng Uk Han Tomb Museum. Of the 19, Chang points out two museums that have a strong history of attracting tourists - the Hong Kong History Museum and the Hong Kong Science Museum. Both are in areas with

heavy tourist traffic. Chang adds, "The attendance at these two museums fluctuates depending on what special exhibits they're showing. When they don't have one, attendance goes down."

In January 2016, the LCSD experimented with its admission policy and offered free admission for the entire month to all its museums. Chang reports they recorded a 15% to 50% increase in attendance per museum that month. And, she adds, tour operators added the museums to their itineraries in order to take advantage of the free admission.

According to Aaen, "In Mainland China, there is a goal to make all museums that belong to the government admission free. Currently 80% of the country's museums have achieved that goal."

In some instances, the resultant jump in attendance has been staggering. In 2008, when the Fujian Provincial Museum switched to free admission, museum officials recorded a jump in daily attendance during peak visitation periods from a few hundred to more than 10,000 per day. In response, the museum ended up curtailing admission at 3,000 each day. In instances such as this, the increase in attendance has been drastic enough to increase operating costs. To offset this, China enacted a rule in 2015 allowing government operated museums to generate revenue for themselves.

Elsewhere in Asia

According to Chang, what's taking place in China's museum sector is unique among Asian nations. With the exception of South Korea and Japan, where museums are funded through a combination of public and private sources, "local governments have to find money for museums. There are only a few remaining Communist countries and museums that tend to make it to market, but the government lacks funds for supporting them.

China Wood Sculpture Museum, Harbing. *Photo courtesy Mad Architects.*



Outside of Singapore, there is not much development in Southeast Asia."

Aaen points out that "China is still doing well compared to other countries. There is a fast development – 150 to 200 new museums per year." He expects Chinese outbound tourism to increase overseas, from the current 120 million to 200+ million by 2020, which could have a positive effect on museum growth in the Asia Pacific region.

The future – and opportunity

According to Aaen, ECA expects continued growth can be expected in the Asian museum and cultural sectors, but there will likely be a deceleration in the growth rates over the next 5 to 10 years. The current Chinese government target is 5,600 museums by 2020. This will reduce the museum-to-population ratio from its current "one museum per 300,000 residents" to "one museum for every 250,000 residents" by the target year.

Chang postulates that, "in the next five years, as has happened in the past three to four years, older museums will start renovations. The quality will improve. Private museums will continue to pop up, but with new regulations, they may need to change their name to something other than 'museum'. Coastal provinces will definitely see world-class museums and hardware. But they'll leave the software to outside professionals."

According to Chang, as newer, bigger, and better museums come into the market, people's expectations will change. This could either have a negative effect for smaller museums with older exhibits or facilitate improvements, which could open up opportunities for exhibit designers.

"Chinese museums are waking up," she says. "In old times, the mission statements started with collections, then research, then education. Because of a new museum regulation, education is now priority number one. Education will push the software. Museums are going to be more audience oriented than just showing collections. This opens up opportunities for designers. This kind of expertise is limited in China. Designers must understand the Chinese audience, how to engage the Chinese audience. The museums need to improve their software, and there's a huge gap to be filled."...

Beth Chang



Christian Aaen



Next Issue: Exploring the International Scene

- **The global impact of the themed experience industry**
- **Bonus distribution at IAAPA's Asian Attractions Expo in Shanghai**

May 2016

Go with the glow



Anna Musun-Miller
Indianapolis Zoo

A glowing report of Garden Glow at Missouri Botanical Garden

Light and sound have the power to transport you - to a specific place and time or even an emotional state. Garden Glow at the Missouri Botanical Garden (MOBOT) in the city of St Louis transformed the grounds into a journey through invigoration, mystery, joy and nostalgia.

Running through Jan 2016, this was Garden Glow's third year and with it MOBOT has continued to push beyond traditional expectations of a holiday light event to create a guest experience more akin to installation art. Timed ticketing and a one-way pathway allowed for a high level of control over how guests would encounter each installation. This control resulted in an enviable level of consistency in the delivery of each emotional note - there was nothing haphazard about a guest's experience of Garden Glow.

David and Linda Smith of Smithink were the executive producers on the Garden Glow project. "The Missouri Botanical Garden asked us to help create a nontraditional holiday experience, unlike anything in or near St Louis," Linda Smith said. "Considering the global awareness and impact of the Garden's research, we thought about this experience on a global stage."

The result: Guests traveled through an explosion of color - hot pinks, lime greens, vibrant blues - that are commonly expressed

in holiday celebrations throughout the world, not just the US. Paired with unexpected audio design, each color-centric vignette enveloped guests, creating a series of immersive moods.

This innovative approach seems to have paid off - the event is clearly tied to the Garden's core brand, yet it appears that the audience for this event was broader than the usual garden enthusiasts. Families were out in force, enjoying photo opportunities and activities interspersed along the pathway.

Highlights of this million-light experience included an enchanting lighted hedge maze, an incredible cascading solar-powered LED light corridor, a fireside view of the otherworldly glow of MOBOT's iconic Climatron with a drink in hand at Café Flora, and roasting marshmallows with one's family alongside the reflecting pools. •••

Anna Musun-Miller puts her lifelong obsession with good stories to work by developing exhibits in cultural institutions. As exhibit developer and evaluator at the Indianapolis Zoo, she develops content for exhibits, conducts audience research, and coaches staff on the implementation of Zoo brand. Anna is passionate about creating transformative guest experiences.



Garden Glow at the Missouri Botanical Garden transforms the grounds for a nontraditional holiday experience
Photo courtesy of Anna Musun-Miller.



Building mystery and excitement

Las Vegas Grand Bazaar Shops rely on JBA Artistic Engineering

by Martin Palicki

Chatuchak Market in Bangkok. Temple Street, Hong Kong. London's Portobello Road...The world's great open-air markets have always had a feeling of mystery and excitement that is tough to find back home in the United States.

Or is it? Now that the Grand Bazaar Shops are open (since fall 2015) at the entrance to Bally's Las Vegas, Americans can get a taste of these exotic markets, combined with the comforts and convenience of a more traditional retail development.

The project is the result of a partnership between Caesars Entertainment and JGB Vegas Retail Lessee, LLC. Grand Bazaar

Management Services, LLC (a subset of Juno Property Group) manages the development.

"The Grand Bazaar Shops are unlike anything else you will see," explains Allen R. Bowman, General Manager at Grand Bazaar Shops. "We worked hard to create a more authentic and engaging experience than typical brick and mortar stores."

One big difference is the intimacy of these shops. Most are just 350 square feet, about the size of a nice hotel room. With space at a premium, merchants put forward only their best products.

There is an international flavor to the shops at this unique retail destination - with English dry goods in one, hand-made cosmetics in another, wearable art, jewelry, spices, candy, gifts, and even a shop devoted to Turkish ice cream.

A great deal of the atmosphere is created by colorful, wave-shaped roofs that top each bank of shops. These serve as a huge electronic canvas that displays an immersive sound and light show visible from above and below.

Towering above the market is the Swarovski Crystal Starburst, lit up twice each night with a special sound and light show. It is directly in front of Bally's and across from the Fountains of Bellagio, at Flamingo Road and Las Vegas Boulevard - the busiest pedestrian intersection in the city and one of the busiest in the world - a site that more than 20 million people walk through each year.

"There is only one other crystal ball comparable to this in the United States, the one in Times Square," Bowman says. The Starburst and the lighting and music shows help to blend a shopping experience with a party experience, differentiating the Grand Bazaar from other retail settings.

Themed entertainment and retail

In creating this unique marketplace, Bowman explains that the design team faced a number of unique challenges. "Keep in mind that when developers build a regional mall of 130 to 150 tenants, they put them on a site of 90 acres or more," says Bowman. "Here we have over 120 tenants on a two-acre site, the density of which has never been seen before in the United States."

Management also spent an extraordinary amount of time choosing and attracting those tenants. "Juno Property Group Chairman Larry Segal visited over 86 countries," Bowman notes. "His experience shaped the development to a huge degree."

The choice of the design and construction teams was crucial. Bergman Walls & Associated (BWA) and DCC Architects shared roles as the designers and Architects of Record. The Penta Building Group was the General Contractor. Management also charged DCC Architects to create the site plan and Elkus Manfredi the roof design, with Grand Canyon Development serving as the owner's rep. JBA's Artistic Engineering Group, headed by Director Rob Pourciau, designed the audio, performance lighting shows and show control network, with the help of JBA's technology and electrical engineering group, that designed the network and electrical infrastructure that delivers them. BWA designed the Swarovski building, signage specialist YESCO created the Swarovski Crystal Starburst, and integrator PSX handled the AV installations.

"Without these companies, the light show would either not exist or would not come close to the appeal it has today," Bowman says. "Rob Pourciau and the JBA team, we believe, are truly global experts. Their creations are absolutely spectacular."

"It was a happy chain of events that brought us together with the developer," Pourciau recalls. "I was able to help them understand how the Grand Bazaar theme could be extended to create an immersive environment that would attract shoppers and keep them there—that would prompt them to say, 'Wow, this is great. I need to come back with my friends.'" (Repeat visitation is the lifeblood of any destination, even at the busiest intersection in Las Vegas.)

"Rob and his team designed the audio and lighting aspects of the project along with a kind of a jukebox of songs and light shows, from classic Las Vegas to modern fun," Bowman adds. The programming changes constantly throughout the day and night, arranged into three to four-minute segments that start every 15 minutes. At 9:00 p.m. and midnight, the Swarovski Midnight Celebration takes over, and the JBA team feeds that music into the Grand Bazaar multimedia system, so it plays throughout the shops, accompanied by complementary lighting effects.

A Medialon media server and show control system synchronizes all of the special effects and makes it easy to upload new shows digitally from the JBA office in New Orleans. The Artistic Engineering team varies the shows by the time of day and by the season, and they continuously create new shows for holidays and special events.

Creating the infrastructure

Clint Gordon, Senior Project Manager, Electrical, for JBA says that in many ways the infrastructure for The Grand Bazaar Shops is more straightforward than for other retail developments.

According to Gordon, because the multimedia system is based on intelligent color-changing LEDs, it uses only 10% of the power that more traditional theatrical lighting would require. Aside from the food vendors, the power requirement for most shops is small. "We created a basic electrical infrastructure, but then provided separate distribution panels for the larger units and a few of the smaller shops that have higher demands for power," Gordon explains.

Gordon says JBA kept the mechanical designs simple and cost effective. "There's no central plant. We used packaged heating and cooling units in individual structures." In a similar way, JBA's telecom group created a conduit infrastructure design that Cox Communications used in providing wired and wireless Internet to the shops.

Become a TEA Member



representing creators of compelling places and experiences worldwide

The Themed Entertainment Association is an international association with over 900 member companies in 40 countries worldwide representing the top creators in the themed entertainment industry.



SATE Conference



Member Mixer



Thea Awards Gala



Annual Members Meeting

TEA Member Benefits Include:

- Online member profile – making you visible to the international attractions community
- Global membership directory – giving you access to all your TEA colleagues
- TEA Connect – bringing TEA news to your inbox
- Global calendar – find TEA events and mixers to attend
- Special Members Only Activities
- Exclusive Behind the Scenes Tours

GO ONLINE TO JOIN TODAY AT
teconnect.org

For more information, call 818.843.8497 or email info@teconnect.org

150 E. Olive Ave., Suite 306 • Burbank, CA 91502 • USA tel. +1.818.843.8497 • fax. +1.818.843.8477



"We used an existing tunnel system that had been installed back when the area was used for special events by Bally's," explains David Wells, JBA Director of Technology. "We created an MDF (main distribution frame network), essentially a small data center, in a utility room beneath the Grand Bazaar, then ran conduit to nine smaller utility rooms serving all of the shops." The biggest challenge, he adds, was providing Wi-Fi throughout the property, given the interference expected from the metal in the colored roofs. "We worked with Cox to make sure everyone has good coverage."

The fire protection planning was challenging, mainly because the fire codes were written with larger retail structures in mind. Fire protection consultant Michal Turczyk worked with the Las Vegas building department to designate each group of shops as a single building for the purposes of planning. "Michal created an egress plan that made sense for the unusual layout, while, in electrical, we helped with exit signs and emergency lighting," Gordon says.

"Here in Las Vegas, we set out to create a destination, an outdoor shopping and dining experience with rich colors, sounds and smells that delight all the senses," Bowman adds. "We feel we have captured all the excitement and intrigue an international marketplace has to offer." ...

INTRODUCING
A WHOLE NEW DYNAMIC

**DYNAMIC
ATTRACTIONS**

WITH THE CREATION OF OUR NEW
ATTRACTION DEVELOPMENT CENTER IN ORLANDO FL,
WE ARE READY TO OFFER

**UNLIMITED
ATTRACTIONS**

COMPREHENSIVE SERVICES,
PROVIDING EVERYTHING INVOLVED IN THE CREATION OF
SOPHISTICATED, WORLD-CLASS, LEGACY ATTRACTIONS.

WWW.DYNAMICATTRACTIONS.COM



The hangar doors at Flying Aces are about to open to take guests back in time on the biplane ride of a lifetime at Ferrari World Abu Dhabi. All Photos courtesy of George Walker.

Flying Aces

The story behind the steel

George Walker's first-hand, behind the scenes account of the new Flying Aces roller coaster experience at Ferrari World Abu Dhabi

It was less than five hours before my flight to New York for the Christmas holidays with the family. I had been working with the scenic crew, who were carving the cement in the scene where the truck is stuck in the mud. The truck is meant to appear tilted and sinking with three wheels set into the soft ground, and the fourth wheel up in the air.

Somehow, something got lost in translation. A mound of cement had been mistakenly built up under the fourth wheel, causing the entire point of this scenic detail to be lost because now the wheel wasn't free to spin in the air. While I was talking the problem over with the crew, the cement was hardening. I picked up a jackhammer myself and began chipping away. Within moments, the crew quickly joined in. Two hours later, we had fixed the scene, and not long after that, my aching body was sound asleep on a plane headed for America.

Building great theme park attractions is the greatest thrill in my life, but it is also a tremendous effort that requires passion, drive, and sacrifice, along with a great, visionary client. I sincerely believe that this comes through in the work that we do in the theme design industry. These unrelenting efforts lead to elements that seep into people in a magical way as they experience the worlds we create, which is why theme design is such a special and tricky thing.

A look at the team that brought Flying Aces to reality at Ferrari World Abu Dhabi would not reveal a polished and seasoned crew of veteran theme park builders. Rather, it was an eclectic mix of colorful folks from all corners of the world, each bringing their special skills, talents, and of course, challenges. There were not only linguistic gaps to overcome, but cultural and experiential ones as well. What made sense to one person might seem ridiculous to another. So how do you forge a single vision out of so many different perspectives?

Simply put, never give up. Leave no one behind and always push everyone as hard as it takes to get them on board. If you don't give up on them, they won't give up on you. And in the end, the vision will prevail. Flying Aces is a tribute to that principle.

Moment of realization

The deadline was looming and we were behind schedule. The project site was a labyrinth of scaffolding crawling with workers like ants at a picnic. I had been fighting for weeks to keep the various trades from mounting electric outlets, security cameras or light fixtures onto the 30-meter-plus long wall at the far end of the show building. I felt like the Greek mythological character Sisyphus, doomed to roll the boulder up the hill over and over for all time. No one seemed to grasp that this wall must be kept free of obstruction because it was, in fact, a projection surface.

We had the talented crew from Holovis on site, swooping in with precision and purpose, wielding their speakers and projectors. Amidst this controlled chaos, they somehow managed to install their gear.

That was when something magical happened. This room was filled with more than 100 crew members all working furiously. All suddenly stopped and silently stared in amazement. The

projectors had been fired up for the first time, and the room came alive with the images of planes flying in a brilliant sunset sky! From that moment on, language barriers melted away, cultural confusion evaporated, and everyone understood that what we were building here was special.

Opening jitters

It's the eve of the grand opening. Armed with a cappuccino and a few more hours of sleep than usual, I'm feeling confident that the past three years' work has been worth it all.

Or am I? Sometimes the view of the forest is blocked by the trees... and we weren't quite out of the woods yet. I think back to the earliest days of the design, when we were scratching out all these ideas on a sketchpad. And now here they were, erected for real, ready to welcome guests.

That's when the little panicked voice goes off inside your mind. Choking a bit on my cappuccino, I wonder to myself, "What if we were totally wrong? What if these ideas don't work the way we thought? What if the guests don't get the emotional experience we were going for?"

The build up to the load station is designed to make guests feel as if they have stepped into the movie screen of a romanticized version of history.





It's in the details. Layers of props and even faux footstep sounds of people upstairs help populate the scene.

Guests step into the history behind the Ferrari logo and learn the story of the WWI pilot Francesco Baracca.



I tuck myself into a dark corner of the queue to watch the first guests wander in. Their pace slows down as they enter the first queue show scene and I can see their eyes light up and camera phones come out. Scene after scene, their smiles get bigger and bigger. My racing pulse starts to slow as relief starts to set in. They make it into the scenic climax – the big room with the projected planes in the sunset sky – and they stop in their tracks and stare. The thunderous sound of planes flying overhead shakes the room, as they duck from their imaginations. Laughter comes next when they see the parachutist tangled in the tree.

Further along, the guests wind through the cluttered radio room filled with static-y chatter, and then into the dramatically staged briefing room complete with the classic pilot's chairs laid out in a row, their names etched into the back. The briefing video played from an old projector lets them know that now it's their turn to ride. They line up behind the wooden doors and wait to enter the loading hangar. My internal voice starts in again: "Did this build up their anticipation for the ride, or simply distract them from it?"

The doors to the load station swing open in sync with a musical crescendo, and the room erupts with screams of excitement. That's when I know we succeeded. They haven't even gotten on the ride vehicle yet, and they are already so filled with emotion that they are screaming. They march to their respective seats and strap in. At this point we are at the climax of the story, and the rest is up to the coaster itself, which delivers in abundance. A few minutes later I watch as they get off the ride, staggering from the adrenaline and silly with laughter and smiles. I'm consumed by one emotional thought: "We did it! Whew!"

Backstory

Flying Aces is an experience about World War I airplanes - but in a theme park about cars? How does that even make sense? The answer is drawn from the origins of the image of the Prancing Pony in the center of the famous Ferrari logo. It turns out that there is a wonderful story behind the logo that takes us back in time to the bygone era of the golden age of flying.

The objective of this attraction was so much more than just to find an excuse to build another roller coaster. Someone is always building another thrilling roller coaster, so we wanted to make this one truly special and unique to Ferrari. This goes way beyond your basic amusement park-style coaster. This is a true theme park, top-of-the-line attraction of "E-Ticket" stature, and a true engineering marvel brought to life by the perseverance of the resident geniuses at Intamin.

The era of WWI biplanes has a romantic quality to it and we wanted to deliver that to guests as part of the overall story. The goal was to instill a sense of cinematic wonder within the guests that would make them feel as if they stepped into the movie screen of a classic film. One such image that this era conjures in

the mind is that of planes dramatically flying off into the sunset saturated with reds and yellows. We knew this had to be a key moment in our experiential story.

We also wanted to take guests back in time, which requires meticulous set dressing and attention to detail. People take cues from their environment instinctively to assess what's going on around them. You have to feed that perception so that they go with you on this journey. An old-fashioned ticking of a windup clock next to the bed; the tinny sound of period radio on the desk; an old truck stuck in the mud of an unpaved road - the kind you don't see anymore. The cumulative effect of these cues tells the guests when and where they are.

Immersing the guest

A good attraction should also make you feel like you are part of a story. Flying Aces isn't really about the historical figure or anecdotal tie-in to the logo, it's really about you! You, the guest. You are the one stepping back in time to become a pilot. You get to see and feel what it was like to live back then, sense the dangers from flying these fragile contraptions and revel in the bravery it took to take to the skies like these pilots of old.

That's a fun pitch to deliver in a boardroom with some slick bullet points and a collection of image references on a screen. The real trick is, how do you deliver upon that expectation? Enter the theme guys.

We used as many techniques and tricks as we could, and as always, under a budget that was tighter and a schedule that was shorter than we wanted. We had a team of mixed talents and checker-boarded experience which all had to be carefully balanced - a project management feat that Tom Black, the Farah Leisure PM, impressively accomplished. Taken as a whole, we had our bases covered, but role-by-role, it was definitely a diverse and unique group.

Learning theme design

I would often start kickoff meetings by asking who in the room had been to a theme park before. Many times, no hands went up. This definitely added to the challenges, but also added to the fun, which came from watching the evolution of everyone's understanding of what true theme design was.

One of my favorite conversations involved a talented architect on the project named Baha. Having only worked in the Middle East, he had never been to a theme park. We were discussing the use of carved plaster to create brick finishes in the façade work, and he asked why we didn't just "use real brick?" On the surface, this seems a logical question. "Control," I replied. He looked confused. "Think of the brick as a character in our story. I need it to act the way I want it to." He looked at me like I was nuts.

Several months later, after the skilled carvers had applied their craft and sculpted gorgeously aged bricks, deeply grooved by weather and filled with the charm that takes nature centuries to apply, I took him on a site walk to show him the final product. His expression echoed the words he uttered, "Ahhh. I get it. Character." He was converted. Theme design.

Time travel

How to transport people back in time?

Fortunately, the "flux capacitor" isn't the only thing that can transport people back in time. But the process is slightly subtler than flaming trails of skid marks. In the case of Flying Aces, we knew we had to make the transition as delicate as possible because Ferrari World Abu Dhabi is one of the most modern and beautiful architectural structures in the world.

And so our plan really had to start at the entrance to the park. As you walk past the turnstiles, guests are met with this spectacularly impressive space frame marvel. It culminates into a glass vortex shape at the center that looks like it has come from the set of a science fiction film. We didn't want to simply slap people in the face with an early 1900s environment from here. Figuratively speaking, we had to take them out of Ferrari World itself - and so our first transitional step takes them to Italy.

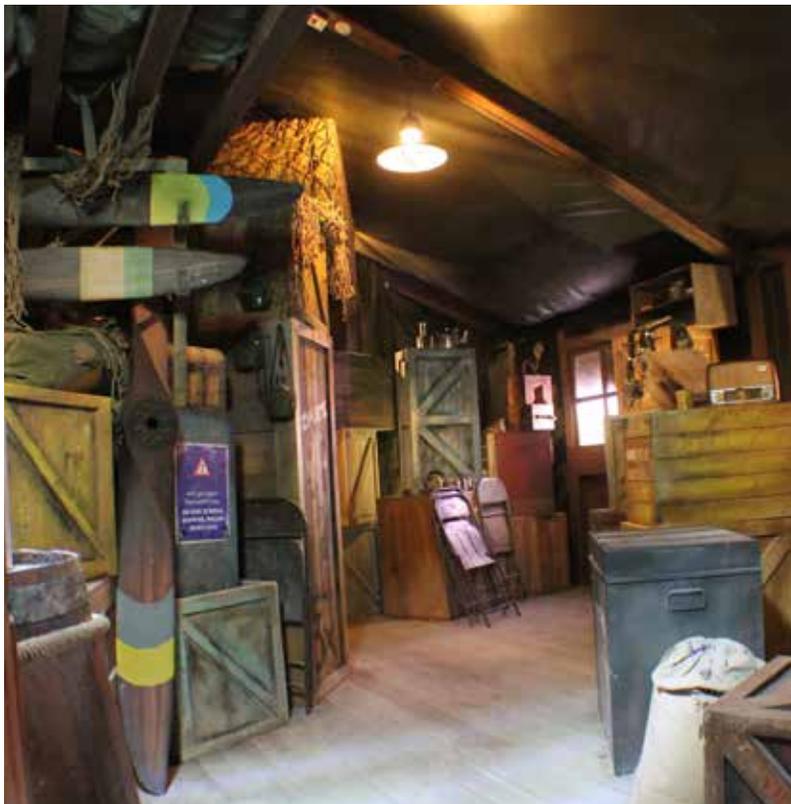
With a few strategically placed trees as a buffer, the splashing sounds of an Italian fountain draw you toward an all-new elaborate façade that we created that replicates an Italian street. We haven't traveled in time just yet. The street is set in modern times, but it is an old street filled with details, props, and animated window displays. This is the first step.

The layers of façades continue for well over 100 meters, giving you a chance to immerse yourself in the Italian lifestyle. It is only at the end of the street that the time period starts to shift and you see the full scale WWI biplane that is the basis of the story of Flying Aces. This frames your view of the adjacent hangar building that is clearly out of the past, but its colors and accents seem to blend seamlessly with the rest of the Italian façades that culminate at the hangar entrance.

The spinning propeller on the marquee sign grabs your attention as your ears are filled with the sweeping, majestic orchestral score of the attraction, the Italian music classics from the street fading out behind you. Once through the hangar doors, you see the barracks of the 91st Squadron just ahead. Our time travel has begun.

The setting starts to change, and the music plays a magical part in our time travel trickery. Holovis media producer Amy Steele

Propellers, plane parts, crates and gear from the past (L) help create the illusion of another time. **Concrete is carved to become a "character" (R)** that environmentally helps tell the story of Flying Aces.





The immersive queue of Flying Aces is designed to build anticipation for the coaster experience that lies ahead.

cleverly layered the audio so that the same score from the entrance is replayed from a tinny, muffled point source coming out of an old-time-radio inside the barracks. Combine this with the introduction of countless props and set dressing cues that put you a century in the past, and it's as if you have stepped through the wardrobe into Narnia. The sights, the sounds, and the feel of the space are as opposite as possible from the contemporary Ferrari World you were in just moments ago.

Ready to fly

How do you turn theme park guests into WWI pilots?

The environment of a training camp is intentional because we are also "training" the guests. They were just in a theme park about cars, and we needed to get them thinking about planes. Not just thinking about them, but really excited about them! To do this, we exaggerated the richness of the experience so that you felt like you were not only stepping back in time, but stepping into one of those movies that romanticizes the retelling of history just a bit. When you step out of the cluttered supply tent, for example, you are presented with a stunning sky mural filled with projection-mapped planes soaring and looping. A speaker array in the ceiling completes the illusion of planes flying overhead with a thunderous roar, and the distant buzzing of the others on the horizon gives the scene depth. The entire time you are in this space you are literally surrounded with planes. We even

put a set piece that recreates a plane being constructed so that guests could see the wooden frame and stretched canvas that they were made of. By the time you reach the load station, we've bathed you with imagery of takeoffs, barrel rolls, and banked turns. You feel like you are part of this world; a pilot ready to fly.

Populating the scene

How do you make a space feel like it is full of people, when in reality, it is totally empty (except for your fellow guests of course)?

This isn't a new challenge. Theme parks have been populating their worlds with people for decades, and we were no different. But it is fun to bring this illusion to a new corner of the world. If we are to have guests believe they are in the training base camp for the Italian pilots of the day, we didn't want it to feel like an abandoned one. And it definitely doesn't.

There are "people" everywhere. A peek through the many muddied windows of the barracks and supply tent shows soldiers marching by and planes taking off. From behind a fence or cluster of bushes you can hear other pilots having a conversation, for example. In the supply tent, we wanted it to feel like the ending scene from Indiana Jones; a place so filled with crates and stuff, that you can only see limited, cluttered sections of the room at a time. Then we placed audio of other



people talking within the room, but it's so full of things, you can't tell where the conversation is coming from.

Later, we introduce you to a plane that has soft-crash-landed into a tree unharmed. Via a projection-mapped face, the pilot chatters away, livening up the space. Further on, you pass by a foxhole populated with two pilots playing cards, thanks to a classic Pepper's Ghost illusion. Even in the radio room, a half-eaten sandwich and spilled drink let you know that someone was surely here only moments ago.

Set dressing

How do you preserve the illusion of this environment inside one of the most modern buildings in the world?

From the outside, the building you are in is a modern, red and steel checkered structure. Obviously if guests were aware of this, it would destroy the illusion. The load station was especially challenging because it is meant to look like an old, rickety wooden-slat barn. This is perhaps my favorite, subtle design illusion that we created. To give the feeling that sunlight was seeping through the cracks between the planks of wood, we actually created a backlit, double wall. This was so effective that, even when I revealed the illusion to one of the guests during soft opening, they didn't believe me. They were convinced it was real sunlight pouring in. Elements like this took the collaboration of the clever team of lighting designers at Pioneer working hand-in-hand with the scenic craftsmen of Aspen Creations, and the result was truly rewarding.

How do you make a steel rollercoaster feel like a tiny wooden plane?

You really can't make a hunk of steel roller-coaster train look like a biplane. To help with the suspension of disbelief, however, we don't reveal the coaster to guests at all until the very end. At that point, they are so focused on flying, that our vehicle design needed only to merely hint at airplane elements without trying to be too literal. The propeller and rounded nose on the front, we felt, would be enough to communicate the intent. From there, it is more about the sensation of flight that the engineers at Intamin craftily created that completes the illusion.

Re-entry (and exit through retail)

How do you conclude an experience like this one and bring guests back to the present?

As the guests exit the attraction, the denouement is one that reinforces the sense of pride and accomplishment. You have just "earned your wings" so to speak, and we want you to feel like you now belong among the other revered heroes who, like you, have braved the skies. And so as you exit, the setting has a lofty quality to it. The corridor is museum-like with photos of the first pilots proudly hanging on the walls, and you feel like your photo could easily be among them. Model planes hang from the ceiling, and even the chair rail is carved to look like a plane wing. The time transition is completed with a reverse cross-fade from before: This time, the tinny score slowly transitions back to the full, orchestral version by the time you've reached the end of the hall - and conveniently, at the retail counter where you can find trinkets to commemorate your experience. You have now stepped off the movie screen and are once again back in the modern world of Ferrari.

The UAE is a region of amazing architecture and breathtaking feats of construction. But it is still somewhat new to the art of themed storytelling. Everyone on the bold and ambitious project team that brought Flying Aces to life can be proud to have achieved something truly unique in the region, as well as an attraction that I believe will hold up when measured against others around the globe. I think I speak for everyone involved when I say that it was a truly thrilling experience to be part of such a fantastic project! •••

George Walker, now VP Creative Development, Dynamic Attractions, and concurrently the Creative Director of Ferrari World Abu Dhabi.

George Walker



Cinema IP becomes theme park

Greg Lombardo & Scott Ault talk about Fox World

interview by Judith Rubin and Martin Palicki

20th Century Fox World Dubai is slated to open in 2018. Plans for the integrated theme park and resort were announced Nov 3, 2015 by Al Ahli Holding Group (AAHG), in an international licensing partnership with Twentieth Century Fox Consumer Products. Design and production services are being provided by Rethink Leisure & Entertainment. Intellectual properties (IPs) that will come to life in the park include The Simpsons, Planet of the Apes, Alien, Sons of Anarchy and Ice Age.

Greg Lombardo (Senior Vice President of Global Live and Location Based Entertainment for Twentieth Century Fox) and Scott Ault (President and CEO, Rethink) talk about the project to InPark's Judith Rubin and Martin Palicki.

Where is the project now in terms of the design process, bidding and staffing?

Scott Ault: Rethink signed a new lease to substantially expand office space as we staff up.

We have four principals on each area of the park: show producer, creative director, art director and technical director. Rick Polizzi, who was producer of The Simpsons TV show for many years, is creative director of The Simpsons area. Joining him as art director is Karen Bauer, who was longtime color stylist on the show. There is a lot of crossover from the film/broadcast world to the theme park world, and the culture is similar.

We are strategically hiring people who have experience with particular brands. For example, the art director for the Aliens and Planet of the Apes areas has been closely involved in creative on the original movie and all the subsequent titles, down to character, costume and puppets.

We've also hired in-house staff who are experienced at marrying brands with IPs and know how to create the right kind of synergy. We're identifying what brands in the region work with the IPs.

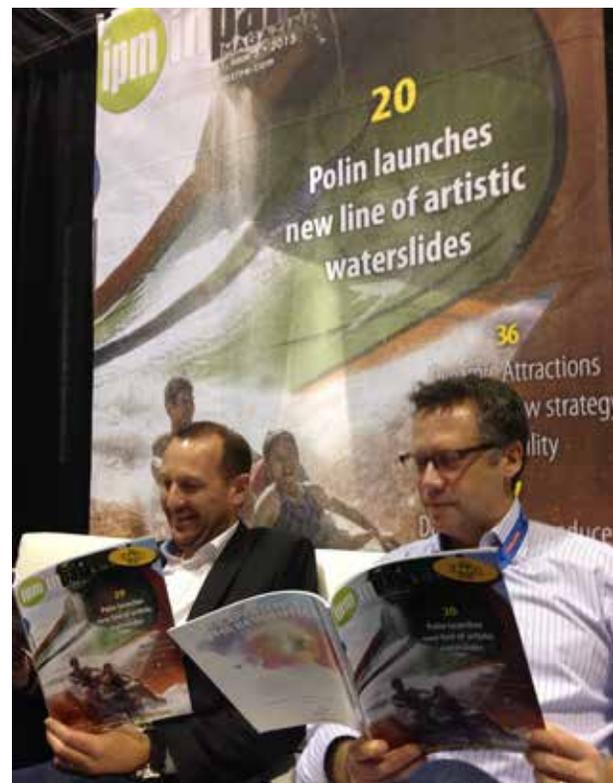
[See sidebar highlighting some additional new Rethink team members.]

How will the theme park build upon the IP to create compelling guest experiences?

Greg Lombardo: We know you have to tell a story and give a fantastic experience beyond the movie. These attractions will take a deeper dive into story with familiar environments and characters – not re-tellings, but new stories that live within the world of the IP. It's such a rich opportunity – and we are talking about active franchises where new movies will be rolling out in the near future.

Is this kind of cross platforming a significant evolution for studios and IP holders?

GL: We're in the contemporary content creation business. The way that people digest media is changing, and IP holders



Greg Lombardo and Scott Ault at the InPark booth during IAAPA 2015



An artist rendering of 20th Century Fox World Dubai. Photo courtesy of 20th Century Fox.

recognize that. One of the things to be aware of is how it differs from one geographic area to another. China, for instance, will have more cinemas than the US does within the next five years.

We are building these destinations from the ground up. We have the right team, and we take it seriously. It's an amazing way to get 365-day-a-year engagement with an IP. With a franchised property that releases a new movie every two years, it creates a new body of consumers who fall in love with the brand. Here we are creating environments where people can feel themselves to be active participants.

Will there be a lot of emphasis on the built environment?

SA: These parks will create physical touchpoints for the consumers to make a different kind of connection with these worlds. They will be physical worlds – not just media worlds. Immersing you in a real world is the ultimate virtual reality.

GL: Our industry can be over-reliant on media to do the heavy lifting in theme parks. But it's so powerful to walk into that world literally and physically re-created, extending all the way to retail. To be able to sit down in the world of The Simpsons and actually eat a Krusty Burger, for instance. And as a parent, I know just how important it is to spend that time in a physical place, not watching your child watch a screen. There's a diversity of experience – a fabric, with texture and pattern variation.

SA: It's a powerful and unforgettable life experience to walk in with your kid and see them look around, wide-eyed.

Tell us what you can about how some specific IPs will be treated.

SA: Ice Age will have to have certain characters, but we're not re-creating something from a previous film; neither will we detract or counter anything in a previous film. Same with The Simpsons, where you can count on getting a cold glass of Duff Beer.

GL: It is similar to a comic book series. Fox recently announced an Avatar partnership, and there are whole, untapped chapters of that universe. Sons of Anarchy has a devoted following and we will make the most of this opportunity to bring its elaborate culture of motorcycle gangs, political rivalry and street justice to a new platform.

Will there be a Titanic boat ride?

GL: There will *not* be a Titanic boat ride.

What about the ride technology?

SA: Some of the rides will have completely unique ride systems. We'll be using proven technology but in new, unprecedented ways. You'll just have to wait and see exactly how!

There is also a Fox World theme park underway in Malaysia. Tell us something about how it compares to the one in Dubai.

GL: Not every IP will be present in each park. We've been mostly focusing on Dubai in this conversation, but 20th Century Fox World in Malaysia is also an active construction site [not a Rethink project]. The mix of content as well as sponsorship and details of hospitality offerings and park layout will differ according to the needs and culture of the visitor base.

SA: We did a lot of benchmarking across parks around the world. Dubai is a major transport hub with a lot of international air traffic and long-term growth potential. The visitor base includes expatriates: Europeans, Filipinos and a large population from the subcontinent. It's already a major shopping destination. Hotel

rooms are increasing exponentially in anticipation of Dubai Expo 2020 [see article on p. 14], and there will be a need to sustain the demand for those rooms after the world's fair closes. The new theme parks in development, including Fox World, will help. Our partner Al-Ahli Holding Group is very thoughtful about that.

GL: Malaysia is a gateway to China, with many visitors from Singapore, Southeast Asia and India who are huge consumers of our movies.

What else would you like to tell us?

SA: The entire team at Rethink is honored to be working on this fantastic project, in one of the most exciting regions in the world. We are looking to create a world-class theme park destination unlike anything previously seen in the region. . . .

Some key new Rethink Leisure & Entertainment team members



Don Roberts, Sr. Art Director

As a former Walt Disney Imagineer, Don led and collaborated with Imagineers for over 16 years on a wide range of projects ranging from movie sets, retail stores, restaurants, roller coasters, immersive environments, cruise ships, resorts and hotels.

Past projects include Mission Space (Walt Disney World Epcot), Indiana Jones Temple of the Forbidden Eye (Disneyland Resort), Finding Nemo (Disneyland Resort), Tower of Terror (Tokyo Disney Seas), Raging Spirits (Tokyo Disney Seas).



Michael R. Sinks, Executive Producer

Michael Sinks has produced and directed both domestic and international projects for some of the industry's major design and production companies including: Landmark Entertainment Group,

Iwerks Entertainment (now SimEx-Iwerks), Paramount Parks, BRC Imagination Arts, Spectra Entertainment and Universal Studios. Michael held the position of Executive Director for Metro-Goldwyn-Mayer Studios Location Based Entertainment division.

Past projects include Motiorgate & Bollywood Theme parks for Dubai Parks & Resorts; Universal Plaza, Iconic Tower and restaurant - Universal Studios Hollywood; Sanrio Puro Land theme park – New Tama City, Japan; Caesars Magical Empire at Caesars Palace Las Vegas; SsangYong EarthScape Pavilion and Residential Environmental Pavilion at the Taejon Expo '93 Korea.



Rick Polizzi, Creative Director

Rick worked at Churchill Entertainment as a Dimensional Animator and Production Supervisor, on programs such as The Mouse and the Motorcycle, Ralph S. Mouse (ABC Weekend Specials), and Stanley and the Dinosaurs (Disney Channel). In 1996,

Rick joined the production team of The Simpsons, serving as an Animation Producer for 16 seasons and over 350 episodes, for which he was recognized with three Primetime Emmy Awards.

As an entertainer, Rick has performed with the L.A.-based improv group, The Groundlings and has voiced numerous characters for animated programs. He co-authored the coffee table book Spin Again (Chronicle Books) that was named "Cool Retro Book of the Year" by Entertainment Weekly.



David Aion, Show Producer

David Aion started in the leisure attractions field in 1983 interfacing with architects, designers, theme park operators; museum, zoo and aquarium professionals, and general contractors on projects in the United States and in Singapore.

Some of these projects have been for Resorts World – Singapore, The Natural History Museum of Los Angeles, California Science Center, and Universal Studios.

David is currently a member of the Board of Directors of the Themed Entertainment Association. He has served on committees for IAAPA, AAM and AZA and is a lifetime member of the Digital Cinema Society.



Photos courtesy of JRA.

Perfecting petroleum

Permian Basin Petroleum Museum calls on JRA to tell its educational story in entertaining, modern formats

by InPark editorial staff

In Midland Texas, USA, the Permian Basin Petroleum Museum, Library and Hall of Fame re-opened April 2 having just completed an \$18 million renovation. JRA (Jack Rouse Associates) provided overall planning, design development and project management for the Petroleum Museum's 15,000 square feet of exhibit space.

The Permian Basin is a large oil and natural gas producing area. Originally founded in 1975, the re-invented Petroleum Museum tells the story of how petroleum transformed the Permian Basin and explains the processes of finding, extracting, producing and transporting this energy source. Part of its mission is to inspire young visitors to pursue careers in the petroleum and energy sciences.

Through its use of interactives, immersive environments and game-based learning experiences, the Petroleum Museum takes guests on a journey through some 250 million years of

Permian Basin history, highlighting the people who explored and harnessed its fuel reserves with determination and inventiveness.

"Both we and the client had a strong desire to make the experience entertaining," said Rob Morgan, JRA Senior Project Director. "Taking a page from our theme park work, we employed techniques such as a game-show based introductory film, dramatic immersive environments, and adapted video game-like technology to convey some challenging content in a fun way. We engage the visitors in many ways, catering to various learning styles. The content can be updated periodically so the messaging can stay as relevant as possible, and encourage repeat visitation."

JRA plans, designs and realizes visitor experiences for entertainment, cultural, sport and corporate clients around the

world. Recent projects include Science Centre Singapore, Space Center Houston, The Mind Museum (Philippines), Imaginosity (Ireland), Lao Niu Children's Discovery Museum (China) and Enginuity (England). The company has been celebrated with numerous awards, including a 2016 lifetime achievement recognition from the Themed Entertainment Association to JRA CEO Keith James.

At the Petroleum Museum, the visitor experience begins with a journey through time, from hundreds of millions of years ago to the present day. Visitors then enter the "Extreme Science" area, where they learn about the techniques and innovations involved in oil exploration and production.

Highlights of the renovation include:

- Mythcrackers: An introductory film welcomes visitors by examining and dispelling common petroleum myths via a Family Feud-style game show, because "it's what you think you know that just ain't so."
- Permian Reef: Upon exiting the theater, guests are fully immersed into a dramatic recreation of a 250-million-year-old Permian reef, featuring the Museum's original 1975 reef diorama, faithfully restored.
- Birth of an Industry: Midland comes to life via a re-creation of a 1930s Boom Town, complete with a general store, land office and an array of early Midland artifacts.
- The Voyage of the PetroTrekker – As the tactical engineers of a petroleum exploration vessel, guests journey across land, through space and under the sea to find new sources of petroleum. This immersive theater features interactive touch screens, dramatic lighting and special effects to place visitors in the heart of the action.
- Risk and Reward – In this game-based exhibit, visitors run into various obstacles as they drill for oil and must determine whether to forge ahead or walk away.
- Supplemental Energies – This area explains the supplemental energies, from solar to hydro to nuclear, that are being used to power our cars, homes and cities.
- Chevron Energy City – This brightly colored zone, geared to children ages 6-9, teaches about various forms of energy and the steps they can take to conserve energy in their everyday lives.
- Find Your Way Café – Having learned about the heritage of the past and the innovations of the present, visitors now learn how they can contribute to the future of the petroleum industry, matching their skills and interests with potential careers in the field via an interactive quiz.

This is a project that has been several years in the making and it has certainly exceeded all our expectations," said Kathy Shannon, Executive Director. "The amount of information, dispersed in so many creative ways, will fascinate visitors of all ages. The Museum has become a showcase for innovative and creative thinking and definitely a strong science-based museum for our community and beyond."...

Learn more about the media production JRA oversaw for the Petroleum Museum in "A Well-Oiled Process: Media producer Don MacBain tapped by JRA for museum project," InPark issue #60, available online at www.inparkmagazine.com.

Permian Basin Petroleum Museum, Library and Hall of Fame

Kathy Shannon, Executive Director

JRA (Jack Rouse Associates): Lead Consultant (Planning, design, project management, executive media production, art direction)

The Nassal Company, Fabricator

Technomedia Solutions, AV hardware integration

GoConvergence, Media production

Abernathy Lighting, Lighting design

Chase Studios, Reef diorama reconstruction

Rhotenberry Wellen Architects, Architect of Record

Lee Lewis Construction Inc., General construction





Making Macau family friendly

Thinkwell Group collaborates with Warner Bros. Consumer Products to bring Warner Bros. Fun Zone to Studio City Macau

by InPark editorial staff

The touting of Macau as Asia's newest entertainment capital is supported by the recent opening of Studio City, the massive Hollywood-inspired, cinema-themed, casino-resort complex developed by Melco Crown Entertainment. The resort features a 1,600-room hotel, casino, more than 30 dining destinations, world-class retail, and new themed rides and attractions.

There's plenty of themed entertainment designed with families in mind at Studio City Macau. Thinkwell Group, a longtime partner of Warner Bros. Consumer Products (WBCP), was commissioned to design and produce the new family entertainment center, Warner Bros. Fun Zone.

"The Warner Bros. Family Fun Zone featured in Studio City Macau was a close collaboration with Melco Crown Entertainment and Warner Bros. Consumer Products to bring many favorite Warner Bros. characters and DC Comics Super Heroes to kids and families for an unforgettable, immersive play experience," said Kelly Ryner, President of Thinkwell Asia.

Working with Melco Crown Entertainment and WBCP, Thinkwell Group was responsible for designing and producing the new, 40,000-square-foot facility, which features popular Warner Bros. animated characters, including Looney Tunes and Tom and Jerry, and iconic DC Comics Super Hero characters. There's an interactive dark ride, several activity zones, customizable venues

for children's parties, a themed restaurant, and a new Warner Bros. Studio Store retail shop.

Brand new rides let kids play alongside their favorite cartoon characters. Warner Bros. Hypercade is an interactive ride that features iconic DC Comics Super Heroes and Looney Tunes characters together in the same ride experience for the first time. In this 4D adventure designed to thrill, kids help beloved characters and heroes defeat comic book enemies and arch-villains. Six immersive scenes transport guests from a bucolic countryside setting to outer space; from the streets of Gotham City into the skies of Metropolis, journeying through interactive show scenes rich with special effects.

The Looney Tunes Bounce-O-Matic offers a dual free-fall adventure for kids with characters like Tweety, Daffy Duck, and Bugs Bunny. The DC Comics Super Hero Raceway allows kids to drive miniature sports cars outfitted with DC Comics Super Hero emblems while navigating the streets of Metropolis. Here, kids will drive around a blacklight-illuminated course and venture into Villain's Alley where they come face-to-face with larger-than-life Super-Villains such as The Joker, Bane, and Catwoman.

Complementing the rides are immersive play opportunities for all ages, again featuring favorite Warner Bros. characters. Small children and toddlers can discover the Tom and Jerry Picnic Playground, which includes a space to explore and crawl

through a miniature forest of soft play-and-climb equipment. For older kids, the DC Comics Super Hero Action Arena is an ideal place to climb, jump, and swing around a giant play structure. For a relaxing alternative, kids can visit the Cartoon Club where they can watch their favorite characters on the big screen in a comfortable theater setting.

Each room, ride, and play zone inside Warner Bros. Fun Zone also includes a range of media developed and produced by Thinkwell, along with WBCP, including KidQuest, which offers a series of gesture-based, interactive video games. Kids are sent along a journey throughout the facility where they discover a new game experience at one of five different KidQuest game stations where they can play and interact with Warner Bros. characters and DC Comics Super Heroes.

With a rapidly growing team in Beijing as well as offices in Los Angeles and Dubai, Thinkwell continues to seek out new opportunities to create and develop entertainment venues. In addition to the above described project, Thinkwell has designed two recently opened indoor theme parks in the northern Chinese city of Harbin, expanding the company's foothold in the region's entertainment markets.

"We are optimistic that Thinkwell will continue to expand in Asia as more intellectual property owners explore alternative platforms to reach new audiences," said Kelly Ryner. •••

Below: The Looney Tunes Bounce-O-Matic offers a thrilling dual free-fall experience for kids alongside their favorite Looney Tunes characters. **Opposite:** The DC Comics Super Hero Raceway lets kids drive miniature sports cars through the streets of Metropolis alongside their favorite superheroes like Superman, Wonder Woman, and The Flash.

Photos courtesy of Warner Bros. Fun Zone



Thoroughly modern museums

Vice President of Design and Engineering at Wärtsilä FUNA, Scott Arnold, talks about how museums can best take advantage of interactive technology

interview by Martin Palicki

What are some advantages of using technology to enhance the museum visitor experience?

Two words: Relevance and attention.

Today's museums are in a battle on multiple fronts for relevance and attention. Because of evolving technology and the multi-tasking demands of life, inspiring and attracting visitors and keeping them engaged at a museum is more challenging and usually more expensive as well.

Additionally, the onslaught of media content from every direction in life raises the expectations of visitors. To combat these stimuli, a museum needs to look to experiences that are different and more compelling: to create exhibits that are more immersive, unique, and interesting.

One powerful weapon in the arsenal is the appropriate use of technology. A creative technology system design can enhance a guest experience in many ways. Technology can be used to create more flexibility, allowing exhibits, or even entire galleries to be changed out or updated by just updating media. Technology can provide real-time access to information, such as tracking a sea turtle in the ocean, seeing a live camera feed from an eagle's nest, or including up-to-the minute statistics in a display. In addition, technology can help support immersion in a topic: for instance, by virtually transporting visitors to other environments through the use of projection mapping or ambient audio.



Scott Arnold
Wärtsilä FUNA

What are some of the latest technologies available and how are they being applied?

Technology is always advancing, and there are always exciting products coming to market that can support an exhibit, and fit a museum's budget.

One great example is 360-degree photography. The technology cost has gone down for cameras and camera rigs as well as projection. For contemporary examples, look at virtual tours such as what Gateway Galleries at The University of Saint Andrews recently undertook with their exhibit Skyward <http://www.skyward2016.org/360-2/> or the National Museum of the US Air Force's tour <http://www.nmusafvirtualltour.com/full/tour-std.html>.

Virtual Reality (VR) is of course the current buzz in the industry, with many new applications. VR has been around a long time, arguably since the 1950s, but the not-so-virtual reality of it all is that huge leaps in technology and processing power in the past few years have helped it advance beyond novelty, to new levels of quality and affordability. As a result, we're now seeing VR technology used for everything from industrial training to video games to architectural fly-throughs and out-of-home guest experiences.

VR use is starting to grow in the museum world. There are some interesting installations with varying levels of interactivity including Daniel Steegmann Mangrané's recreation of a rainforest at the New Museum, Jeremy Couillard's "Out of Body Experience Clinic" at the Louis B. James Gallery, the ability to walk with the dinosaurs as part of the World Science Festival at the Queensland Museum, and some interesting work currently being done at the British Museum.

What are some of the risks museums have to consider when developing interactive exhibits? And how can they mitigate those?

There are certainly risks - and most museum professionals have experienced an interactive exhibit that was not up to snuff. Here are a few of my personal touchstones.



Kids bike along virtual trails at the interactive Detroit Outdoor Adventure Center. *Photo courtesy Wärtsilä FUNA*

- Keep in mind that sometimes the simplest exhibits have the greatest impact – including interactives.
- Technology should not be used simply for the sake of using technology, however new or cool. It must support your story and your message.
- Choose an appropriate technology partner or partners, who will work with and support you, not just sell you products and services. You may need more than one tech partner depending on the project. As an example, the right company to create the interactive kiosks may not be the right company to integrate your audio system.
- Is your interactive engaging? There are many examples of money spent on an interactive that people walk right by.
- Is your interactive big enough or placed well enough to draw attention? We have all seen wall-mounted iPads gathering dust.
- Does it support the throughput needed? A really cool interactive is ineffective if 50 people have to skip it while one person enjoys it.
- Think about how you will support or service your tech investment. Your design partner should steer you toward the right choices based on your capabilities and resources. Technology that is beyond the skillset of your staff will call for training or a service contract to ensure you are supported. This follows into the next point...
- Think about the Total Cost of Ownership. Design and equipment are only part of the equation. Things like power consumption, consumables, and maintenance can add up. It may be better to spend a bit more up front on design and equipment that minimize the long-term costs.

Is more technology justified for all types of museums and all spaces within a museum?

Short answer: Yes.

Longer answer: Yes - like it or not, museums are in a competition for people's time, interest, attention and leisure spending. They compete with other visitor attractions, cultural offerings and in-home pastimes. They compete with any manner of distractions including mobile phones, television, tablets, working out, and life in general.

The reality is that for museums to succeed they must employ a combination of marketing prowess, psychology, and engineering along with great content and a great showcase of that content.

It is less often talked about in the museum market, but technology can also boost the retail component of a museum in terms of the gift shop, food and beverage and special events.

Technology, in its many forms, can be used to support the cause - to draw in new visitors, strengthen the relationship with existing customers and enhance and extend the experience in many ways inside and outside the physical facility. This applies to serving the general public as well as school groups and a museum's extended community of educators, scientists, historians, artists and more.

Most importantly, technology can effectively tell your story, teach your guests, and help excite them about your collection or focus, which, after all, is really the goal of the modern museum.

...

Scott Arnold is a 25+ year industry veteran designing technology projects ranging from museums to theme parks, to cruise ships. For the past six years he has been with Wärtsilä FUNA, whose recent work on the Detroit Outdoor Adventure Center was featured in InPark's Issue #60, available online at inparkmagazine.com.



Giant screen universe

BIG & Digital's "Space Next" CGI documentary from Afterglow Studios navigates a galaxy of special formats up to 8K resolution

by Judith Rubin

Photos: Stills from "Space Next" showcase the variety of rich environments and landscapes created in CGI. All photos courtesy of BIG & Digital

Luke Ployhar began working on the new space documentary, *SPACE NEXT*, as a "passion project" to develop internally at his company, Afterglow Studios while continuing to contribute to other giant screen productions such as *Space Junk 3D*, *Electropolis* and *Antarctica 3D: On the Edge*. He founded Afterglow in 2006 after relocating from Los Angeles to the Minneapolis-Saint Paul area. With such films as *Minority Report*, *Inspector Gadget*, *Planet of the Apes* and *Austin Powers* under his belt, Ployhar found that his mainstream movie making skills in production, visual effects, 3D and animation transferred effectively to the alternate universe of special venue cinema.

By 2013 *Space Next* was mostly finished and Ployhar began showing trailers at GSCA conferences (a full length screening took place March 8, during the Giant Screen Cinema Association Film Expo in Los Angeles), where he met distributor Tina Ratterman of BIG & Digital. "Tina was my first choice for a distributor," said Ployhar. "A number of people had pointed me to her, and I liked her thought process. She's interested in cross platforming and making the most of digital assets to reach as many markets as possible, including the new virtual reality markets."

Boutique studio Afterglow partnered with boutique distributor BIG & Digital, and things began to happen. On Dec 4, 2015, *Space Next* opened in the newly renovated Giant Screen Theater at the National Infantry Museum (Columbus, Georgia). On Dec 17, *Space Next* had its European premiere at Tycho Brahe Planetarium (Copenhagen). US Space & Rocket Center (Huntsville, Alabama)

opened it February 29. Space Next has since also been leased by TELUS Spark (Calgary, Canada) for a January 2017 premiere.

“With Space Next, there’s no way you can leave the theater without having learned something new about spaceflight and its history,” said Chris Brothers, Theater Technical Manager, US Space & Rocket Center. “School groups and the public attend the same shows. A number of the objects in the film are featured in the museum, from rockets to the ISS and SkyLab.”

“Space Next is a great fit, especially considering the inspiration it could bring to future space enthusiasts and young scientists and engineers,” said Cassandra Dickin, Communications Specialist, TELUS Spark. “We endeavor to bring quality programming to TELUS Spark that both delights and provides a learning opportunity. We anticipate the film will meet our community’s desire for space-related content along with our core focuses of science, technology, engineering, math, and even art (STEAM).”

The primary markets for Space Next are museums, science centers and planetariums. On flat screens at museums and science centers, where film systems are quickly giving way to digital projection, Space Next will most often be screened in 4K 2D or 3D. Evans & Sutherland, a major player in the world of digital planetariums and dome theaters, has signed on to distribute the fulldome version of Space Next in resolutions up to 8K.

Trending to 8K

Space documentaries are a staple of the special venue market, where digital exhibition has opened up the field for all content in providing a greater number of compatible screens. “It happened organically,” said Ratterman. “A lot of museums have multiple theaters now and most of those are digital. They have more options for where they can show a film and how to position it. We’ve been able to adapt to that.”

Budgeting, selecting and installing a new, top-of-the-line projection system is a major undertaking for a nonprofit institution and exhibitors are inclined to choose content that will help show it off. “Based on current science and using the giant screen 3D format to full effect, Space Next was an easy choice for our grand re-opening as a 6P laser projection theater,” said Jordan Beck, Creative Director, Giant Screen Theater at the National Infantry Museum.

“We’re showing it three times a day in a 2K 3D presentation in our National Geographic Theater, which uses a Barco DP2000 projector and a doremi dcp2K server,” said Chris Brothers, US Space & Rocket Center.

High-end fulldome systems have repositioned planetariums at the cutting edge of digital cinema, competitive with giant flat screens and other museum screens for content and for their institutions’ marketing dollars. This has been a game-changer, and Ratterman takes the fulldome market seriously. Space



Next, BIG & Digital's first space title, is being screened at several fulldome festivals and conferences, including the 2016 IMERSA Summit in Denver, March 16-20, and the 2016 IPS Fulldome Festival at Brno, Czech Republic, June 15-17. BIG & Digital's next space title, IN SATURN'S RINGS, will also be available in resolutions up to 8K.

"8K is the future of the planetarium," said Ratterman. "There's an amazing variety of projection systems, and exhibitors need customization and flexibility. The growing network of Laser and 8K projection systems is sparking demand for 8K content. The quality of CGI in planetarium shows is getting better because of better tools as well as demand. Producers and distributors have to meet the new expectations. It's challenging and rewarding."

Flatscreen special venue systems will also upgrade to 8K, Ratterman foresees. "Outside of giant screen exhibition, 4K is still a fairly new, premium item, but there are plenty of indicators that will change relatively soon. Digital signage is now already a 4K platform. Giant screen will want to keep its edge of being the biggest, best and brightest."

New content for new market realities

"Research shows how the market is changing, technologies are changing, the interests of younger audiences are changing," said Ratterman. "We have the content to help bring in these new

audiences and provide variety. Ours is not a typical giant screen library."

She and Ployhar see Space Next as an ideal product in that regard. Space Next provides what those younger audiences are drawn to, they explain – animation and special effects, lively pacing, compelling story and stellar production values, plus the "wow" factor of leading-edge research and development in the space industry.

Comments from exhibitors currently showing Space Next back this up. "It gave me the feeling of wonder I felt about space travel when I was a kid," said Elijah Terrell, Chief Projectionist, Giant Screen Theater at the National Infantry Museum, adding that "school age kids have been blown away."

"The Space Next story is educational and at the same time very entertaining, and suitable for all ages. Guests have given us positive feedback," said Peter Bak-Larsen, Chief Executive Officer, Tycho Brahe Planetarium.

BIG & Digital's distribution vocabulary also includes 4D attractions, virtual reality and augmented reality. "Our 4K and 8K content is transferring well to 4D experiences," said Ratterman. "Our giant-screen release DRAGONS, starring the great Max von Sydow, is doing very well as Dragons 4D, adapted by EON

SPACE NEXT FACTS

Release date: December 2015

Synopsis

The journey to reach the stars began with our earliest dreams of flying, and led to landing on the moon and sending a probe to Pluto. But that's only the beginning. SPACE NEXT offers a glimpse into tomorrow, and the possibilities of what is to come by way of private space developments and national space programs. The result is an exhilarating vision of our future, based on real science, sure to inspire a generation of explorers, scientists, and dreamers.

Production team

Narrator: John Olive
Production Company: Afterglow Studios, Inc
Director: Luke Ployhar
Producers: Luke Ployhar, Ashley Jahnke
Writers: Scott Pearson, Barry Thorson
Editors: Luke Ployhar, Jason Malkovich
Visual Effects Supervisor: Jason Malkovich
Motion Designer: Nicole Daniels
Lead Animator: Mark Dunshee
Audio Mix: Brian Eimer, Images in Sound

Formats & versions

3D and 2D
Digital IMAX®, Giant Screen and fulldome
8K, 4K, 2K

Run times: 38 minutes and 25 minutes

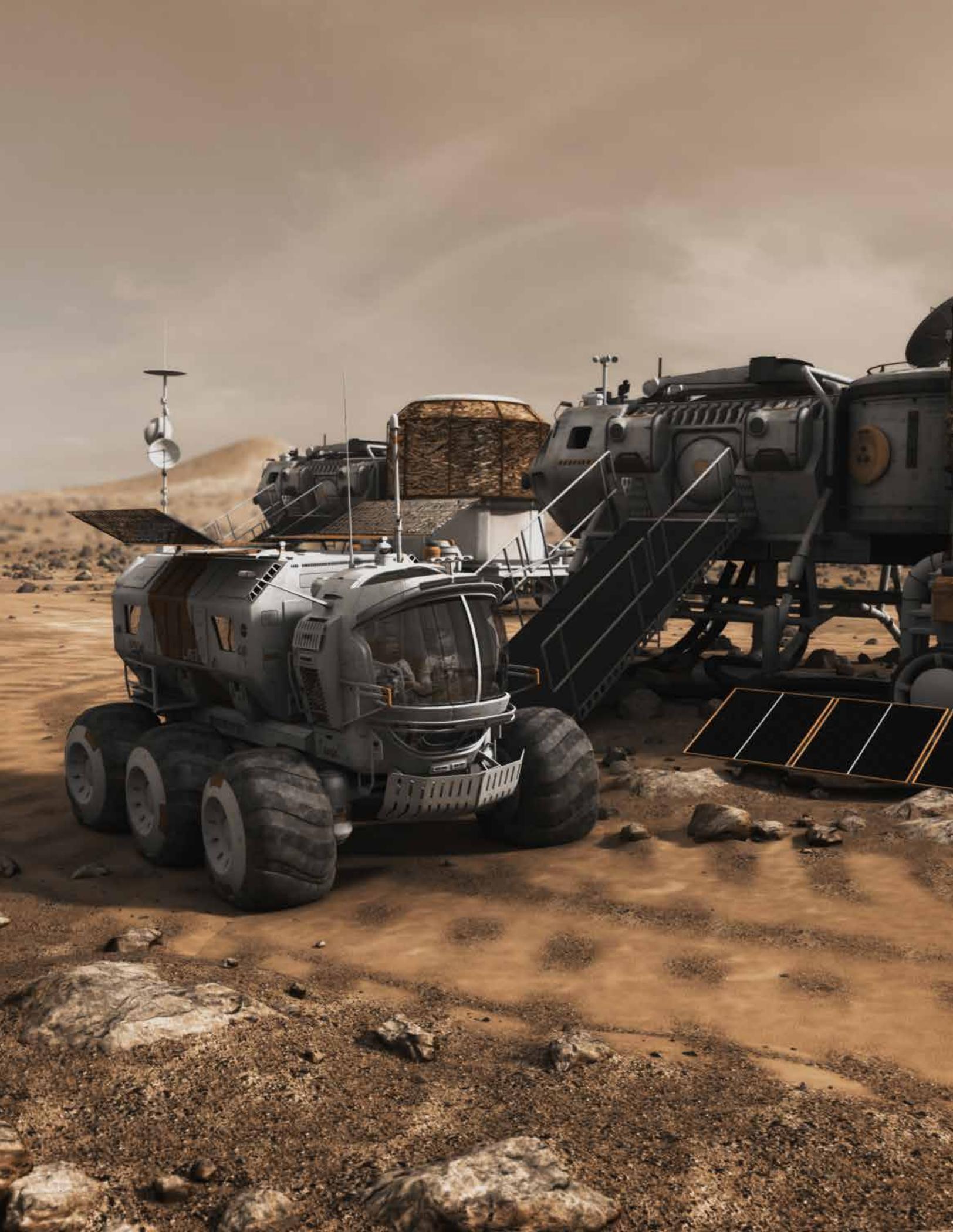
Distribution

BIG & Digital
Primary, worldwide – Contact Tina Ratterman
Tel. +1 702 932-4045
tratterman@biganddigital.com
www.biganddigital.com
Facebook <https://www.facebook.com/BIGandDigital/>
Twitter – @BIGandDigital

Evans & Sutherland
Fulldome Partner – Contact Michael Daut
mdaut@es.com
www.es.com

D&D Pictures
Japan – Contact Takehiro Nakayama
nakayama@d-dpictures.co.jp
<http://www.d-dpictures.co.jp/>

www.spacnextmovie.com





Reality and showing at the EON Idome in Laval, France." Space Next, indicates Ratterman, will also soon enjoy an ancillary life as a 4D attraction film. BIG & Digital is also working with a leading developer to explore options for an interactive VR experience of Space Next, as shows that have been configured for full-dome readily translate to the wrap-around format of a VR headset.

The personal touch

"Being a producer is a full-time job; that's why you need a distributor," said Ployhar. "Tina has her network of people she's promoting to and connecting with, and all the business and industry insight she's accumulated over the years. She's been out there, making a lot of headway. She sees the crossover and ancillary markets. She has helped us leverage the digital assets of Space Next, giving it a longer potential life. We're bringing vibrant new content to the market."

"This is the first film we've booked from BIG & Digital and it very much fits the mission here. One thing we like about B&D is that they give a very personal touch that is much needed in the industry," said Chris Brothers of US Space & Rocket Center.

"I go to bat for my producers and my clients," said Ratterman. "We work to help producers understand the market and create a great film, but we don't take over their creativity and vision. We work cooperatively. With most producers, it's very personal – they're working on something that's an important topic for them. For clients, we do whatever is needed to support them – including marketing, educational materials, technical requirements, exhibition quality, budget limitations and programming."

With a background in communications, advertising and special events, Ratterman got her start on the exhibition side of things in 1997 at the Kentucky Science Center. In 2003 she joined Giant Screen Films as director of distribution and marketing. She started BIG & Digital in 2009.

For Luke Ployhar, Space Next was a practical choice given market demand, but it was also a personal choice.

"With the space shuttle program having ended, people have so many questions about what's really going on in the space industry, which is really quite a lot between privatization and government agencies," he said. "So I set out to make a really cool film to show the future of the potential of space – and make it inspirational, solidly based on science, with everything vetted and researched, all showing what could realistically happen in the next 20 to 100 years, including warp drive. Even someone who doesn't care much for science will be entertained by it. But I like thinking about the young person who may go on to become a scientist because they saw and were inspired by Space Next."...



Luke Ployhar



Tina Ratterman

SPACE NEXT

YESTERDAY'S DREAM. TOMORROW'S REALITY.



"Space Next looks fantastic on our dome."
*Peter Bak-Larsen, Chief Executive Officer,
Tycho Brahe Planetarium*

"Based on current science and using the
giant screen 3D format to full effect,
Space Next was an easy choice for our
grand re-opening as a 6P laser
projection theater."
*Jordan Beck, Creative Director,
Giant Screen Theater at the
National Infantry Museum*

**AVAILABLE IN
2D AND 3D
8K, 4K, 2K
IMAX®, GIANT SCREEN,
AND FULLDOME DIGITAL
38 AND 25 MINUTES**



Michael Daut
Fulldome. Worldwide,
excluding Japan.
mdaut@es.com
Tel: 1-801-588-1627

Tina Ratterman
All formats. Worldwide.
tratterman@biganddigital.com
Tel: 1-702-932-4045

Takehiro Nakayama
All formats, Japan.
nakayama@d-dpictures.co.jp
Tel: +81(0)3-5414-5674

www.spacenextmovie.com

40 YEARS PERFECTING THE EXPERIENCE

THERE IS A STORY BEHIND THE PASSION
GREAT PASSION BEHIND THE TEAM
A TEAM BEHIND THE IDEA
IDEAS BEHIND THE DECISIONS
DECISIONS BEHIND THE ACHIEVEMENTS
ACHIEVEMENTS BEHIND THE MILES
MILES BEHIND THE YEARS
YEARS BEHIND THE EXPERIENCE
WE INVITE YOU TO JOIN US
ON OUR JOURNEY