

ipm in park MAGAZINE

#58 • volume 11, issue 3 • 2015
www.inparkmagazine.com



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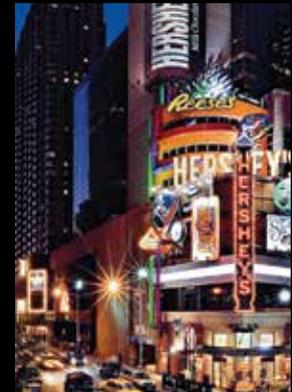
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InPark Magazine (ISSN 1553-1767) is published five times a year by Martin Chronicles Publishing, LLC, 2349 E. Ohio Ave. Milwaukee, WI 53207. Shipping address: 2349 E Ohio Ave. Milwaukee, WI 53207. Phone: 262-412-7107. Printing by Short Run Printing

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Postmaster: Send address changes to InPark Magazine 2349 E Ohio Ave. Milwaukee, WI 53207. Subscriptions are available annually for \$40 per year (\$55 international).

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

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COVER: HoloVis' Motion Dome attractions combine gaming technology with immersive screens and a motion base simulator. **Full story on p 22.** Cover credit: HoloVis

Value talent as well as technology

**Martin Palicki,
IPM editor**



In putting together this issue of InPark, I realized we often talk about people the same way we do technology. Flip through and you will see there is talk about how projectors have improved, how dark ride scoring systems are faster and more accurate, and how older technologies are being revisited, enhanced and built upon.

In many ways, the same is expected of a workforce. Global markets demand that companies function more efficiently, in an improved, faster and accurate manner in order to gain an edge over the competition. Placing those demands on team members is part of that equation.

Culturally, we are encouraged to see both technology and talent continuously evolve. As consumers, we are perpetually hungry for the “next generation.” From iPods to show controllers, the latest version captures our attention.

Interestingly, we use that same terminology to refer to future leaders in our industry: next generation (or next gen). We seek out new models, and we want them to have all the “bells and whistles” of the current leadership, but with even more features.

I’m not bemoaning the system – I think there are great benefits to having high expectations. But let’s be clear about one thing: talent and technology are intimately intertwined, but without the talent, the technology doesn’t exist, or is meaningless.

So while parks and institutions know the value of continuously investing in new projects and capital (which often means upgrading technology), it’s important they also regularly invest in the talent behind that technology.

We expect technology costs to drop over time, but we can’t expect the same for the designers, storytellers, and engineers connecting that technology to guests through experience—especially as we continue to demand more from them.

It is important to note that always seeking out the latest and greatest model, when it comes to talent, doesn’t mean replacing the previous version. As the leaders of our industry mature, their decades of experience and know-how are truly assets to an organization. Probably the best projects and teams combine the fresh perspective of emerging talent with the wisdom of seasoned professionals.

Ultimately, to value the guest experience we provide, we must value the diverse sources of talent that creates it.

A delicious success in Milan

**Judith Rubin,
IPM co-editor**



Expo Milano 2015 is displaying considerable success on many fronts: popular, critical, visitation and international goodwill.

Organizers showed savvy in choosing a theme that revolves around food – allowing exhibitors to address the serious angles (world hunger, food sustainability, agribusiness) while simply celebrating the joy of food. This brilliant theme has allowed the Expo to leverage the brand of Italy – its inherent appeal for travelers and residents alike. Food and food security are subjects on which every exhibitor can shine as well. Moreover, world’s fairs have historically ushered in a wide range of breakthroughs and these have included food trends.

Food is something that never goes out of style, never loses its relevance and has always been a key element of an expo even when not central to the theme. I think Milan 2015 will stand as an example of a world’s fair perfectly tailored to its region and to its era.

Politically, the expo is established on the international radar as a place to be seen. Expo 2015 Milano has been drawing heads of state and dignitaries from around the world. A partial list includes the presidents of Italy, France, Spain, Russia, Mexico, Lithuania, Columbia, Ivory Coast and Madagascar; the Queen of Belgium; the Prime Minister of Egypt; and from the US, First Lady Michelle Obama, Democratic House Leader Nancy Pelosi and Secretary of Agriculture Tom Vilsack.

Measuring success by attendance, Milan 2015, a 6-month expo running May 1-Oct 31, reached 8.3 million at the halfway mark. As, historically, visitation rates balloon toward the end of an expo as closing day looms, Milan is likely to reach the 20 million total that organizers originally projected.

A look at attendance totals for the previous expos held in this century provides context. Milan’s numbers are very competitive with the last 6-month world’s fair held in Europe, Hanover 2000, and well ahead of the more recent, 3-month event in Zaragoza (Spain). The much higher Shanghai numbers reflect the much larger local population that region has to draw upon.

Many thanks to consultant James Ogul, InPark’s world’s fair expert, who was a resource for this editorial. Be sure to check out his article on p. 17.

Yeosu 2012	8,203,956 (3 months)
Shanghai 2010	73,000,000 (6 months)
Zaragoza 2008	5,650,941 (3 months)
Aichi 2005	22,049,544 (6 months)
Hanover 2000	18,000,000 (6 months)



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The projection mapping revolution

An insider's guide

by Jeevan Vivegananthan

Chimelong Ocean Kingdom includes projection mapping on the park's signature whale shark sculpture. *Photo courtesy of Christie.*

The growing power and sophistication of digital projectors, and the software that drives their content, are creating a revolution in projection mapping. Once primarily limited to 2D surfaces, the technology is being employed on widely varying and irregular surfaces ranging from mountains, buildings and scale models of cars to events including live concerts and theatre productions.

Projection mapping uses specialized software and other technologies to warp and blend projected images from a single or multiple projectors so they fit perfectly and seamlessly onto irregularly shaped surfaces. Unlike the familiar flat 2D screen, the technology requires a careful "mapping out" of the surface where the image will be shown. Special programs are then used to construct a virtual model upon which opacity templates help to "mask" the exact shapes and positions of the different elements of the space. The coordinates relating to the placement of the projected objects on the surface are then defined. Finally, the proper lens is selected and the optimal position of the projector is determined. If more than one projector is being used, the images from each projector also need to be coordinated and positioned to create a seamless display.

Going Big

While projection mapping can also "go small," as well as indoors, the most spectacular examples are usually found outdoors where they can be done on a massive scale. In

the best instances, the transformation of common, everyday objects into lively, animated images can be startling and awe-inspiring. For theme park visitors, they are often the highlight of their experience and cap off an exciting day at the park.

An excellent example of this is the impressive projection mapping display conducted on a gigantic whale shark sculpture at Chimelong Ocean Kingdom in Hengqin, China. The theme park, which opened early last year, is divided into eight themed areas, each representing a part of the ocean. One of the park's most popular attractions, the highly entertaining "Glamorous Sky Over Hengqin" show, plays nightly to packed crowds. It features spectacular lighting, audio, video, fireworks, and acrobats. Projectors throw visuals onto the 216-foot high whale shark sculpture, creating a dazzling spectacle.

Where to Start

Before rushing off to purchase several new projectors, it is important to recognize that projection mapping is simply a tool to achieving your vision. The best presentations take into account numerous factors, including artistic vision, ambient light levels, audience size, viewing angles, type of content being displayed, and the type of surface on which your content will be displayed – whether brick, glass, sheetrock, wood, or water. The color of the surface being projected upon is also important, since that will affect the color of the image.

To make the most of your available surfaces, the type of content you use is equally important, since some content works better

on certain surfaces. Another consideration is that the more complex the image, the more difficult it is to achieve a perfect "marriage" with the projected surface. While it is easier to control these elements indoors versus outdoors, in either situation, the diverse elements of your "canvas" can be overwhelming for someone new to the technology. Therefore, it is best to work with an experienced partner who can help you carefully plan your presentation to ensure the best use of both the content and the available surface.

One of the latest and most inventive uses of multiple surfaces is the "Wonder Full" tonight show at Marina Bay Sands, located in the heart of Singapore's financial district. Considered Southeast Asia's largest outdoor display, the show's main "canvas" is composed of three cascading hotel towers topped by the extraordinary Skypark, an elevated park that sits atop the three towers. Illuminating the skies twice nightly from Sunday through Thursday, the show uses seven high-definition 3DLP® projectors. To achieve the desired effect, 30 multi-colored moving searchlights were placed on the waterfront's Event Plaza, Skypark, and the Artscience Museum's "Rain Oculus," a curved roof that collects rainwater and channels it into a pool. The projectors, enclosed in customized floating barges, display the imagery and graphics onto three floating water screen vessels spanning approximately 6,500 square feet.

Transforming the Commonplace

When creating a projection mapping display indoors, it is important to recognize that room setup will vary from venue



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to venue, so a thorough study and measurement of the space is vital. Ideally, you want to project perpendicular to the surface. You also want to ensure that audiences get as unobstructed a view as possible. Unlike most outdoor settings, where the surfaces are large enough and even high enough to be observed by almost every member of the audience, indoor settings sometimes have to deal with architectural elements that may obstruct the view. In such cases, creative placements of the projector(s) or a change in the position and shape of the surface can be helpful.

An excellent example of an effective, large-scale indoor projection mapping display was produced in Colombia, South America, as part of a tie-in with the premiere of "Transformers: Age of Extinction." The rental-staging company, Big Video, delivered a stunning presentation on the façade of the Calima shopping mall in Bogotá, bringing a 213 by 66-foot area to life using eight projectors. The projectors were installed 26 feet high on scaffold structures with a throw distance of approximately 85 meters. The video, lights and sound were synchronized using a multimedia processor, which also managed the geometric correction and edge blending.

The presentation lasted for seven minutes and contained fragments of the movie and promotional contents from the sponsors. The projection

mapping display played four times each night over the course of three days, drawing an average of 350 spectators per show.

A Little Help from Friends

While there are no limits to the level of creativity you can realize with projection mapping techniques, it still comes down to having the right artistic vision, working with knowledgeable partners to design and map out the presentation, and using the right projectors, lenses and software to deliver a unique and memorable presentation.

If you are new to projection mapping, this may also mean resisting the urge to undertake the entire project without assistance. Knowledgeable partners will help you avoid mistakes often made by novices. They also can contribute to the creative development of your desired content, design and preparation, to help you achieve your goal of putting on a performance people will remember. •••

Jeevan Vivegananthan is Senior Director of Product Management, Global Market Solutions, Christie. (www.christiedigital.com)



Transformers: Age of Extinction receives a large projection mapped promotion on a mall facade in Colombia. *Photos courtesy of Christie.*



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Worlds of opportunity in themed entertainment



interview with Monty Lunde
by Kimberly Rily

InPark contributing editor Kimberly Rily spoke to industry leader Monty Lunde, CEO of Technifex and founder/past president of the Themed Entertainment Association, about markets, the creative process and the future.

Technifex has been involved in some great projects in the casino market as it has grown and changed over time. Where do you think things are headed, especially in light of rapid international expansion?

Gaming represents a very exciting market for themed entertainment suppliers and developers. Casino operators who understand the value of “Wow” are willing to take risks and invest in amazing must-see venues and attractions. Casino developers are also very interested in differentiating from their competitors, and attracting a demographic beyond gamblers.

Over the past 25 years, Native American gaming (US and Canada) has grown through government recognition of more tribes as sovereign nations - which expands their regional territory - as well as from existing tribal gaming venues investing consistently in upgrades. Improvements that are engaging and helping retain customers include entertainment technologies, higher quality food and beverage, hospitality and other amenities that now rival what used to be found only at top Las Vegas properties.

Internationally, Asia is experiencing the most rapid growth right now in the casinos market. Macau continues to build new facilities and major attractions at an impressive pace. Expansion is also occurring in other Asia-Pacific countries including the Philippines, Malaysia and Australia. This represents significant competition to Las Vegas. The gross gaming income in Macau alone has surpassed Las Vegas by several orders of magnitude.

There will be continuing demand for show technologies to augment gaming experiences for many years to come.

Your company has done some unique projects for municipalities and governments. What other ancillary markets are out there?

Zoos - seriously! Our industry has just started to scratch the surface relative to how we can enhance animal attractions and animal facilities. According to our client, Audubon Nature Institute, adding effects and interactivity to areas of the zoo is not only something that’s fun for visitors - it can positively engage the animals at the same time. There’s also a crossover of attraction types starting to happen – Audubon, for instance, has very successfully integrated a water park within their zoo.

Other markets where special effects and related technologies could play a larger role include educational facilities, trade shows, corporate brand centers, retail and historical sites.

What drives innovation and improvement at Technifex?

Our clients trust us to provide innovative and robust solutions, even when developing ideas that are one-offs. Doing something that’s never been done before is pretty much standard practice in themed entertainment; you have to always be raising the bar and differentiating. We take great pride in providing elegantly designed and engineered effects to our clients. Time and budget may impose creative limitations, but we strive to always provide show systems that create unique guest experiences. Even when we are implementing tried-and-true technologies, thinking about how we can make the process and end product better is in our DNA.

Please share some observations from your 30 years in the industry about the process of designing special effects, and how it's been affected by new technology.

There are far more technical systems available to us today. When my business partner Rock Hall and I first started Technifex in 1984, computers were rarely used in the design process, much less to control special effects. We used relays and cam timers a lot in those days. In general, the equipment and technologies available to us back then were designed for theater applications. Though there is certainly crossover, the duty cycles and performance requirements for equipment can differ significantly between theater and themed entertainment.

Thanks to the Internet and the general growth of the attractions industry, access to information and specialty components has improved immensely. This translates into more sophisticated designs and the production of technical systems that integrate and communicate in ways not possible 30 years ago.

At Technifex, we typically follow the technology advancement curve in that most of our designs and end products are unique implementations of existing technology. Most clients don't have the time or funds to have us invent new technologies, but modern computer design programs, access to a wide array of technologies and innovative thought can produce astounding results.

You have worked with many varied clients and collaborators. Is there a typical process that you go through for each new project, or does every project have a life and process of its own?

As much as possible, we try to implement a consistent and logical design and production process - but it must be adapted to each client's schedule, budget, internal process and culture. Some clients dictate the entire process and it is our job to conform, while others simply give us the keys and say "don't crash the car."

Once we understand our client's vision, we usually start the development process in small, incremental steps (concept, mock-up, schematic design, etc.), so the client can understand where things are going and participate in critical design and budget decisions before they commit full funding to a project.

Technifex has developed many different fire and water effects. What are some of the specific challenges of each?

There are often significant life safety considerations that affect how we engineer and manufacture flame systems. There are also stringent codes that we must adhere to relative to the use of fire in a show environment. When fire is in close proximity to an audience, the client and government scrutiny are very high,

for justifiable reasons. Demonstrating to a local fire marshal that fire effects are safe can also be a challenge, but through proper engineering and sensitivity to their concerns, we have always received the necessary sign-offs.

When we develop water effects, the primary concern is more about engineering systems that won't leak or grow some hideous mold! Our focus revolves around the proper engineering of pumps, filters and water treatment systems, as well as creating whatever water effect an art director envisions.

Recently, we have been developing technologies that combine both fire and water.

What are some of the ways you utilize projection technology?

Because they add so much to the guest experience, projection technologies will always be in Technifex's "bag of tricks." We are well known for creating "Pepper's Ghost" (PG) type illusions for theme parks, casinos and trade shows. These PG systems involve reflecting projected images into a dimensional scene and can be quite complex. We also have several proprietary products that utilize projection systems, including our Flowscreen®, Tunnel Vision™ and Water Web™.



Projectors, media servers and all the interconnecting bits have become much more sophisticated and versatile. This provides us, as implementers, the ability to create incredible visually impactful show systems.

What do operators/developers need to consider when adding technology/effects to their project?

There are the obvious items to consider such as facility development and accommodation for the various show technologies that are planned for a given project. Finding a general contractor who understands how our industry operates and the unique construction requirements themed entertainment venues often require is key to controlling costs and developing a successful attraction.

It is also vital to include the technical systems suppliers in the earliest phases of design and project development. The technical input provided can be invaluable in terms of proving - or disproving - concept design feasibility. Critical facility information can also be incorporated into architectural packages and, most importantly, clients can gain a clearer picture of what a project will cost when they have technical input early in the design process.

To better assure long-term success, developers must also carefully consider their internal operations and maintenance

capabilities. If a developer is going to make the financial commitment to build sophisticated and technically-advanced effects and show systems, they must also be prepared to finance and hire technical staff that can monitor and maintain these systems.

Tell us about the primary themed entertainment market – the parks - and where you see that heading in the near and far term.

As new theme parks continue to be developed in the Middle East, China and other parts of Asia, and existing US and European venues continue expanding, it feels like there is genuine energy and momentum within the amusement park industry. When you include the re-entry of Fox and Warner Bros. into the attractions market and the potential launch of DreamWorks amusement parks, all planning to dot the planet with their unique intellectual properties, we could be in the early stages of the most expansive growth the amusement park industry has ever seen.

Long-term: outer space. Seriously. Considering all of the energy and money being spent to get the general public into space, I'm eager to see who will build the first themed experience in space. (Not that being in space doesn't qualify as a themed experience on its own.) I believe a themed experience in outer space could happen within the next 30 years, and I hope to live long enough to see it. •••



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Triotech congratulates **Knott's Berry Farm** for their new media based Interactive Dark Ride:

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Print photography: it's still here

by Belinda LoPresti



Belinda LoPresti
DNP

High quality printed images with a branded custom border or folder/frame are still among the best-selling souvenir items at parks around the world.

As the attractions industry continues to grow, park owners and operators face an array of challenges to ensure continued profitability. Finding ways to proactively generate new revenue streams while simultaneously enhancing the customer experience is critical. You may be surprised to learn that even in this digital age, in-park photography services can be a profit center.

The In-Park Photography Landscape

Offering park-wide photography services that include printed images has proven to be largely effective and popular with customers. Photo technologies such as green screens and augmented reality provide a tangible product that can't be produced on a smartphone or standard point-and-shoot camera; and are vastly superior to the quality of a smartphone image.

Although accessing and sharing digital images is easier than ever before, the value of a physical print is still high. People still want prints to display in their homes.

Both digital and printed images have value to park visitors and can be part of attraction souvenir packages, but the digital image has a lower perceived value than a



print, and consumers are willing to pay more for a high-quality printed image. Recently, the Vegas Off-Road Experience saw a 10 percent increase in revenue in the nine months following the deployment of a single photo printer.

Impulse buys, repeat visitation and branding

A photo captures the emotion of a moment, and the park photo souvenir serves as a reminder of positive experiences and feelings. The photo souvenir package that guests take home as a personal memento helps reinforce the kind of emotional bond that can lead to repeat visits.

Just as a shopper might purchase a candy bar at the checkout aisle of a supermarket, park-goers will make spur-of-the-moment purchase decisions in theme parks. Some parks find that it pays to print photos on spec. They drive sales by having prints on display and ready for purchase immediately after the guest exits the ride. Short wait times and easy traffic circulation in the retail area will increase the chances of a sale.

Branded prints with a park logo or custom borders and folders are among the most popular items sold at attractions around the world. Branding a print increases the exposure of the park's brand and is a great way to showcase the experience to prospective guests who will see the photos in people's homes.

The case for dye-sublimation

The technology behind producing printed packages is just as important as the capture device in protecting quality, guest satisfaction and profit margins.

The two most widely used photo printing methods available are inkjet and dye-sublimation. Inkjet printers spray droplets of ink onto specially coated papers. Dye-sub printers use a dry technique that diffuses dye onto paper. This dye comes in the form of a ribbon, which is converted into a gas by a heated print head that is absorbed by a special receiving layer on the paper.

In our experience, dye-sublimation printing offers several advantages for park operators, including high margins, low maintenance, and speed. Cashman Photo, the leading photo providers at attractions across Las Vegas, recently upgraded its wet-print labs with dye-sublimation dry print solutions—citing the total cost of ownership from an energy, media, and operational standpoint as significantly lower than their previous wet labs. High quality dye-sublimation systems are also said to be robust, able to turn out prints in a wide range of sizes, and compact enough to readily fit photo booths and concessions.

When it comes to printing with dye-sublimation, since there are no expensive ink cartridge refills, the price per print is the price per print. Dye-sublimation media prices (paper and ribbon) generally don't fluctuate and are usually good for hundreds of prints in a single roll.

Park operators need to be able to produce prints quickly while guests' interest level is high. Dye-sublimation printers can print full-bleed customized images in a matter of seconds. Prints are dry and ready to touch as soon as they leave the printer. Dye-sublimation prints are also resistant to fingerprints, dust and fading, and typically are available in glossy or matte finishes.

The bottom line

Park visitors take thousands of photos on their smartphones every day, but often have no way of viewing them off-screen and are not printing at home at the same rate they were even a few years ago. For the attractions industry, print photography continues to represent a major opportunity to improve the bottom line. •••

Belinda LoPresti is Director of Marketing, DNP Imagingcomm America Corporation (www.dnpphoto.com)

Beyond the ride photo: 6 photo ops to have in your park

- 1. Designated Photo Spots:** Have an area pre-scouted and designated to ensure park visitors will get a great shot—whether in front of a popular ride or landmark, or fronting an awesome view. Stationing a photographer with professional equipment there will allow guests to step out from behind their own capture devices and all get into the picture.
- 2. Haunted Attractions and Seasonal Events:** Capture the thrills, shrieks, and scares of park-goers by adding a photo system to haunted attractions, Christmas fairs and other seasonal events.
- 3. Green Screen Photos:** Entice guests with photo ops that let them pose against a themed backdrop, with a character or an exotic background, using a green screen. Don't forget to include park branding!
- 4. Mascot Photos:** Get your park mascots out and about the grounds or at a designated area for photos with families and kids of all ages.
- 5. Roaming Photographers:** Photographers roaming the park are a great way to offer more professional shots and prints that guests can't get on their smartphones and get everyone into the shot.
- 6. Entry Gate Photos:** As soon as your guest comes through the gate, offer the option to take their photo, print it, and have it ready for them to take home on their way out. It will help them remember the good feelings of anticipation and arrival.

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A meaningful American presence at Milan 2015

Ambassador Douglas Hickey,
Commissioner General, USA Pavilion

Interview by James Ogul

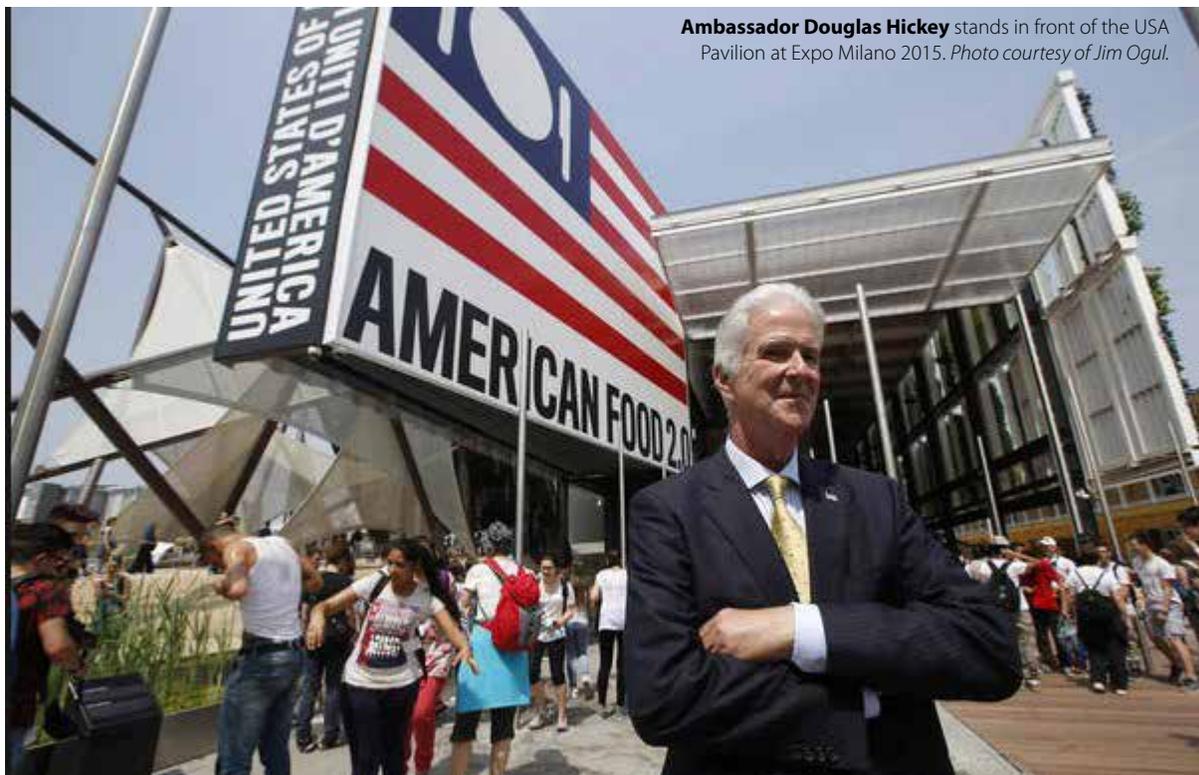
Just past the halfway mark of its six-month run, Expo Milano 2015 has reported some 8.4 million visits. The USA Pavilion at this world's fair has been ranked as one of the most-attended, reporting more than 2 million visits - an average of more than 25,000 a day.

Ambassador Douglas Hickey, Commissioner General of the USA Pavilion, graciously took the time to be interviewed. Based on my own years of experience helping organize the US presence at world expos, Ambassador Hickey's vivid enthusiasm is characteristic. The distinguished men and women who have served as US Commissioners General become true believers in expos.

Douglas T. Hickey was most recently president and CEO of San Francisco-based BinWise, and has more than 20 years' experience holding senior level positions in the telecom, Internet and technology space. He was appointed Commissioner General of the USA Pavilion at Expo Milano 2015 by the US Department of State in December 2014.

Let's hope that this splendid US effort at Milan will be matched at upcoming world's fairs at Astana (Kazakhstan) 2017 and Dubai 2020.

– J.O.



Ambassador Douglas Hickey stands in front of the USA Pavilion at Expo Milano 2015. Photo courtesy of Jim Ogul.

What's your general impression of this Expo as a whole?

I have been extremely impressed. This has been a huge undertaking for our Italian hosts and they should be proud of what they have accomplished. I think everyone who has the opportunity to visit can attest to the beauty and substance of this world's fair. It's also a lot of fun! Expo Milano is clearly the place to be in 2015.

The energy, creativity and substance of this Expo have been truly remarkable. The theme – Feeding the Planet, Energy for Life - is a serious theme and a global challenge. Many of the participating pavilions have very thoughtfully addressed the theme.

Please give us an idea of your level of involvement as Commissioner General of the USA Pavilion.

I moved with my family to Italy in December 2014, before the Expo opened, and have been here full-time ever since. We wanted to support the development and implementation of the USA Pavilion as fully as possible and felt we could do that best by being on the ground here in Milan. It was a proud day when our Pavilion opened on May 1 and I have been part of the team here, working daily, to ensure a meaningful American presence at this world's fair.

I am very proud of the team we have here in Milan, and of American leadership and innovation on global food issues. The USA Pavilion very effectively reflects the latest advances in areas such as science, technology, climate change, nutrition and health.

Tell us more about the USA Pavilion.

Under the theme "American Food 2.0: United to Feed the Planet," we reflect on America's ability to innovate in the food sector globally, and talk about individual as well as institutional responsibility in addressing hunger in our world. We all have a part to play in how we feed the more than 9 billion people that will inhabit the Earth by 2050.

As First Lady Michelle Obama observed when she visited, when you walk around the USA Pavilion, you think the solutions are right in our grasp. It represents how the United States is engaging in a global dialog about how we will feed the planet in the future in a way that is sustainable, wholesome and just.

Some have suggested the US ought to rejoin the Bureau of International Exhibitions (BIE). What is your opinion?

As a Commissioner General, I have participated in the Commissioners Meetings. I have a close relationship with the Americas representative on the Steering Committee; we work closely to raise opportunities and concerns to the BIE as appropriate.

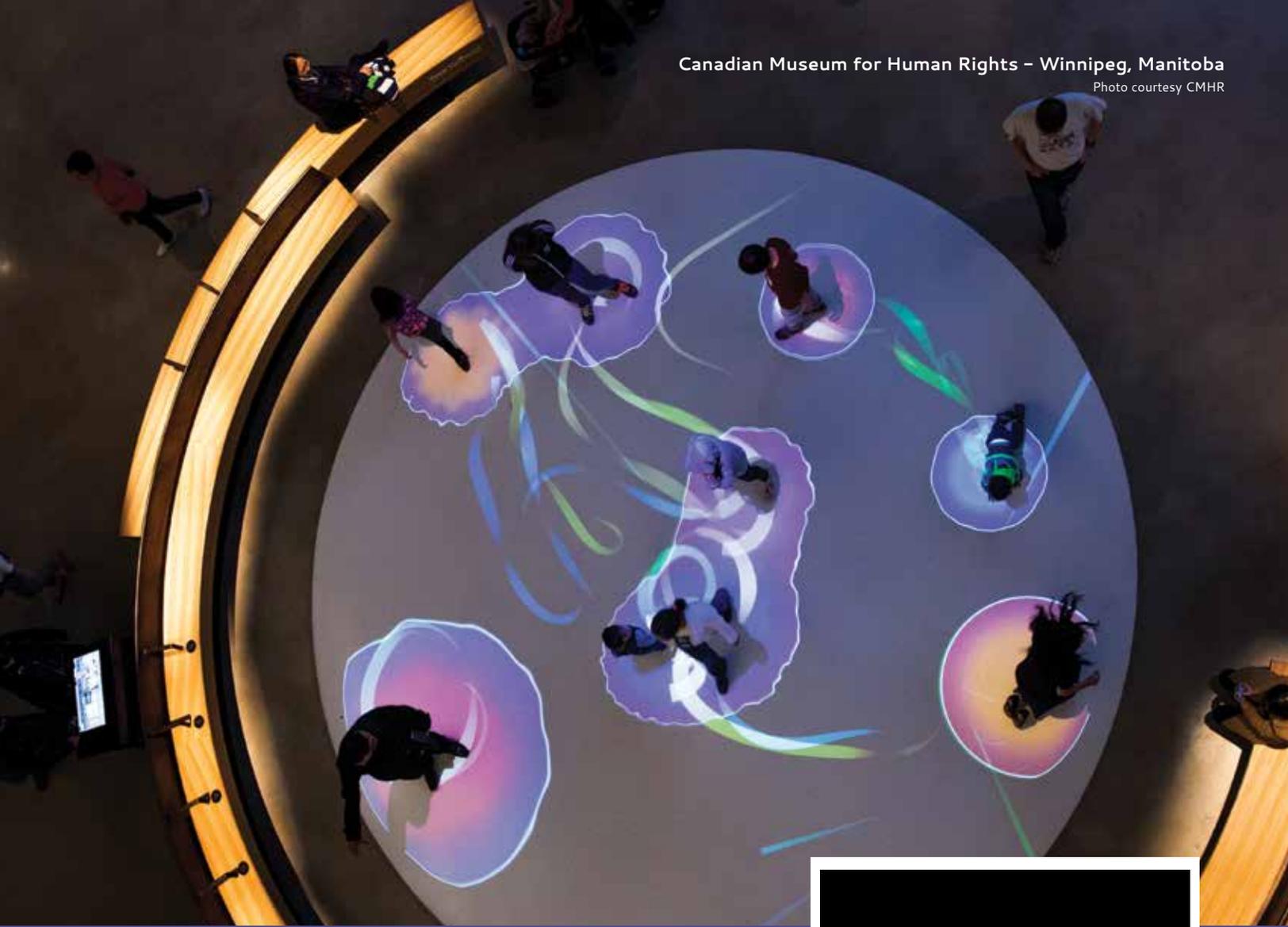
The USA Pavilion at Milan 2015

- 42,000 square feet
- Biber Architects - building design
- Thinc Design - exhibits design
- Open-plan layout designed to accommodate high foot traffic without queues
- Four-story, vertical garden, the length of a football field, supplies food for its restaurant operations
- Operated by Friends of the US Pavilion Milano 2015, which is made up of the James Beard Foundation, the International Culinary Center and the American Chamber of Commerce in Italy
- 64 Sponsors and nine Official Suppliers
- 120 Student Ambassadors representing 95 universities
- Hours of operation: 12 hours a day, 7 days a week
- Three components: The Pavilion, Food Truck Nation and the James Beard American Restaurant (offsite, in the city of Milan)

Membership in the BIE is not a prerequisite to US participation in a world expo held in another country; Milan marks the fourth time we've been part of a world's fair in the past decade. And even though I don't have a voting role in the College of Commissioners, I am able to participate, offer my opinion, and collaborate with my fellow commissioners on issues of common interest.

Have you been able to meet other Commissioner Generals and visit their pavilions?

I meet other Commissioner Generals all the time and have been hosted by many at their pavilions, just as I host them at the USA Pavilion. Expo Milano is a wonderful global collaboration and conversation. Meeting and working with my fellow Commissioner Generals in this context has been a huge pleasure and privilege.



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What are your views on the significance of world's fairs, and Milan 2015 in particular?

World's fairs are wonderful opportunities for countries to come together to share experience and innovation, and provide an international platform to highlight global priorities. The United States has a proud history of participating in world's fairs and when Secretary Kerry asked if I would serve as Commissioner General for the USA Pavilion, I enthusiastically agreed. I care deeply about the focus of this Expo. Simply put, the Expo is one of the most effective public diplomacy forums available to us. We have the opportunity to touch millions of people from all around the globe. ...

Jim Ogul is presently a consultant with IMG on Dubai Expo 2020, and a contributor to InPark Magazine, which has published his online book, "Tales from the Expo." After retiring from the State Department in 2011, he served as a contract Senior Project Officer for the USA Pavilion at Yeosu Expo 2012. As an employee of the US State Department, and before that the Commerce Department, he was involved in organizing and directing US participation at world's fairs including Aichi 2005, Lisbon 1998, Taejon 1993, Seville 1992, Vancouver '86, Tsukuba '85, New Orleans '84 and Knoxville '82.

Snapshot of Expo Milano 2015

- May 1 – October 31, 2015
- Theme: Feeding the Planet, Energy for Life
- 140 Participating Countries
- Six Participating Corporations
- Attendance Projection: 20 million
- Exhibit Space: 1.1 million square meters
- Nine Global Partners
- Commissioner General: Giuseppe Sala

Dubai 2020: a few facts

- October 20, 2020 - April 10, 2021
- Projected Attendance: 25 million
- Theme: Connecting Minds, Creating the Future
- Site: 438 Hectares with 200-hectare gated Expo area



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The immersion game

Holovis: virtual environments, real-world business

by Judith Rubin

It's a cycle in themed entertainment for a new, high-end guest experience to be introduced by a major operator, and as the technology becomes more mature and affordable, for smaller operators to introduce similar experiences as providers find ways to package them. "Every solution can be scalable," says Stuart Hetherington of Holovis, a full-service provider of high-tech, immersive, media-based attractions for an international body of clients.

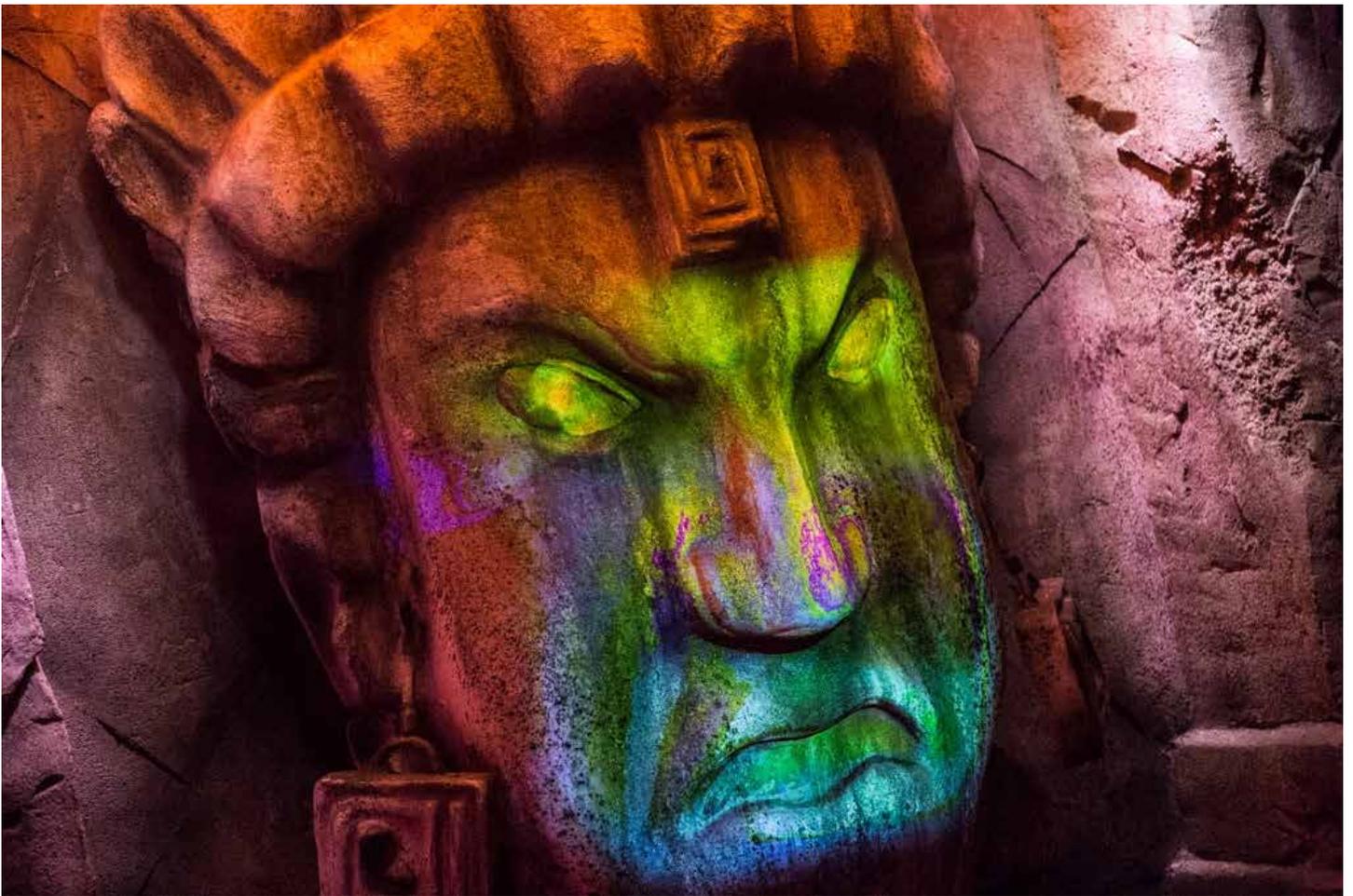
Another cycle is to revisit a concept or platform with new technology. Just as certain kinds of movies get remade with ever more convincing digital effects, the attractions industry refreshes certain kinds of attractions with new and ever more sophisticated tools.

Motion simulation, dome projection and virtual reality are cases in point. These are all experience platforms that have been improved and enriched in the past few years by new technology, digital tools and gamification (integration of video gaming features and interactivity). The benefits are more compelling and seamless effects, smoother and better coordinated motion, and a more immersive experience.

Thanks to new tech and new tools, entering a virtual world is easier and more enjoyable these days than it was in the 1990s - whether via ride vehicle, headset, specialty theater or a combination - and it's more likely one can have a good, long visit there without getting seasick or having to work too hard to suspend disbelief. Better tools for technologists also means better tools for storytellers.



The Holovis facility in the UK is set up for demonstrations and R&D of presentation systems and technologies, like this CAVE simulation environment.



A projection mapped sculpture at Bobbejannland.
Photos courtesy of Holovis.

This is the environment in which Holovis has been building international success. This versatile company maintains a turnkey facility and a seasoned staff to work on the leading edge of media-based attractions for entertainment and education, in a range of budgets. "There is a demand for scalable, custom attractions," said Hetherington. "Clients are looking for a certain level of immersion, a certain type of media, a unique story and experience, within a particular budget. We can value-engineer that when needed - or go higher-end."

Own the problem, own the glory

Holovis has the in-house capability to provide design, fabrication, hardware manufacturing, AV and media integration and now also media production and game design out of its UK facility. Hetherington calls it "taking control of all parts of the value chain. We are rethinking traditional supply-chain methodologies to more effectively deliver the next generation of dark rides."

This differs from a frequently seen model in themed entertainment wherein a team of small companies, consultants and producers comes together specifically for that project and then disbands. Hetherington feels that turnkey minimizes risk while it increases responsibility. "I have seen clients relying on lots of third party suppliers and seen it break down in some

aspect: ride system, visuals, interactivity. By producing from start to finish, by not taking a fragmented approach, we own the problem, and we own the glory as well."

Another benefit of having a large R&D facility is the ability to demonstrate systems to the client, first-hand. "It's like a miniature theme park and VR center here," said Hetherington. We have the means to test, prove and continually improve everything: next-generation 4D theaters, a dark ride test cell, fulldome theaters, two virtual reality CAVE facilities and all the software and tools needed for mockups and visualizations. We can have an in-person group in the immersive space having a proper collaborative discussion. "The facility is approximately 100,000 sq ft. in size currently and occupies an old farmland site. "We took it over 10 years ago and are in the early planning stages to expand the site with a brand new technology and innovation center double our current size again," says Hetherington. "We're making magic, hidden away in these old barns..."

Three divisions and gray-haired geeks

The company is currently organized into three divisions, and continues to serve manufacturing, military and government clients in addition to entertainment. More than 70 employees work at the main facility in the UK and this figure continues to



expand monthly. The company now also maintains offices in Los Angeles and China. New additions to creative staff include Amy Steele, a veteran of Universal Creative with a background in gaming. "We will be bringing on more game developers in our LA office," said Hetherington. He shows a leaning toward seasoned professionals at the top of their game, "Gray-haired geeks, that's what we look for. People who meet our vision and values and goals. Everyone we bring on board is incredibly talented. Everything in our business is innovation led." He sees the US as a market to cultivate and promises "a lot more to talk about in the next six months."

The in-house media production was also formed in response to the challenges of quality control when working with third parties, especially for gaming applications. "We are still partnering with key players on the media side," said Hetherington. "We are not in a place where we would want to take on big film and animation houses. But because we have our gaming and software development teams in-house under our brand, we are doing some CGI and film work ourselves. It's about owning the challenging creative aspect, paired with the physical attraction side, and the interactive technology. We think this is the ideal and most effective way to build attractions."

Markets

Juggling client sectors as diverse as manufacturing, government/military and entertainment is a challenge that not all companies are able to meet. According to Hetherington, it takes discipline, robust design and realism. "We have a very good design and creative team that can balance quality with value engineering. There are different budgets and different requirements in each marketplace. We understand that; we have been very flexible in how we adapt; we are solution oriented." Hetherington and Holovis Co-Director Joe Jurado come from a background in automotive research. "We both worked in physical testing, and that led us to virtual technology for crash testing and simulation, which took us to the study and research of immersive volumetric CAVE VR systems. From there we moved into military simulation and training and then early full-dome technology. Joe managed one of the world's very first permanent digital planetariums, at the American Museum of Natural History in New York City. We have continued in that space as well and are seeing where next we can take large scale immersive 3D experiences."



Immersive and interactive virtual reality environments in CAVES and DOMES. Photos courtesy of Holovis.



Stuart Hetherington
CEO, Holovis

Three Holovis Projects: The Forbidden Caves

4D immersive tunnel ride for Bobbejaanland

For Bobbejaanland, a regional theme park in Lichtaart, Belgium, Holovis provided an immersive tunnel attraction that takes guests in motion vehicles through a projected 3D environment. The storyline has to do with a legend about mysterious crystals and secret caves. The ride, which opened May 2015, has been compared to King Kong 360 3D at Universal Studios Hollywood. Holovis designed and supplied the technology and integration as a turnkey system including a custom U-shaped screen, two themed, jeep-style, 30-passenger vehicles, electric motion actuators and control system. "It's designed for the whole family – with motion and thrill elements, but not too aggressive," said Hetherington. Media production was by Super 78 Studios and Tau Films, independently contracted to Bobbejaanland.

The timeframe from concept to opening on Forbidden Caves was a brisk seven months. Working closely with the Bobbejaanland team, Holovis project-managed the other contractors, including the theming and lighting providers and show control integration. The display screen was designed to wrap around the riders, filling their peripheral vision. The high-resolution, 12,000 x 10,500 pixel display was created using seven Projection Design F85 units, edge blended with

Holovis's proprietary auto-alignment software. Spatial audio further enhances the immersive experience, with a 12.2 stereo sub setup and multi-directional spatial sound, plus six on-board speakers transmitting realistic radio communications. Special effects include the scent of a musty cave and air moving fans that boost the illusion of moving rapidly through a dangerous environment.

In 2013, Holovis had already shown its ability to produce a scalable version of this kind of attraction, delivering a similar immersive tunnel system for CineCitta Theme Park in Italy in 2013.

"The key behind everything Holovis does is the immersiveness, starting with visuals that fully wrap a rider's peripheral vision, synchronized with organic motion, spatial audio and special effects to complete the experience," said Hetherington, who displays an unflagging passion for the business. "Often this is a better approach to immersive 3D because it means you don't need any headwear to put you at the heart of the story. Couple that with interactivity, and you can create experiences that are different every time."

Photos courtesy of Gert-Jan Meeuwesen, Bobfans



Harbin Plaza FEC

Immersive theater and beyond

Holovis's proprietary platform InterAct allows users to vote at the outset to choose their experience in a new interactive gaming theatre at Harbin Lesong Plaza Co. Ltd., a major shopping and leisure complex in the Heilongjiang province of China. The Immersive Theater opened in May as the centerpiece of Harbin Lesong Plaza's dedicated, 12,000 square meter family entertainment center (FEC). Thinkwell Group, which designed the FEC, brought in Holovis to create the theater. "Our relationship with Holovis quickly changed from a supplier to a partner status," said Hong Sang, Owner, Harbin Lesong Plaza. "This is a next generation experience that is completely unique, not only in this marketplace, but for the whole of China."

The 12-person, 4D Immersive Theater was delivered turnkey by Holovis including proprietary, interactive seats with 3 degrees of motion freedom, 180-degree 3D dome projection with multiple, edge-blended projectors, handheld shooter devices and gesture tracking. The two game options currently running are from the Holovis DomeRider™ Series: Jungle Crisis and The Lost Cove. Holovis will bring a demonstration theater to the IAAPA Attractions Expo in Orlando in November 2015.

"Since opening, the space is very busy," said Hong Sang. "Being aimed at the younger generation we see the highest traffic

during school holidays. The retail and FEC spaces complement each other by making the center a destination experience. The reality of a modern day retail facility is that it has to offer something more than shopping outlets as the younger internet generation can access this service online."

Holovis is looking at the way gamers engage, with a whole product and enterprise approach in mind. "We are harnessing game engine power using one of the top three game engines, which our game development team adapts in unexpected ways," said Hetherington. "Part of our innovation pipeline is designing an extended experience on multiple platforms so that user engagement happens before, during and after the visit, through social media and app development. Connecting in-home and out-of-home experiences is a huge, untapped space, and will involve tying into the larger scheme of things at the facility, including marketing, ticketing and tracking. There is more to this complete solution approach than traditional installation of an attraction. There is a much bigger conversation around the experience, and how we engage with that and with the guests will stimulate ROI, repeat visitation and keep the attraction fresh."



Sino Creation and Dreamworld

FEC and park concept

With business partner Xiamen Dreamworld and Sino Creations, HoloVis has been engaged in developing a complete, turnkey package of high-tech attractions and facility design for an FEC concept targeting teens, that will start to roll out over the next year or so, as well as design of a series of indoor, boutique theme parks that will bear the Dreamworld brand.

This endeavor will unveil its first new FEC later this year at a mixed-use, coastal development in South China that already has residential and retail in place. The first of the theme parks will open at a later date, in the same province.

Based on the comments of Mr. Zeng, CEO of Sino Creations and Xiamen Dreamworld, HoloVis is well on its way to establishing a base in China to support the rollout of these and future facilities. "We initially worked with the HoloVis China division to discuss

our complex project requirements and once we understood the diversity and scale of what HoloVis can offer, we quickly moved to a partner relationship," said Zeng. "We are now working in close collaboration with the HoloVis design team to create and deliver a complete FEC in Xiamen that will focus on immersive and interactive attractions to give our visitors high-end gaming experiences far superior to anything they will have seen before."

HoloVis has, according to Zeng, already become "a major player in China." He said, "We see HoloVis as more than an attractions provider, they fully understand experiential design and their historical position in immersive, simulation and virtual reality solutions means they bring a fresh perspective and unique approach to the entertainment industry. They have proven that they can deliver the type of attractions and experiences that we believe are the future."...





All photos courtesy Knott's Berry Farm

Interactive steampunk

Cedar Fair and Triotech
collaborate on "Iron Reef" media-
based attraction at Knott's Berry
Farm

by Joe Kleiman

For a decade, an 18,000 square foot building in the far southwest corner of Knott's Berry Farm remained closed to the public. Between 1975 and 2004, it housed two dark rides featuring animatronic animals; respectively, Knott's Berry Tales and Kingdom of the Dinosaurs. The building was closed in 2004 and reopened May 15, 2015 with a new, interactive 4D dark ride shooter called Voyage to the Iron Reef.

"It was dark for so long because we were trying to figure out what the right thing was for that space," says Lara Hanneman, Knott's Director of Entertainment Production. "We were flowing with ideas of what to put in there. Cowboys came up. Aliens came up. All the normal things you see in dark rides. We even thought about bringing back Berry Tales, but we realized it could never be as good as people remembered it being."

The new ride would accord with a new corporate policy, "Amusement Dark." The policy was instituted under parent company Cedar Fair's CEO Matt Ouimet to bring dark rides with unique intellectual property to some of the Cedar Fair parks. The first park to receive an Amusement Dark attraction was Canada's Wonderland with its 4D shooter/coaster hybrid Wonder Mountain's Guardian, open in 2014 (see InPark Magazine Issue #53). According to Raffi Kaprelyan, Knott's General Manager, "It helps that we have a corporate team that keeps pushing us along the path that leads to attractions being placed in the right places."

Renewed versus new

In the past few years, Knott's has received much attention for its restoration and reimagining of the Timber Mountain Log Ride and Calico

Mine Train, staples of the park from 1969 and 1960, respectively, and in need of updating. Kaprelyan points out, "Our work on the log ride and the mine train was to bring the technology into modern times. With Iron Reef, we applied modern technology right at the outset."

"The mine ride is more about visual engagement as compared to a thrill ride," adds Hanneman. "In the broader sense, interactivity is more important than just looking at scenes." According to Hanneman, we can expect interactive elements to continue cropping up on park attractions in the future.

Steampunk sealife

The attraction was given an aquatic theme in keeping with its location in the Knott's Boardwalk zone. Its steampunk aesthetic conveys a hip vibe (steampunk refers to an eclectic genre of science fiction and fantasy drawn on the 1800s steam engine era) and is also compatible with the Boardwalk. "Steampunk is really popular," says Hanneman. "We started doing steampunk in our Necropolis haunt five years ago. It worked very well then and is a continuing trend."

A team of eight

Fans of Berry Tales and Kingdom of the Dinosaurs will remember the long ramps that led to the second floor of the building, where the ride station is located. As the ramps were not ADA compliant, they were removed, opening the face of the building. A new stairwell was built (with an elevator for the disabled)

leading to a preshow room where the backstory for the ride is told through a number of monitors.

The backstory is quite simple. A sea captain discovers that a metallic crab has invaded his boat. Creatures are stealing artifacts from the park. He asks his passengers to help defeat them, and steers towards the lights of the park. This sets them up to expect to confront the steampunk sea creatures once they board the train, and shoot at them with special "freeze ray guns."

Groups of eight compete against one another. At the loading dock, guests board four-passenger ride vehicles manufactured by ART Engineering. The vehicles are tethered in pairs, and as they progress through the ride, they turn slightly allowing all eight guests in each pair to face the same screen simultaneously and compete against one another.

The vehicles are equipped with onboard audio, wind effects, subwoofers, and a color coded gun for each player. As they shoot at the targets, their corresponding color appears on screen. Once the ride is underway, players enter a physical set with a boiler. Inside this room, their freeze guns are charged. In the next room, through 3D animation, they enter a submarine and dive to the ocean depths to confront their targets.

Animation was produced by Triotech, which had 50 people working on the attraction for a year prior to opening. According to Ernest Yale, President of Triotech, "Design wise, Voyage to the

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Iron Reef was very much a collaboration between the Cedar Fair/Knott's team and Triotech. The physical set pieces and other theming you can see in the queue area was all Knott's. However, the characters were more Triotech's designs. In a project of this scope, there is a lot of back and forth which is what helps make a better attraction in the end."

Hanneman agrees: "Triotech was very collaborative. Knott's came up with the general concept of undersea steampunk and worked closely with them on the storyline. They came back with concepts and characters and their 3D art is incredible. They took our theming and made the storyline work."

Creative use of screens

The illusion of traveling underwater is produced along the 600 feet of track with interactive 3D projection onto a series of 11 custom screens in various configurations and physical set pieces. Yale proudly points out, "The greatest advantage of media-based interactive dark rides is that they are not pre-rendered. This means that what will actually happen on screen is determined by the guests' actions. For instance, in Voyage to the Iron Reef, a creature will not freeze if it has not been hit by the player's freeze ray guns."

Throughout the ride are "Easter eggs" for Knott's longtime fans: remnants of discontinued attractions "stolen" from the park by the steampunk sealife. They include coaster track from The Corkscrew, the Roaring '20s sign that once lit the area around the ride building, the Walter K steamboat, and a car from Knott's Berry Tales.

At one point in the ride, a single 180-degree screen is seamlessly used to link two different scenes. Yale explains, "There is technology and then there is knowhow. Developing a ride and integrating different technologies to create a compelling attraction is one of our strengths. In this particular case, which I believe is a first in the industry, we simply pushed what we call the 'immersion factor' to the extreme." When guests first encounter this screen, their attention is initially focused on the left side, with the animation gradually moving in on the smokestack of a sunken ship that will turn out to be the villain's lair. Once guests enter the ship onscreen, the ride vehicles physically shift to the right side of the screen, and guests are taken on a simulated journey into the bowels of the ship. By using a single screen, the sense of motion remains uninterrupted by any physical space between screens and the transition appears seamless.

Immediately after the 180 degree screen, guests encounter the main villain of the ride. "We wanted it steampunk trendy, but we needed a twist," says Hanneman, "so we came up with the Kraken Queen."

"We brought in a series of key elements to make the final scene stand out as a strong moment for the guests," Yale explains. "We

decided to introduce the Queen on the next-to-last screen and thus created a confrontation that is part chase, part fight. Then for the final scene, there is this oversized concave screen. This screen was custom-made for this particular attraction." The concave screen, which is shaped like a letter "C," with the center of the screen farthest from the guests, creates a greater sense of stereoscopic depth as the Kraken Queen chases after the attraction's players. Yale points out that because of this factor, it ends up being "more compelling and rewarding for visitors."

The future

Iron Reef can be updated over time or have the storyline changed for seasonal events. Hanneman says the transformation can easily be accomplished: "We can place rockwork anywhere."

The future extends far beyond the Iron Reef attraction itself. Triotech's Yale notes, "Media-based interactive dark rides are so new that there are lessons that can be learned and applied to new projects. At Triotech, we really push this concept. We want to keep developing and pushing the technology to give guests an amazing experience."

Within the Cedar Fair family, Knott's General Manager Raffi Kaprelyan shares, "We learned a lot from Guardian and we'll learn a lot from this one for the next attraction."...

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Solar superstorms

Big data, big movie, big stars

by Judith Rubin

"Solar Superstorms" features another big star in addition to the Sun: popular actor Benedict Cumberbatch as narrator. His presence in this new, 24-minute fulldome science documentary distributed by Spitz Creative Media has reportedly sparked an impressive amount of public demand from people who might not normally find their way into the planetarium.

Remember the fictional events and chain reactions that took a chunk out of Earth's communications in the feature film "Gravity"? "Solar Superstorms" shows how the natural activity of our Sun could lead to an equally disruptive, real-world disruption of the modern communications grid.

"From our vantage point, the sun is calm and unchanging. But in fact, its surface is turbulent and chaotic, with giant waves of hot plasma and towering thunderstorm-like features," said Donna Cox, director of the Advanced Visualization Lab at the National Center for Supercomputing Applications (NCSA) in Champaign, Illinois USA. NCSA and Cox collaborated on "Solar Superstorms" with Spitz Creative Media and Thomas Lucas Productions, in association with Fiske Planetarium at the University of Colorado, Boulder. "The huge supercomputers are our new disaster forecasters," said Cox, "and data is the new digital fuel for visualization studies of natural phenomena."

"Solar Superstorms" was made possible with support from the Commonwealth of Pennsylvania and the Pennsylvania Film Office and funding by the National Science Foundation

(NSF). As of August 2015 it was in 20 theaters and produced in six language versions with more to come. It is being made available in 4K 2D, with 5.1 or stereo soundtrack.

For their part, the supercomputers now being used to analyze the Sun are increasingly busy. Said Cox, "As supercomputer speeds have increased 100+ fold, teams of scientists generate increasing volumes of numbers that reveal the hidden laws of the universe. The goal of our group is to transform this massive data into a cinematic experience that conveys the science." The growing complexity of scientific data sets is complemented by better rendering tools and the heightened display capability of top-line 8K fulldome systems, now accepted among the industry as good enough even to fill the place of 15/70 film.

For the experienced production team behind "Solar Superstorms," it adds up to the ability to take audiences on a glorious, immersive cinematic tour inside the workings of the Sun. Cox described "visualizations of scientific data never seen before by the public - places invisible to telescopes, made beautiful and visceral; the dynamics of the interior of the Sun, plasma, and giant coronal mass injections. A lot of this cutting edge supercomputer science will be new to the general public - in particular the story of plasma, how the sun erupts in violent storms and how they can affect earth's communications and power grids," she said. "The Spitz team has also generated cutting edge animations that contextualize and amplify the scientific data."



"We were able to deliver many great moments and sequences," said "Solar Superstorms" director Thomas Lucas, "for instance, taking us onto the surface of the sun, getting close to the towering, bubbling thunderstorm-like clouds that roil up from the surface and then slip back down, flying in among them, looking at jets of plasma shooting up from the surface..."

The Carrington event

In addition to never-before-seen solar visualizations, "Solar Superstorms" shares a story that today's viewers can relate to personally. It uses the example of a solar eruption that penetrated Earth's atmosphere some 150 years ago to make a point about the vulnerability of our present day communications grid.

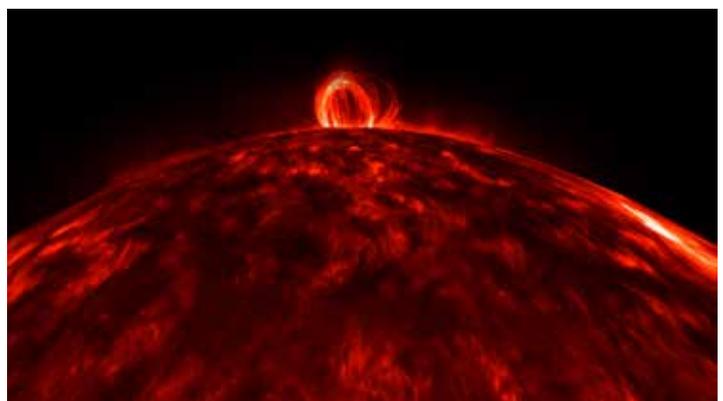
The Carrington Event was named after Richard Carrington, an astronomer who observed and documented it. Even in a much simpler world, connectivity was affected. "The great solar storm of 1859 produced an auroral light show not to be believed, but it also knocked out telegraph systems," said Lucas. "We have much more to lose today." "Solar Superstorms" illustrates the event and documents how scientists are studying ways to understand and detect a similar event.

Live action and special effects are part of the cinematic mix and facilitate the storytelling. The Spitz team, interested in experimenting with and developing techniques for live-action gigapixel photography, went on location to the Rocky Mountains, where the Carrington Event had been witnessed by a Denver newspaper reporter. "The live action sequences lead audiences to a more direct experience of the subject matter," said Lucas. "We knew we could get a lot of vertical dimension to imagery that would work well on the dome - the sky, characters in the foreground, amazing vistas, trees. We worked out scenes, then reconvened in Philadelphia in a green-screen studio to shoot the live action characters. It is this kind of intensive collaboration that I find to be the most rewarding about dome production," said Lucas.

In collaborating with NCSA, "We explore the conditions within the Sun needed to trigger these really massive blasts that lead to something like the Carrington Event," said Lucas. "In all that huge complexity of data, we must pull out some simplicity to tell the story while giving a sense of how complex it really is."

The NSF grant and CADENS

Using supercomputers to simulate natural events is rapidly changing the way science is being done, and behind the visualizations are some of the best peer-reviewed



All photos taken from Solar Superstorms and used with permission

scientific discoveries being shared today. One of the goals of NCSA and the “Solar Superstorms” team is to help create greater awareness among viewers about the growing role of computational science. When we developed one of our previous shows, ‘Black Holes: the Other Side of Infinity’ - it became very clear most general audiences do not yet fully understand scientific visualization, nor how computational science affects their everyday lives in such things.”

Very few places beyond NASA Goddard and NCSA have the resources available to transform big data into cinematic expression. “When you’re talking about multiple terabytes per science project and more than five of these data-driven scenes used in ‘Solar Superstorms’ alone, that is a big challenge that almost no production house or museum can handle,” said Cox. “And very few big data visualization teams are focused on public outreach.”

NSF recently awarded a \$1.5 million grant to CADENS (Centrality of Advanced Digitally Enabled Science) an NCSA-led initiative led by Cox to develop and widely distribute a series of science documentaries highlighting visualizations of computational and digitally-enabled science. “Solar Superstorms” was the first production to receive funding from the grant.

Art-science-entertainment collaboration

From data to cinema is basically a two-step process. Step one, the generation of data: The science team sets up experiments in supercomputers to calculate all the physics in a 3D virtual world. Step two, the generation of pictures: The production team transforms, designs and choreographs the data using

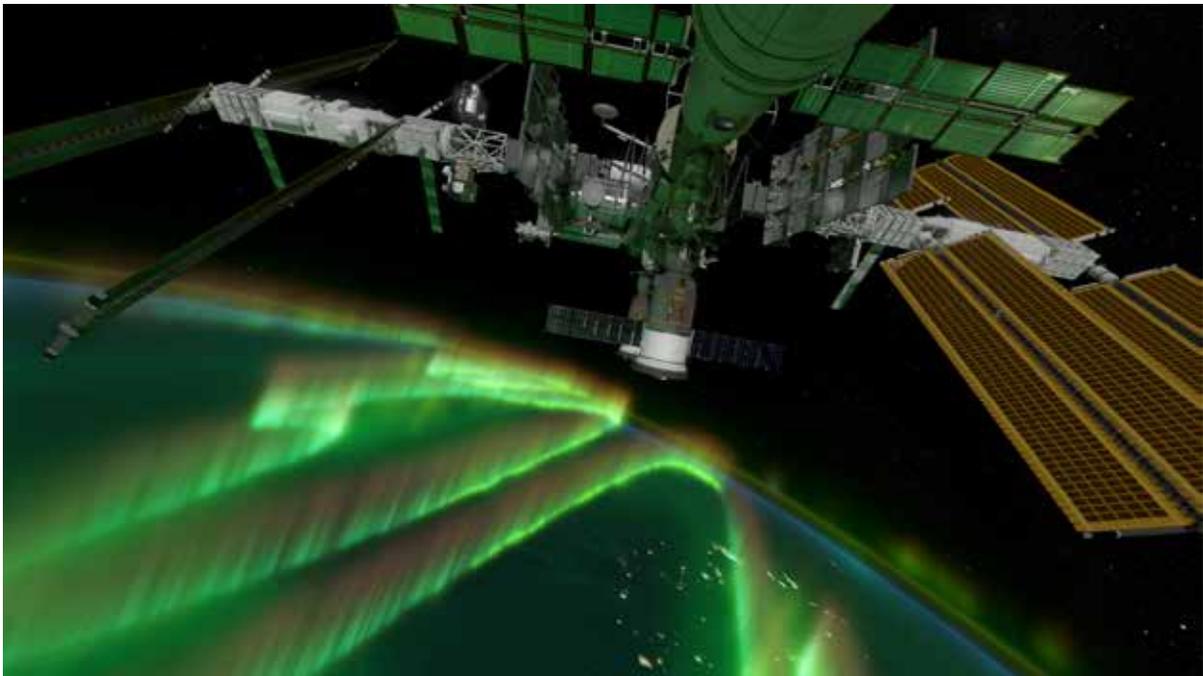
custom software and animation software for rendering. “Transforming billions and trillions of numbers into digital pictures involves artistic selectivity,” said Cox. “We have lots of choice on rendering, timing, pacing, camera choreography, and how we treat data, just as other artists make aesthetic decisions with composition and color in a variety of media.”

Walking the line between science and art to achieve authentic results involves close, extended dialog with scientists. On the one hand: “We discuss issues of data and representation to maintain accuracy,” said Cox. On the other: “We work with Tom Lucas and others who bring artistry and storytelling sensibility, to make sure it captivates while communicating. Tom and the scientific team have frequent conference calls to achieve a balance between being accurate while also being dramatic and memorable. There may be gaps to fill in – for instance, it is necessary to scale time or space in order to travel across the universe. But we remain true to the data and gather scientists’ feedback when we take artistic license.”

“We have the means to create a high-quality, educational show that is about the world people live in, conveys understanding, and gives a thrill ride,” said Lucas. “It’s become our formula for success. It’s a bit journalistic – not fantasy or narrative, but topical – exploring something people are curious about, and telling the stories behind the stories.”•••

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The unique demands of AV design in themed entertainment

by Scott Harkless

For those who have been to a theme park anytime in the last decade, it is impossible not to notice the significant role of audiovisual systems and media. Designers of theme parks and out-of-home attractions are continually pushing the envelope to create memorable experiences and provide options that differentiate an experience from what's available in the home or elsewhere.

Take dark rides for example. This type of attraction has long been a popular standby of theme parks, but has evolved and grown in sophistication over the years.

If we rewind back to the early days of dark rides, we would see a chain of cars or boats on a track advancing at a somewhat leisurely pace from scene to scene of elaborate props, animated figures, scenic lighting, music, and sound effects. A modern-day dark ride, on the other hand, is liable to be a 4D experience. It might have vehicles with complex motion systems designed to taunt riders with sudden changes in gravity and acceleration. The ride scenes might be combined with sophisticated video projection to enliven the scenery or animated figures. Audio still plays a huge role, but the audio systems might be located on-board the ride vehicle to improve sound quality and a more immersive guest experience. Even the vehicles themselves might be completely trackless and wireless.

In other words, the "wow factor" is high, and the technical challenges are varying and multifold.

Let's take a deeper look at what a tech or AV designer is likely to encounter in the creation of a media-based attraction with sophisticated systems.



Scott Harkless
Alcorn McBride



A rack of AV equipment controls is the heart and brains of an attraction. All photos courtesy of Alcorn McBride.

Synchronization

One of the biggest hurdles is ensuring that all of the audio and video effects are perfectly synchronous with other entertainment systems such as ride motion, animated figures, lighting, and special effects. Imagine how nauseating it would be for the ride vehicle to lean sharply to the left two seconds before the ride video leans left. In a 4D Theater application, that water spritz to the face just isn't as convincing if it doesn't happen at the exact same moment the character on-screen sneezes. Synchronizing these systems to avoid lag is critical to a great guest experience and, in the case of rides, is also important to minimize the chance of motion sickness.

The way to guarantee this precise level of synchronization is to use AV, lighting, animation, and ride control systems that work



X-Press: Platform 13 See page 38 for expanded explanation

together harmoniously. For AV gear, this means remote control capability, consistent triggering, and the ability to lock to external clocks like Genlock, audio sample clock (word clock), SMPTE timecode, etc. Show control is critical for managing all of the entertainment systems. When a show control device is combined with the ability to consistently trigger other devices, the result is a system with the power to provide a synchronous and repeatable experience.

Reliability

With parks spending millions of dollars on building and marketing their star attractions, downtime is unacceptable. To add to the challenge, these attractions run repeatedly all day long, day after day, often for many years. When coasters and ride vehicles are involved, sometimes the AV equipment can be subjected to fluctuating power sources (i.e. super capacitors), high temperatures, humidity, vibration and G-forces. With this kind of use and abuse, top quality, purpose designed gear is, in our view, an imperative. Consumer-grade and even common professional-grade electronics and AV gear are not up to the challenge. Just try putting that rack-mount amplifier into a roller coaster and see how long it takes for it to rattle itself into pieces.

As a general rule, it's best to use solid-state equipment whenever possible simply because moving parts will inevitably break with such high levels of use. Especially in the case of ride vehicle environments, gear should be used that was specifically designed for the purpose. It will be more expensive than that rack-mount amplifier, but it will still be in one piece when the ride pulls into the loading station. For media playback devices, solid-state memory (usually flash memory) is a must. Traditional

disk drives are simply not reliable enough unless they are used with complex redundant RAID configurations. Simple, purpose-built, and solid-state equipment will ensure high uptime with little to no maintenance.

Long-term Availability

Sometimes an attraction remains popular for many years and continues to run with little or no alteration to the guest experience. The original gear might still be in use after many years of service. Even the most reliable electronics can wear out after years or even decades, however. When this happens, the ability to replace this gear without having to redesign the entire attraction is of tremendous value. This is why the initial choices of AV equipment and manufacturer are key.

Sometimes designers advocate using more mainstream gear that is cheaper due to the larger production volumes, but such a choice may come at a high price in the long term. As awesome as the themed entertainment industry is, it's simply not a big enough market to justify large production volumes. What this means is that the manufacturer of that mainstream gear has other markets in mind when they make decisions on their product offering. If they decide it's in their best interests to discontinue or redesign their product, the attraction and the attraction operator suffer the consequences.

Themed entertainment is a niche market and the safest bet is to work with companies that focus on that industry. These companies will understand the need for a long-term supply chain to keep attractions up and running. This means they generally keep stock of old equipment or at least design new

equipment that can easily replace the old equipment. In short, if an attraction goes down it can be repaired quickly for the price of a piece of gear rather than a complete redesign effort to navigate around obsolete and irreplaceable gear.

Service

The niche status of the industry also plays into maintenance and service once an attraction is up and running, just as it affects long-term product availability. As popular as themed attractions are, this market is just a drop in the bucket when compared to other more mainstream AV markets such as digital signage, teleconferencing, broadcast, education, etc. It's a simple truth that must be accepted and understood by AV and tech providers and kept in mind by their clients.

AV manufacturers that focus on the broader markets are less inclined to provide the fullest range of service to themed entertainment clients simply because for them, the numbers don't add up. For them, the attractions market is low priority. This can be a huge problem for personnel in charge of building or maintaining a high-profile system. Nobody wants to be in a situation where an attraction is down due to an equipment failure and the manufacturer cannot provide urgent assistance. Nobody likes to hear an automated response when calling for tech support, nor do they like to waste time speaking to agents who have no information on the product or the issue at hand.

This is why themed entertainment is one of those industries that still demands high-level personal service in all aspects of the business. Cutting-edge attraction designs push the limits of what technology can do. Identify and work with the part of the AV community that places high priority on the attractions business, and you will reap the rewards of getting what you need to optimize your chances of success: technical assistance and demonstrations during the design phase of a project, and phenomenal support for the entire life of the attraction.

Despite how comparably small the market for AV products is in themed entertainment, well-conceived and well-built modern attractions manage to successfully push the limits. As an AV enthusiast, it is truly the best industry to experience the latest trends in AV technology and the entertainment value it brings to visitors.

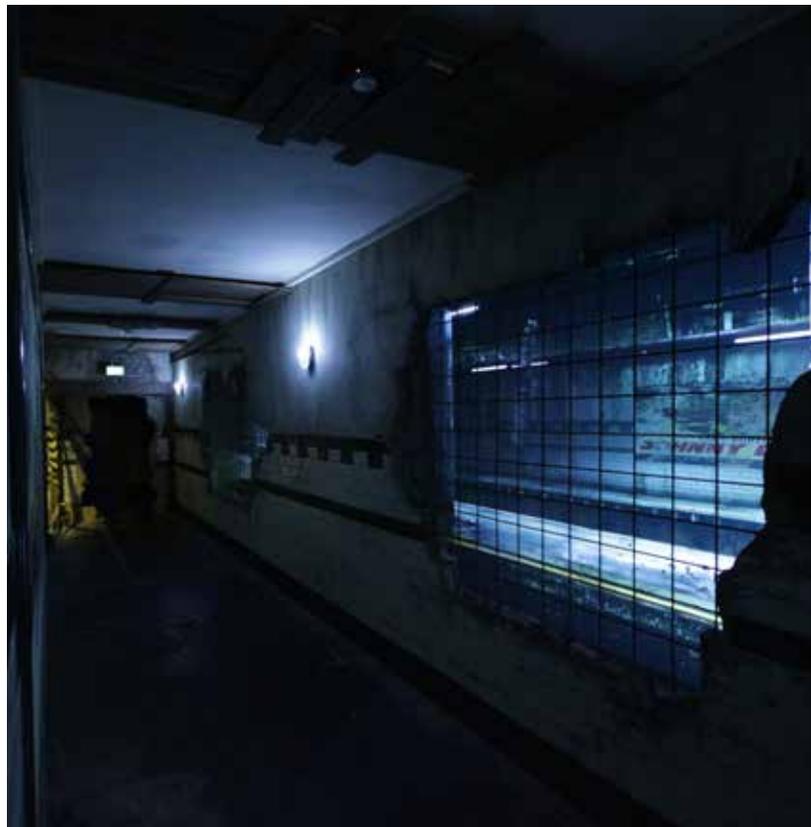
Get to know this industry and you'll see that long-term reliability is not so elusive, because the people who work in themed entertainment are hooked. We love what we do and tend to stay in this niche for our entire careers. For us, the opportunity to work every day in places where people go to have fun is an amazing perk. •••

The Walibi Holland theme park in Biddinghuizen, Netherlands recently rebranded its steel roller coaster as "X-Press: Platform 13," giving a new look and feel to the ride. The ride borrows elements from the theme park's successful Halloween haunted house attractions and adds a mysterious backstory, which unfolds in the queue to extend the guest experience.

Guests entering the queue watch vintage-style news reports describing an infamous subway train crash and the many mysterious events that followed. As guests wind their way through the queue, they are immersed in the an eerie atmosphere of piercing train headlights, blaring horns, squealing brakes and PA announcements.

Arriving at Platform 13, an out of control train races past, its brakes squealing. Then their own train approaches. Once onboard, guests are launched, accelerating to 94.3 km/h in just 2.9 seconds. Entering the final tunnel, passengers see the safety light blinking red, but their train is not stopping. The train seems to slide on the track, and a final pyro effect concludes this heart-stopping ride.

Alcorn McBride equipment provides the elaborate video, audio and lighting synchronization throughout the attraction. Alcorn McBride's V4 Pro frame-accurate controller manages the entire show. The status of projectors and other show elements can be monitored using Alcorn McBride's ShowTouch interface running on an Apple iPad. A DMX Machine and a LightCue create synchronous lighting effects, and control 30 LED fixtures for the phantom subway train approach. An A/V Binloop HD drives projectors for spooky visual displays and creates the out of control train. An AM4 Digital Audio Machine provides audio effects for the finale. A ProTraXX is the main audio source for the queue.



Unique interactives

Educational exhibits at the National WWII Museum,
Expo 2015 Milano and Graceland

by Eli Kuslansky and Gregory Peduto



Eli Kuslansky
Unified Field



Gregory Peduto
Unified Field

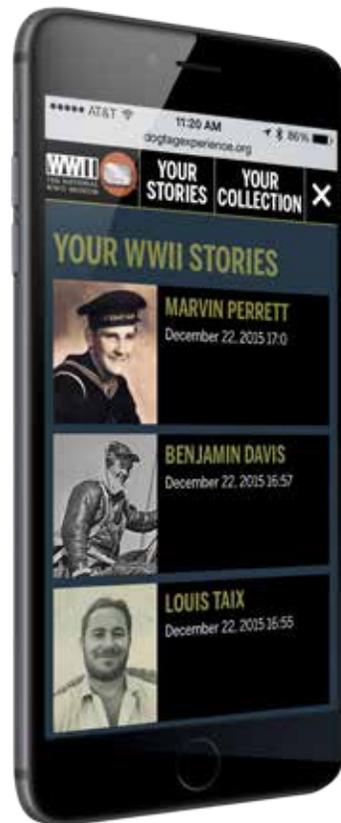
Recently, Unified Field had the opportunity to provide design services on three unique endeavors: The National WWII Museum in New Orleans, The USA Pavilion at Expo 2015 Milano, and Graceland Mansion in Memphis.

Dog Tag Experience

Built to honor World War II veterans, the new Campaigns of Courage Pavilion at the Museum takes guests on an immersive multimedia journey through one of the most cataclysmic events in human history. Using the dynamic nature of media to strike a fine balance between authenticity and the transcendence of time, Unified Field crafted the experience to connect younger visitors with the stories of their grandparents and great grandparents.

The Dog Tag Experience begins at ticketing where each visitor is issued a personalized RFID (Radio Frequency Identification) card. Each visitor registers his/her Dog Tags and selects the story of a unique veteran to follow throughout the war. The cards are used to log in at themed interactive War Station and My Journey kiosks throughout the pavilion. The kiosks are packed with content such as oral history interviews with veterans recorded by the museum's staff, archival videos, artifacts drawn from the museum's collection, animated battle maps, and exploded 3D models of vehicles and weaponry.

The cards enable a visitor to personalize his or her museum trip and save videos and artifacts for viewing at home through the Dog Tag Experience website. In an official Museum statement, Dr. Gordon H. "Nick" Muller, President and CEO of the Museum





Feeding the Planet Together at the USA Pavilion in Milan. All photos courtesy Unified Field.

was quoted: "Personal narratives embody the human dimension of the exhibits inside Campaigns of Courage and, through the use of technology, bring to life the story of WWII. The digital dog tags bring home the courage and sacrifice of the war's participants in a powerful way by connecting visitors to the journey of real servicemen and women. And, after leaving us, guests can go online to continue their exploration and discover even more. It is history that will follow you home."

Unified Field created a custom content management system to manage the Dog Tag Experience, which allows the museum staff to update content across the kiosks and website, facilitating an integrated and up-to-date visitor experience.

Global Food Security

Working in collaboration with exhibit developers Thinc Design, Unified Field created a multi-touch interactive table game titled "Feeding the Planet Together," based on the Economist's Global Food Security Index. It is part of the guest experience at the USA Pavilion at the 2015 world's fair hosted in Milan, Italy and running for six months (through October 31). [For more on the USA Pavilion, see article on p. 15]

The expo theme is "Feeding the Planet, Energy for Life." Many international and corporate exhibits showcase innovative technologies designed to feed the world while respecting

the equilibrium of the planet. "Feeding the Planet Together" accommodates up to six visitors at a time, of all ages, to work together to address and try to solve the problems contributing to world hunger.

The interactive table is a part of a larger story told throughout the USA Pavilion. Global food security is a serious topic, but Thinc Design suggested we infuse playfulness into the interactive, making it non-didactic while communicating complex information that was compelling. Each player's station symbolizes a different facet of food security, which includes: nutrition, farming, policy, research, cooking and industry. 3D models representing food security challenges, such as urban food waste, farming inefficiencies and wasteful irrigation, materialize in the center of the table.

By working together, passing these challenges from station to station, visitors can unlock solutions to world hunger. The game is bi-lingual and visitors can select either English or Italian. Overhead, a Kinect senses when players arrive at the table.

Elvis immersion

To celebrate the life and legacy of Elvis Presley™, Graceland® contracted Unified Field to completely modernize the audio guide at the Graceland Mansion into a multimedia iPad app, presenting an immersive experience for Elvis fans of all ages.

The system works by monitoring Bluetooth iBeacons strategically placed by Unified Field's engineers throughout the mansion. iBeacons function as a content delivery system, transmitting room specific media to the iPads in the form of interactive hotspots, allowing users access to audio, video, photographs and photo opportunities. The "Elvis Photobomb" feature permits visitors to use their tablets to drag and resize iconic images of Elvis into photographs they've taken at the mansion.

Other features allow guests to "favorite" selected content found on the tour to review and share at the conclusion of their tour experience. The tablet tour has been proven to be a popular hit, based on research with guests on site and also from reviews on tripadvisor.com.

The audience and nature of cultural institutions are shifting rapidly. Organizations that understand how to create content and experiences for this demographic, while still being relevant to current audiences, will be best positioned for the

future. From gesture simulations and media walls to large-scale real-time displays, augmented reality and RFID systems, museums, corporations, architects and designers are learning to incorporate modern interactive technologies to emotionally resonate with their audiences. •••

The co-authors are on staff at Unified Field (www.unifiedfield.com): Eli Kuslansky is partner and chief strategist, and Gregory Peduto is writer-researcher. Unified Field designs and builds content rich experiences for international clients to generate sustainable relationships with their customers, audience and networks. Unified Field fuses interactive media with the power of narrative to evoke emotions, provoke deep thought and invite action. Their New York City offices contain in-house capabilities for producing 2D and 3D animations, video, software, research, scriptwriting and hardware, including a dedicated lab for prototyping the next generation of interactive exhibits and convergent technologies.

The iPad tour at Graceland contains information and media, as well as an opportunity to include Elvis in a photo the guest takes.





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JUSTICE LEAGUE: Battle For Metropolis 4D

Merging technologies and moving dark rides forward

by Martin Palicki

Even superheroes need some time to build a theme park attraction. According to Sally Corporation CEO John Wood, the idea for developing JUSTICE LEAGUE: Battle for Metropolis for Six Flags had been percolating for over a decade.

"We had been talking to Six Flags about using the JUSTICE LEAGUE IP in an attraction for at least ten years, but things really started to move when we approached Six Flags in early 2012," explains Wood. They talked about the JUSTICE LEAGUE: Alien Invasion 3D attraction Sally was in the process of building at Warner Bros. Movie World in Australia, which opened in September of 2012.

JUSTICE LEAGUE: Alien Invasion 3D is a leisurely paced dark ride that combines a score-based shooting attraction and the JUSTICE LEAGUE theme. Although there is no formal connection

between Movie World and the Six Flags parks, Six Flags does have access to the DC Comics IP (which is owned by Time Warner) and park executives knew they wanted an attraction based on the DC Comics characters.

The Australian attraction was an important step forward in the evolution of dark rides. Sally had been installing shooting-gallery style dark rides for many years. Starting in the late 1990s, destination theme parks began adding high-end projection-based media dark rides with motion base vehicles. Alien Invasion was a step towards bringing those concepts and technologies together.

"For the Six Flags ride, we all wanted a new story and ways to integrate the technology to involve visitors more in the show action," says Wood. "We really felt we were superheroes of the

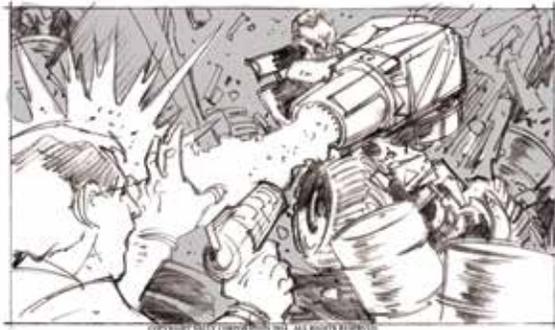
attractions industry, on a mission to bring high-end attractions to life at the smaller parks.”

Six Flags liked what they saw in Australia and saw the potential for more. In 2012, Wood brought in Rich Hill, Creative Director for Sally, to work with Tom Iven, Senior Vice President of U.S. Park Operations, along with Les Hudson and Sam Rhodes, Six Flags Corporate Design, on developing a storyline and concept.

According to Wood, JUSTICE LEAGUE: Battle for Metropolis differs from the Australian version in several significant ways. First, it was important to Six Flags to have a dynamic vehicle that could spin, accelerate quickly, and move in sync with the projected media.

While the park wanted the attraction to appeal to the family market, they also wanted the ride to meet the needs of their thrill seeking population. The second major improvement came courtesy of the Unreal 4 game engine (sourced and integrated by Pure Imagination), which allowed for real-time game play and Alterface Projects’ laser and camera scoring system. This meant that the ride designers could designate anything as a target, and players could rely on the knowing who the “bad guys” are rather than seeking out a specific target shape. Action on the screens reacts to what players shoot at, so the ride becomes much more realistic and intuitive. The powerful game system, coupled with advanced animation and projection systems, elevates the guest experience of this regional park attraction to rival that of a destination park.

From concept, to installation to finished experience, Sally’s Rich Hill helped bring the Justice League story to life. Photos courtesy Sally Corporation and Six Flags.



Be Amazed



Photo courtesy of: BRC Imagination Arts, US

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Sally played the role of design / build contractor, starting with the conceptualization of the ride package and writing the script. Sally also helped assemble the team of experts that brought the project together. Oceaneering Entertainment Systems handled the ride system, Pure Imagination oversaw CGI production, Lexington Design & Fabrication provided scenic construction and the gaming system was created by Alterface Projects.

Six Flags opted to open two versions of JUSTICE LEAGUE: Battle for Metropolis, one at Six Flags Over Texas (Arlington, TX) and Six Flags St. Louis (St. Louis, MO). Both sites selected were existing buildings that were retrofitted. In Texas, the ride was going into an old theater, with an additional building added on over the reservoir for the park's rapids ride. In St. Louis, the ride took over space from "Scooby Doo's Haunted Mansion" boat ride (also a Sally creation), which required filling in the former boat troughs to create a level floor. Both rides contain the same scenes and show elements. The St. Louis version has more space and has more ride track between the scenes.

The ride's iconic Joker animatronic also includes technological improvements. Advances in skin materials and new articulation of the character's mouth make him more lifelike. "Animatronics are constantly evolving," says Wood. "They are really becoming more of an art form."

Developing the ride and storyline

Sally's Rich Hill gets the superhero's share of credit for bringing JUSTICE LEAGUE to life. As lead designer on the project he led the ride from concept through installation to opening.

Guests enter the Hall of Justice and learn that several members of the JUSTICE LEAGUE have been captured. They need everyone's help to find them, free them, and then capture the Joker and Lex Luthor. Guests move on to Cyborg's lab where they learn about the ride vehicles being provided and the technology riders will use to stun villains and free the heroes.

Guests then grab 3D glasses and enter the six-passenger ride vehicle. According to Hill, the ride was always designed with 3D media in mind. "We wanted the characters and scenes to pop out at guests, and the best way to do that is with 3D," explains Hill. The team selected RealD for the 3D projection system.

Sometimes it is simple technology that can have a big impact. Hill pointed out that the doors dividing scenes are new sliding doors created by Besam and manufactured by Door Control Inc. A traditional dark ride door swings open, which takes a longer time than a sliding door and uses a lot more real estate. Ride vehicles have to travel forward past the door arc so the doors can close. With sliding doors, the vehicle can turn directions much sooner, freeing up the layout significantly. Hill says he got the idea on a visit to the local grocery store, and has been really pleased with how they have blocked light and sound between the different scenes.

The ride layout takes vehicles through a series of fabricated sets and CG environments. "We worked hard to mix the practical with the virtual," says Hill. "Tangible effects make a difference. And for the CG portions, we took a lot of care to make it look like virtual vistas, as opposed to just sitting in front of a tv screen."



Six Flags' Brett Petit, Sam Rhodes and Sally Corp's John Stegall look at set pieces for the new ride in Sally's Jacksonville, FL facility. Photos courtesy Sally Corporation and Six Flags.

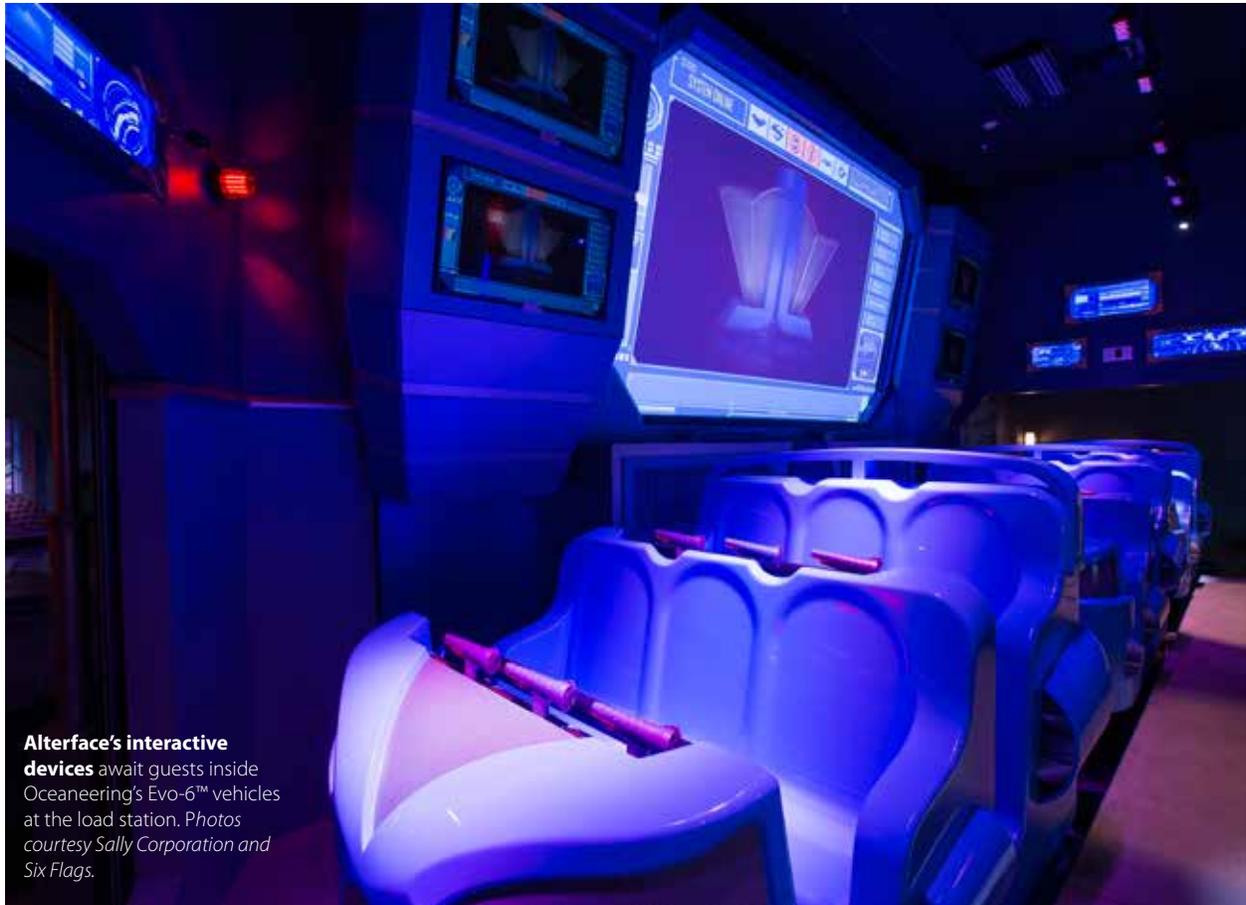
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Alterface's interactive devices await guests inside Oceaneering's Evo-6™ vehicles at the load station. Photos courtesy Sally Corporation and Six Flags.

During the trip through Metropolis players can shoot at targets both on the screens and in the real environment. The second half of the ride takes place in a series of immersive curved screens designed to cover players' field of sight. At the end, scores are calculated and displayed, along with a photo of each player taken earlier in the ride.

A new vehicle for fun

The six-passenger vehicles for the attraction are Oceaneering's Evo-6™ product. The JUSTICE LEAGUE attractions were the first installation of the Evo-6™, which is derived from an 8-passenger vehicle called Evolution, first debuted in 2005.

Each vehicle has a full motion base capable of 360-degree spins (yaw). The vehicle also contains onboard lighting and audio. Onboard audio playback comes from an Alcorn McBride AM4 Digital Audio Machine. Audio amplification comes from Alcorn's AmpTraXX amplifier. Both of these units are mounted together using a special bracket that Alcorn designed to save space in the ride vehicle. For both Six Flags attractions, the vehicles also contain a strobe light used sparingly throughout the ride.

The maximum speed for the vehicles is six feet per second, although they rarely go that fast. Oceaneering's Nathan Marks,

project manager for the Evo-6™ vehicles says the gaming element requires slower movement. "When players are aiming at targets, we don't want to spin them around or move them too quickly along," explains Marks. "In St. Louis, we had more space between scenes so we are able to take the vehicle up to full speed several times during breaks in the game."

Fighting the Lex-Bots

The gaming system is a core element of the attraction. Alterface Projects developed the patented interaction system, which is based on laser and camera detection technology. According to Alterface Projects CEO, Benoit Cornet, "This system avoids putting fragile components into the interactive devices, which means simpler and cost-effective maintenance."

Each vehicle wirelessly transmits scoring data to a central computer located backstage. This isolates the sensitive equipment from the vibrations and movement of the ride vehicle, enhancing reliability.

The gaming system is noticeably different from the Australian attraction. "The system is largely invisible to the guest," says Benoit. "The camera and laser system allows virtually anything to become a target."

In the case of JUSTICE LEAGUE the team took the technology one step further and created moving targets on a fog screen. When Alterface and Sally were working on the Australian ride, they ended up with an extra projector and during the install they used it to try and project 3D onto the fog screen in that attraction. When it worked, one of the Alterface crew set up the gaming system by the fog screen to see if it would read the scoring. It proved to be effective, but it was only temporary. As Rich Hill likes to say: "It was a little secret we kept in our back pocket until the Six Flags projects happened."

Now, guests round a corner and see a fog screen in front of them with an army of Lex-Bots (small menacing robots sent to protect the villains) appearing to move toward the vehicle. As players shoot at the fog screen the Lex-Bots respond. As the vehicle breaks through the fog screen riders suddenly find themselves in an entirely new scene. The moment is startling and powerful; an effective deployment of existing technologies in an entirely new format. That, in essence, is what makes JUSTICE LEAGUE a success.

Who's in charge?

With such a dynamic ride environment, the show control systems might be complicated. Not so, says Sally's Technical Director John Stegall. "Three main systems are able to operate the whole attraction," says Stegall. Sally utilizes four Weigl show controllers that run all of the show elements, including the preshow and load area monitors.

Oceaneering's ride control system monitors the exact position of each ride vehicle. It communicates that information to both Sally's show control system, which triggers show elements, and Alterface's gaming control system, which initiates and monitors game play. Media for the attraction's six projection screens is played back from the Alterface servers.

Both attractions have received impressive reviews from fans in St. Louis and Texas. And according to John Wood, it's only the beginning of a dark ride renaissance.

"There are a lot of things contributing to the resurgence of dark rides today," says Wood. "Technology is one of those things, but it's also time. There is an increase in demand worldwide that wasn't there in past decades."

Six Flags CEO Jim Reid-Anderson seems to agree. At the IAAPA Asian Attractions Expo Leadership Breakfast, when asked about the success of the attraction, he hinted that more are in the pipeline: "[Interactive dark rides] are probably a fundamental part of our plan going forward."

...



Front row: Ron Johnson, John Wood, Steve Martindale, Donna Gentry, Rich Hill
Middle row: Rick Rhodes, Mike Sossamon, Sam Rhodes, Les Hudson
Back row: GREEN LANTERN, WONDER WOMAN, SUPERMAN, THE FLASH, BATMAN
Photos courtesy Sally Corporation and Six Flags.

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IAAPA returns from Hong Kong

InPark reports from the 2015 Asian Attractions Expo

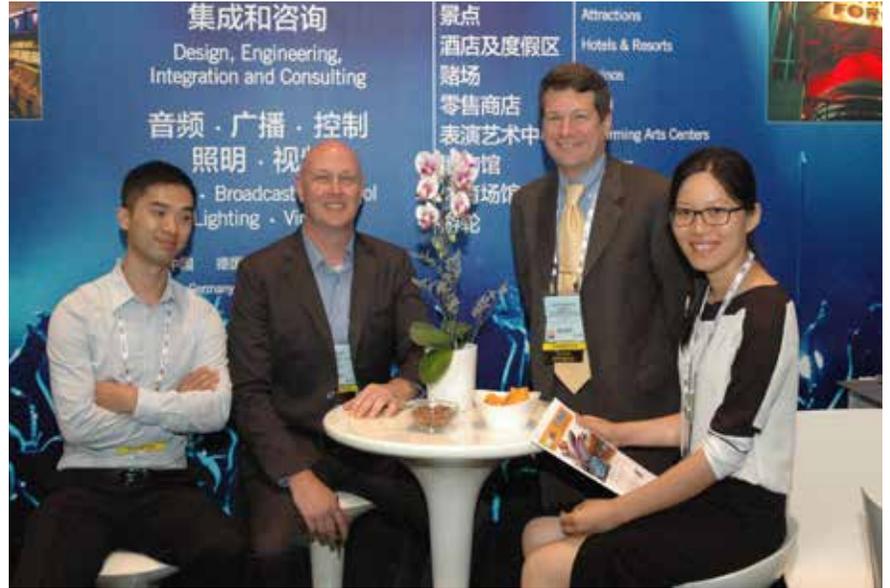
Asian Attractions Expo (AAE) 2015 attracted an estimated 8,500 total participants; broke records for the size of the trade show floor and number of exhibitors; delivered information-packed education programs; and featured sold-out networking events at Hong Kong-area attractions. Asian Attractions Expo, which is organized by the International Association of Amusement Parks and Attractions (IAAPA), took place at the Hong Kong Convention and Exhibition Centre, 16-19 June.

Based on preliminary estimates, a total of 8,500 people participated in the show from 74 countries, including 6,100

buyers. A record 353 exhibiting companies from 40 nations filled 9,432 net square meters of space on the trade show floor.

At the event's Opening Ceremony, Ocean Park provided a spirited welcome performance and IAAPA VP of Asia June Ko introduced Mickey Mouse and a team of performers from Hong Kong Disneyland's Paint the Night Parade.

Gregory Su, Hong Kong's Economic Development and Tourism Minister revealed that the government is investing \$80 million to increase tourism in Hong Kong. They are also offering a drawing



Clockwise from top left: Attendees learn about membership in the Themed Entertainment Association (TEA); FUNA's Peter Qui, Dave Cline, Scott Arnold and Feiyan Peng; Brogent Technologies' Johnny Huang and Vekoma's Jeroen Holman; Birket Engineering's Winnie Lam, Steve Birket and Jerry Birket; Steve Wylie and Michael Reid of Iconpath Curated Experiences.

for visitors to enter with grand prizes of luxury return trips to Hong Kong. Their marketing is designed to encourage visitors to shop, eat and play in Hong Kong.

On the trade show floor, the mood was optimistic as people commented on the quality of buyers at the event.

"Based on initial traffic to our booth, we are excited about the growth of the industry and of this show," said FUNA's Scott Arnold, a gold sponsor of the show. "It's our fourth year exhibiting and it's been good to see the progressive growth of the show."

"It's our first year having a booth at AAE," said Brogent Technologies President Johnny Huang. "It's a good show with a lot of people. We have seen a lot of serious people – serious buyers – coming to see what we offer."

"We really like the quality and branding of the show and find it continually elevated from year to year," said ProSlide's Chelsea Ogilvie. "It's refreshing to see how many big freestanding booths are on the floor this year."

Artec3D

Artec3D brought their 3D scanning booth: Shapify. People can scan themselves and then receive a ready to print 3D file of themselves. The ultimate souvenir requires a bit of patience though, as it requires 12 hours to print on a full color 3D printer. Customers can order the models from Shapify or use a local 3D printer. More info at shapify.me

Actcatcher

Actcatcher.com showcased a new freeze-frame type attraction. 50 DSLR cameras mounted in a 360-degree ring capture a single moment in time (usually someone jumping) and process it into a short video, showing the moment from all sides (think "The Matrix") The Thailand-based company has used the setup at brand events, but they can also theme the structure to incorporate it into an attraction. The system is available for sale or on a revenue-share basis. The company is expecting the first park installation to be in Qatar soon.

FUNA

FUNA was finalizing work on the Detroit Outdoors Museum, which opened mid-July. The project has taken a vintage factory building and turned it into a multi-story interactive highly-themed experience touting all the great outdoors the state of Michigan has to offer.



Clockwise from top left: TEA past president George Wiktor of Prana Studios and Michael Thayer of Michael Thayer Productions in the TEA booth; John Wood and Lauren Wood pose with a Sally Corporation animatronic; Smart Monkeys' Mitch Schuh and Stephan Villet are joined by translator Judy Chu. *All photos by Martin Palicki.*

Smart Monkeys

According to Stephan Villet, Owner of show control specialist Smart Monkeys, two years ago at the Asian Theme Parks and Attractions Summit, show control wasn't very well understood. Now people know what it can bring to a project and want to incorporate the show control systems into the overall design.

Currently, Smart Monkeys is working on multiple projects in the Middle East and will be announcing some interesting projects in Asia soon.

Alterface Projects

Alterface was promoting their recent success on the two Justice League attractions at Six Flags Over Texas and Six Flags St. Louis. The attraction features the world's first interactive fog screen, allowing guests to shoot at targets on the fog screen moments before passing through it.

Alterface engineers came up with the idea on a project with Warner Brothers Movie World and set up some equipment to test it. It was successful so they included it as part of the US JUSTICE LEAGUE attractions. [See feature article on p. 43]

The company has half a dozen IP-based projects in the pipeline to include video game brands and traditional media brands.

"The technology has not been explored to its full potential. We are still focusing on creating a compelling experience rather than just the technology of product," says Alterface's Benoit Coronet. "We are currently working on motion detection technology and integrating that into game play. We want to provide alternatives to the shooting paradigm and develop new ways for guests to interact with the attraction."

Themed Entertainment Association (TEA)

During a luncheon held at AAE, Chris Yoshii from AECOM said, "This is the golden age of the theme park industry in Asia." TEA President Steve Birket says it is also the golden age for TEA in Asia.

"The Asia Pacific division is a high growth area for TEA," said Birket. "Also, the Next-Gen community in Asia is now recognizing TEA and themed entertainment as an industry and as potential career path."

Brogent Technologies

Brogent is working on several I-Ride flying attractions, following up from their Fly Over Canada attraction in Vancouver. Minnesota's Mall of America I-Ride opens in April 2016. Abu Dhabi opens one in 2017 – which, for a change of pace will not have a specifically flying theme. At the end of summer 2016 expect "This is Holland" to open in Amsterdam which

Q&A with Paul Noland

IAAPA President and CEO Paul Noland sat with IPM's Martin Palicki during the 2015 Asian Attractions Expo to talk about the show, recent IAAPA successes and the future of the association.



Why did IAAPA bring AAE to Hong Kong?

It's where our buyers and exhibitors like to come. The industry has had great success here and it's home to several great members. The [convention] facility here is top-notch, the destination is easy to get to, and we have several facilities nearby for members to experience. Hong Kong represents the whole package.

What has been your impression on the show floor?

Our exhibitors had a great week. We had record setting numbers in Beijing last year, but the qualitative reports here have been extremely positive. The quantity of buyers was good, but the quality of buyers was even better.

Parks and park products seem to be highlighted at this show. Are you focusing on other segments in Asia? What about the Asian casino market?

That is not necessarily purposeful. We have cultural attractions come to us for many things and we provide education and other benefits to our non-park members. A lot of our education tracks are very broad and applicable to all our members.

We have casinos come to us seeking help with theming and other aspects of their business. It is the same type of value-add we provide to our museum, zoo and aquarium members.

How is the education program planned?

We have an education subcommittee in Asia. They survey members to see what they would like to see at the show. Once we determine the needs, we reverse engineer the program to meet those needs. Education is one of the top three reasons people come to this show.

What are you working on improving this year?

Our strategic plan from a few years ago identified ways in which we can diversify the experiences IAAPA offers away from the trade shows. We want to offer other services such as education and certification programs. This year we have been releasing the lion's share of those initiatives.

Also, we want to be a resource for industry info and data. Our members want data for the whole industry and seek forecasts for the future. We've developed an industry outlook report we

published in November 2014 and are working now on this year's report. It is a free service to members.

How can the industry keep Asia a sustainable market?

I think there are three steps that are applicable here in Asia, as well as around the world. Park operators have to: 1) provide great service; 2) continue to maintain and invest in park upkeep and new products; 3) focus on safety.

What can people expect from future AAE events?

We want to dial up our education component. We did a good job but the feedback is that attendees would like more.

We are also looking to rotate to new cities. As we've grown we need more space, which limits where we can go, but we want to rotate more broadly than we have. We try to find cities where our members want to go that can handle our logistical requirements. In the past we've been fairly conservative, but we are trying to be more aggressive in finding places where members say "I've always wanted to go here, but not necessarily alone. I'd go if IAAPA is there."

What are you most proud of accomplishing?

I am proud of the way we have grown the three IAAPA shows along with the level of professionalism. After a show while visiting a park I always hear that a member learned about some product or service they purchased at an IAAPA event.

Additionally, behind the scenes we have been working on retooling our governance structure. The global nature of IAAPA was sort of added on to our structure, so we pulled everything back and retooled it to have IAAPA be a global organization at its core. It hasn't been easy, and there are not a lot of truly international organizations, but I'm proud of the team for how they implemented this.

What moment this week made you think "I love my job!"

At the leadership breakfast, Jim Reid-Anderson had a video of clips of people in their parks with captions for why they are there: celebrations, remembering loved ones, escaping challenges, etc. He shows that video to staff to remind them why they come to work every day, and it resonated with me as well. Sometimes it's not just a day in the park – it's a lot more than that. ...



Attendees at the TEA Mixer
 raise a glass to toast the
 successful week in Hong Kong.
Photo by Martin Palicki for TEA

will provide a 45-60 minute experience including the preshow, flying attraction and post-show.

According to Brogent the technology is now to a point where it's suitable for CGI experiences, opening up a whole range of new content possibilities.

George Wiktor, Prana Studios

IPM ran into George at the TEA booth where he proudly proclaimed "I'm back making movies!" George is working with Prana Studios on two flying attractions for the Lotte Group, to be located in China. Both rides will be utilizing the Dynamic Attractions ride system.

"The best flying films rely mostly on the movement of the film and only use the ride base to accent the motions," explained Wiktor.

WhiteWater

Sean Hinton, Executive Vice President at WhiteWater was busy promoting the company's 100 completed projects in Asia. He observed that the trend in Asia is for larger parks. "We don't just supply waterslides to our Asian clients," commented Hinton,

"They come to us because we are with them through the entire waterpark process, from design to manufacturing, installation and maintenance for years to come."

Triotech

"We see the trend of interactive rides only accelerating and consider ourselves a leader in that industry," said Triotech's Christian Martin. "Just walking around the show floor there are a lot of interactivity-based companies. We also see a trend of storytelling in an attraction extending beyond the actual ride. It's more of a whole experience than just a single ride."

Of course, the non-interactive theaters will still exist. A large theater that needs to have a high throughput will not be able to support the same level of interactivity as a smaller one. It just depends on a company's business model. China seems more interested in motion seats and 3D/4D experiences for large, multigenerational audiences, but in the US the market is seeking more interactivity and intensity.

Triotech is working on installing an interactive dark ride in the new Studio City Macau as well as one at Dubai World with details soon to come. •••

IAAPA's next major conference is the Euro Attractions Show (EAS), which will take place in Gothenburg, Sweden. It will be the very first Euro Attractions Show located right next to one of Europe's major amusement parks: Liseberg. Many of the education and networking events will also take place inside the park. The exhibit floor will offer more than 425 exhibitors from over 35 countries showcasing different products and services. More than 9,000 attendees will see products including roller coasters and attractions, ticketing services, 4D and 5D theatres, water-rides, rides for small children, themed areas and much more. All EAS attendees will also have the opportunity to enjoy the park's attractions. EAS 2015 will offer over 20 hours of educational sessions, forums, attractions tours, leadership development and networking events to improve your business.

EAS Website for more info: <http://www.iaapa.org/eas>

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At SATE, T stands for Technology

TEA's annual conference on themed entertainment design and development

IPM asked SATE and TEA leaders about the technology component of the conference, and the industry.

"There's no app for this"

Paul Kent, Electrosonic

SATE '15 Technology Segment Chair



This year for the SATE conference the technical sessions are looking at the uses of technology that will influence the industry in the coming years. We are looking at technologies that are just starting to be used or thought about for the entertainment industry as whole. We are going to be looking at learning robots, using brain waves and your thoughts to control objects and interact with your experience. Virtual reality is now a reality and we will be looking at two styles of virtual reality, its use in immersive gaming and the use in the "real world" to enhance your ride experience. We have all seen drones in the news, and we are going to bring them to SATE to talk about their ever increasing use in creation of content for experiences, and their participation as elements in experiences. These threads will be brought together in a joint session with Steve Birket where we will discuss the real engineering behind the experiences that we live with everyday, and how elements are engineered to be reliable, repeatable and safe, in a session called "There's no app for this."

Democratization of technology

Steve Birket, Birket Engineering

TEA International Board President

I remember being on an attraction installation for a new Orlando park about 1989. Only the owner project manager had a (large) cell phone on his belt, no one else on the project did. You knew he was important!

Years ago many of the technology methods and tools used in our industry were held by a few, those having special training and tribal knowledge of the methods and tools. Elements of this remain certainly, and provide the creative spark, however a large component of this knowledge is now more common, and there are many more paths and places to gain this knowledge.



Technology is applied in an increasingly uniform manner, benefiting the technologist and guest alike. International standards exist and are increasingly accepted. As years ago standards did not exist in many areas of our unique industry, the best practice was determined by experienced people sitting around a table considering scenarios and outcomes. Over time these best practice discussions have evolved into formal industry standards.

The expectation for what technology will provide continues to rise, and the designer and guest just want the magic to occur. If the engineer does his job, his work is transparent and it must have been easy!

Collaboration and creativity

Loren Barrows, Alcorn McBride

SATE '15 Co-Chair (with Shirley Saldamarco of ETC Carnegie Mellon)

The entire themed entertainment industry is about collaboration so it's not coincidental that designers and technologists work together as a team to create the total guest experience. Designers are focused on story and the architectural details that

SATE runs Sept 17-18 at Carnegie Mellon University, Pittsburgh • <http://www.teaconnect.org/Blog/SATE-Blog/>

result in the complete immersion of the guest into the experience. Complex technology must be hidden and complimentary to the story and architecture. As Ed Catmull [co-founder of Pixar Animation Studios and President of Walt Disney and Pixar Animation Studios] once said, "Creativity inspires technology and technology inspires creativity."



Loren Barrows

It's ultimately all about the Experience, and how you get there. That is what the SATE equation is all about: integrating story, architecture, and technology to transport guests to an immersive themed experience that fulfills the vision for the project. The best experiences seamlessly integrate story, architecture, and technology. The collaboration between trades is essential for success.

Great guest experiences also connect on a personal level. I admire the talent in our industry that makes this happen on a global scale and continues to raise the bar.



Shirley Saldamarco

Hosting SATE '15 at ETC Carnegie Mellon reinforces this professional culture. My Co-Chair, Shirley Saldamarco, says, "As an educational institution, the ETC organizes students into multi-disciplinary

teams and teaches collaboration and team work above all else. Expertise diversity leads to more conflict, disagreements and debates and that's precisely what leads to the creation of higher quality and more innovative products."...



**The
Swimsuit
Issue**

Next Issue: Waterparks, Zoos & Aquariums

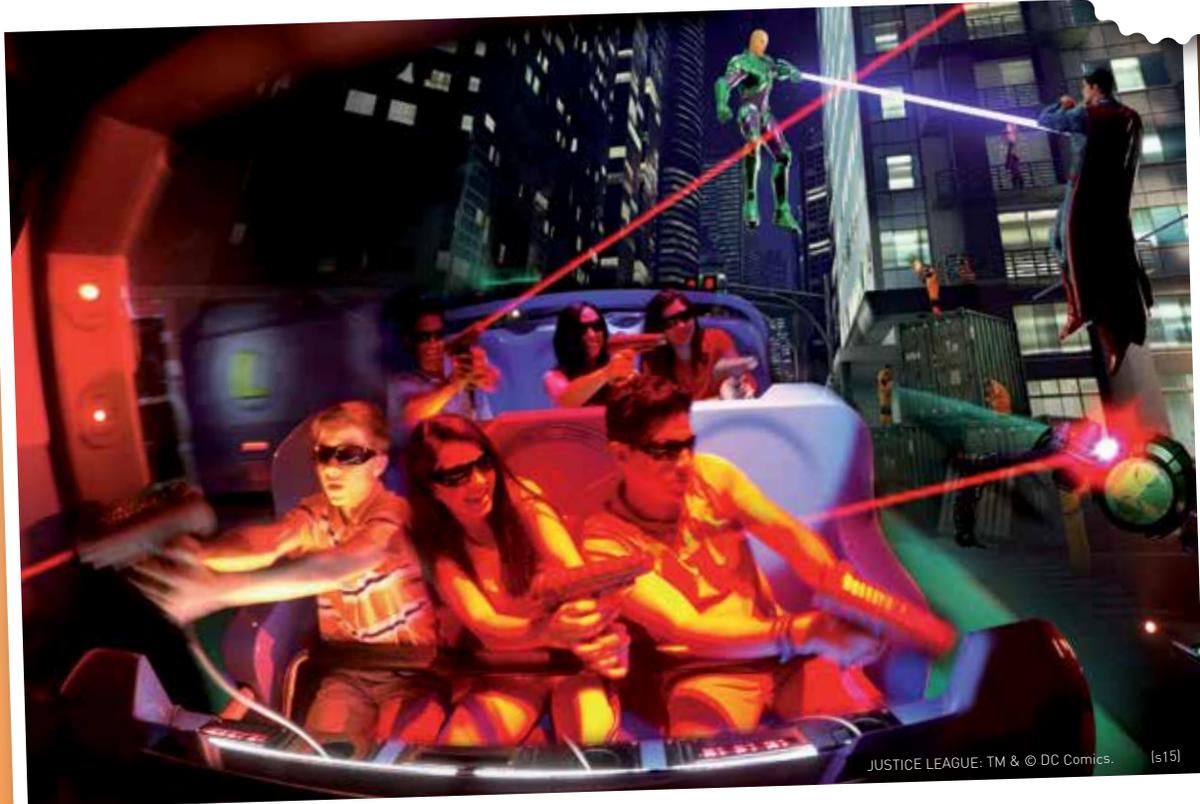
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JUSTICE LEAGUE: TM & © DC Comics. [s15]

JUSTICE LEAGUE: Battle for Metropolis

Alterface Projects is proud to provide the interaction system on SixFlags' new state-of-the-art dark rides designed by Sally Corporation, featuring stunning 3D, special effects and motion-based vehicles.

Opening 2015 in SixFlags St Louis & SixFlags Over Texas.

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