IT'S A SCREAM!
The infectiously interactive Gantom Torch technology

DAN FAUPEL

VR & AR
Experts provide updates on VR, AR & Pokémon Go

Ride Engineering
The skills behind some of the world's greatest coasters

Show Roundups
InPark reports from InfoComm & IAAPA's Asian Attractions Expo

Innovation and creative partnerships drive success

*Martin Palicki,
IPM publisher*

With over 400 exhibitors, IAAPA's 2016 Asian Attractions Expo offered plenty in the way of new ideas and concepts. The trade show floor was bursting with technology. The most prominent offerings? Dome theater attractions and virtual reality applications.

While it was clear that the presence of Chinese vendors is increasing, the show remains vitally important to Western suppliers. Companies that typically don't exhibit at IAAPA expos (such as Thinkwell) had a large presence this year. Similarly, Scott Arnold of Wärtsilä FUNA commented that his company is planning an even larger showing at the 2017 expo in Singapore.

With 11,500 attendees, attendance at the event was up, and exhibitors took note. "We usually are mostly busy with drop-in visits, but this year we had meetings with current and new clients set in advance, so we were extra busy with the addition of the drop-ins," said Mack Rides' Maximillian Roeser.

It was also clear that there is an emerging trend of collaboration. Technology providers are partnering with creative designers and content producers to develop turnkey projects for operators. The partnerships are designed to specifically help smaller studios and developers who are just entering the theme park market, especially in Asia.

The Expo, coupled with Disneyland Shanghai's impressive grand opening, are clear signs that the market is very positive for the Asia Pacific region, and will remain so for some time to come.
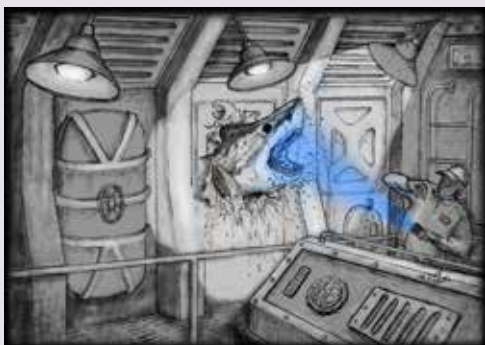
COVER: Dan Faupel, VP at Creative Visions, illustrates his idea for incoporating Gantom Torch technology into an attraction **Full story on p 20**

The new interactivity and the new/old technology

*Judith Rubin,
IPM editor*

The symbiosis of design and technology was never more apparent in our industry than it is now. Designers and tech specialists sit side by side on creative teams, working closely together from the early stages of a project. And creativity is everywhere. The ideas for how to apply a technology can come from many sources: the design firm that brings a fresh perspective, the integrator that recognizes compatibilities and solutions, the manufacturer that knows it intimately.

Our cover story about Gantom technology reflects that - but there are other examples, such as Harman's new business vertical devoted to themed entertainment, which is covered in our InfoComm report. Harman has many relationships with designers, suppliers and integrators – but they will also interact directly with the end user. Companies are becoming much more active and pro-active about influencing how their products are used. When they follow up by sharing those examples with the professional community, inspiration and more creativity result. Digital technology breaks down barriers in more ways than one.

Sometimes what's called a new technology is really just a new application of existing technology – a fresh approach to its use, fueled by advances either in the technology itself or essential components, greater affordability or availability, ease of use, ease of integration with other technologies or the elimination of some past barrier to public or industry acceptance. Industry veterans may have to shake off previous notions and put on their fresh eyes when something comes around for the second or third time. Dome projection, 3D, VR, AR and IR, real-time image generation and many more such are coming of age. Interactivity has leapt beyond pressing a button or touching a screen – now we have entire environments that respond magically, in real time, as if they were alive.

Joe Kleiman is News Editor for the InPark Magazine website. He has over 20 years management experience in the attractions and giant screen film industries and as a zookeeper, cared for animals ranging from penguins to rhinos.

Contact Joe at joe@inparkmagazine.com and follow on twitter @ThemedReality.

staff & contributors

PUBLISHER
Martin Palicki

EDITOR
Judith Rubin

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

CONTRIBUTORS
Kevin Dazey
Matt Kent
Curtis Lingard
Keith Loria
Hilary McVicker
Cliff Reeves
Randy White

DESIGN
Martin Palicki

advertiser index

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

A vehicle for fun

The culture of Oceaneering Entertainment

by Matt Kent

Evolution™ vehicle used in multiple Justice League attractions at Six Flags parks

The dark ride has come a long way, from the first iterations by early theme park pioneers, to the intensely immersive and technologically complex themed attractions of today. And the challenges that a ride engineering firm faces are vast. Oceaneering Entertainment Systems (OES) has built its reputation on the production of highly innovative and advanced dark ride and show systems. Today, after 25+ years, with more than 50 high-profile projects, multiple awards and patented designs, and millions of pounds of equipment installed all around the globe, the company is internationally known and recognized as a leader in themed entertainment ride engineering, innovation and technology.

To do that requires something more than just machinery. It takes a combination of cutting edge technology and thoughtful, complex programming that fulfills the requirement of performance as well as multifaceted communications with a myriad of effects and cues. Creative storytellers appreciate OES ride systems for their highly dynamic and powerful capabilities, and ride operators value their rugged reliability.

OES is a division of the publicly held parent company Oceaneering International, Inc., and since its inception more than 25 years ago has grown to 150+ employees in its Orlando, Florida and Hanover, Maryland locations. VP of Strategic Program Development, Dave Mauck was at the forefront of forming the Entertainment Systems division when the opportunity arose to apply Oceaneering's subsea expertise to an existing-attraction-in-need in Orlando.

For its first decade, OES had focused on producing animatronic figures and show-action equipment - some of the largest and most sophisticated ever built, in fact. It was not until the Millennium that they got fully immersed in the ride system side of the business. By that time, OES had been a trusted vendor to several owner/operators, and had made a name for itself based on its ability to create custom engineering solutions. In 2005, Oceaneering delivered its Evolution™ tracked ride system for Curse of DarKastle™ at Busch Gardens Williamsburg,

which earned a Thea Award from the Themed Entertainment Association (TEA). This jump-off point for OES into ride system development resulted in work on many other dark ride attractions around the world.

A natural progression

Parent company Oceaneering International is well known in the off-shore oil and gas business, and in the government/defense sector world for its engineering capabilities on land, in the sea and even in space, in many of the harshest known environments. With this engineering experience, it was a natural progression for the company to find its way into the theme park industry, where attractions are expected to run safely and reliably up to 20 hours a day, seven days a week. Safety and reliability are paramount to all aspects of theme park design and development work, and these core values translated well from deep-water, military and manned space flight applications which are cornerstones of Oceaneering's expertise. But how are these complex ride systems brought to life?

Initially, the truly over-the-top innovative attraction concepts come from the major theme park operators, who have their own in-house creative groups, or from one of many independent creative houses in the field. They dream up new and exciting (and often wildly innovative) show concepts, determine the best way to transport guests through the story, then look to a company such as Oceaneering to help them develop those ride and show systems.

Once such an attraction has its public premiere and is well received, there is usually a high demand to find a way to bring a similar experience in some form to a wider audience, and regional or overseas parks come to the table. In one recent instance, OES was approached about an opportunity to work with the Six Flags regional park chain on the new Justice League: Battle for Metropolis™ attractions. OES developed a new tracked ride system, dubbed EVO-6™, based loosely on its existing Evolution system, and integrated a gaming system from Alterface Projects. These new attractions have been a huge success, enabling

Six Flags parks to offer their guests a high-end, dynamic thrill experience while staying within budget parameters.

But hardware - even the best hardware from the best ride engineers in the business - is only part of the equation.

Technology is the partner of creative
"We are frequently approached with requests to build, say, 'the next Transformers' or 'the next Spider-Man,'" says Bill Bunting of OES. "These attractions, like others, have achieved a level of excellence and recognition in the industry. We understand that when potential customers say they want a 'Transformers,' what they're actually asking for is an immersive and thrilling experience that comes from the perfect marriage of rich media, excellent storytelling and functional technology that takes the dark ride genre to new levels. But it's the dreamers of the industry, the creative teams in themed entertainment, who are the 'secret ingredient' that make successful dark rides come to life."

Bunting is a 40-year veteran of the themed entertainment industry. He is what is sometimes referred to as an "Epcot baby," having managed thousands of employees in operations for Disney until the late '90s. He has continued to contribute to theme park attraction development primarily as a project manager and master planner for the last 20 years. Bunting joined OES in 2008, and today, serves as Director of Business Development.

OES sees itself in the role of technology partner, and a company slogan is "Helping Storytellers Move Your Audience." Bunting says, "Our ride and show systems serve the single purpose of enhancing that storytelling with carefully choreographed motion

and inertia. We are committed to that role, and committed to the dark ride genre, and we have worked very hard to develop close working relationships with all of our creative partners in the industry. We are keenly aware that without them, we simply have tons of sophisticated hardware that entertains no one."

The trackless REVOLUTION™
The REVOLUTION™ Tru-Trackless™ ride system is a prime example of OES innovative ride and show systems that are really tool kits, awaiting the vision and inspiration of a creative team to realize their potential. "Over the past few years, since we introduced REVOLUTION™, we have been amazed by the incredibly diverse ways creatives have adapted designs and storytelling to use it, in ways we could have never imagined," says Bunting.

Because REVOLUTION™ is a truly omni-directional and trackless ride system, with a motion-base actuated cabin, it can be programmed to be completely free-ranging: to move forward, backward and even sideways or diagonally. A ride without the restriction of a fixed track becomes a promising tool for contemporary, non-linear, storytelling where the guest can take an active role. "On traditional, fixed-track dark rides, stories and experiences are linear or 'follow the leader' by definition, with limited options for interaction between vehicles, and no way for different vehicles to take different ride paths," says Bunting. "We wanted to offer a completely different way for our storytelling partners to be able to think about dark ride attractions."

Development of the REVOLUTION™ system, done in-house at OES, spanned several years and millions of dollars in R&D. In its various applications to date REVOLUTION™ has enabled storytellers to forever change the way dark ride experiences are crafted, and how media, scenic and animatronic technologies

REVOLUTION™ trackless vehicles featured in Antarctica: Empire of the Penguin at SeaWorld Orlando

can all interact directly with guests aboard dark ride vehicles. REVOLUTION™ was recognized in 2014 with a TEA Thea Award for technology.

Size is everything

The size and seating requirements of a ride vehicle are designed for the specific throughput requirements of the attraction. Scalability is important to customization: Currently, the world's largest trackless ride system provides seating for several dozen guests, and the smallest system seats only two. "Because our proprietary AGV (automatic guided vehicle) technologies are each fully scalable, we can create trackless ride vehicles of virtually any size or configuration," says Oceaneering's Dave Mauck. "We can truly adapt these key technologies to virtually any size or shape or theme."

AGVs are essentially robots that follow a magnetic grid of location points to navigate multiple paths. Oceaneering acquired Netherlands-based AGV company, FROG AGV Systems (now dubbed Oceaneering AGV Systems), in 2013, which allowed OES to expand its product offerings substantially. The acquisition allowed OES to integrate the key technologies required to develop REVOLUTION™.

At OES, this process is called "Connecting What's Needed With What's Next™" in themed entertainment. To design durable theme park rides that function correctly and reliably for years, Oceaneering has drawn from its heritage of building and repairing gear that performs from the harshest ocean depths to even the far reaches of outer space. For decades, Oceaneering has been a full-service, life-of-field provider of some of the most sophisticated off-shore machines known to humankind. Today, Oceaneering Entertainment Systems offers an award winning family of products that give creative freedom to design and imagine the dark ride in ways no one could have dreamed of just a few short years ago. From sea, to land, to space, and now to theme parks. • • •

Matt Kent (mkent@oceaneering.com) is Head of Creative Services at Oceaneering Entertainment Systems, based in Orlando.

Going for a ride

What does it take to design the best thrill rides and stay on top of the business?

by Kevin Dazey

Steve Gladow
Chance Rides

Adam House
GCI

Thorsten Koebele
Mack Rides

Fraser Ross
Vekoma Rides

Charlotte van Etten
Vekoma Rides

Scott Voyles
RMC

InPark reached out to five leading ride manufacturers - Chance Rides, Great Coasters International, Mack Rides, Rocky Mountain Construction, and Vekoma Rides Manufacturing - to discuss qualities that make for a successful ride engineer or designer, look at recent achievements and talk about quality control and the process of ride and roller coaster development.

The process of developing a new roller coaster or amusement ride product can last well over a year. Reliability, ease of maintenance, and of course safety are just a few considerations that must be reviewed during the design period.

What makes a great roller coaster engineer?

A roller coaster engineer's skillset encompasses the major engineering disciplines such as mechanical, structural, and electrical. Excellent problem solving skills using science and math, thinking outside the box, and adaptability are vital. Interest in the field is also a plus.

Complete familiarity with specialized manufactured products does not happen overnight. An engineer may start by learning one or two aspects of a product or process; from there the knowledge base continues to grow and hopefully never stops. Communication and sharing of expertise with one's peers is constant, as is the need to roll with the seasonal business cycle.

Since there is no specific higher education curriculum tied to this niche (although a number of universities have formed clubs) we asked questions about the qualities that manufacturers find valuable, and where they look for candidates. Education is just preparation. The phrase, "can you be taught?" stands out whether a degree is present or not.

Do you have what it takes?

Steve Gladow, Engineering Manager, Chance Rides:
In short, there is not a simple amusement rides 101 class that is missing from curriculums that would make a difference. I know that much of what has been developed (designed, engineered, and manufactured) at Chance Rides has come from a team of people, some of whom are "formal" engineers and many of whom are folks that simply have a passion for and are good at creating, designing and manufacturing.

My opinion is that the engineering function is not tied to the ride creator/designer function. The engineering function is primarily to take a ride concept and create the machine or system that does this safely, reliably, and cost effectively for all parties involved. Of course, there are certain individuals who do possess both skill sets. In addition, an engineer needs to stay current with new technologies, techniques, and changes in the industry itself such as updated industry specifications. I would add civil and computer/software engineering to the others mentioned [mechanical, structural and electrical].

Fraser Ross, Concept Engineer,
Vekoma Rides Manufacturing:
Every concept designer at Vekoma is passionate about roller coasters and has good knowledge of all types around the world. It is important to know what rides exist, and to experience firsthand.

There are no specific educational courses on roller coaster design, but in general you need a thorough technical background and training. A master's degree in mechanical engineering or physics would be most helpful. Of course electrical engineering is important for the systems department.

As a concept engineer, creativity and mathematics come hand in hand. An analytical mind is a must because of the many different subjects that have to be taken into account to make a design successful. Regarding rollercoaster design and calculations, all issues have to deal with fatigue. In most of the studies hardly any time is spent on this. This part of the design process will be learned inside the company.

We have several well recognized universities in the Netherlands such as the Technical Universities in Delft and Eindhoven. We work together with universities, give presentations, and participate in job fairs. Engineering interns are often are hired for full time employment. We also work together with international universities such as the RWTH Aachen Germany.

Thorsten Koebele, Chief Officer Sales & Marketing,
Mack Rides:
It's the general understanding of rides and technics that make a good engineer. One key factor is the interest in our industry and the rides, which is not very difficult as we work in a fun business. We have people working at Mack Rides that started their career in a totally different direction and became engineers over time because of their passion and understanding. It is a must that you

Vekoma Rides' Space Warp Launch Coaster at Poland's Energylandia

GCI's Ghostrider at Knott's Berry Farm

have to try the rides you engineer and manufacturer - so our engineers have to be brave!

**Scott Voyles, Designer and Draftsman,
Rocky Mountain Construction (RMC)**
We definitely have a busy season at RMC. During that time, it is imperative that people are efficient in managing their time, detailed, willing to take on responsibilities outside their assumed scope, remain dependable, and able to communicate effectively. The pace is fast and employees need to be able to think on their feet. The detailing, logistics, testing, and execution of an idea take training and experience as well as talent.

I wouldn't say that we focus on the origin of one's education. Generally, we are looking for a specific skill set and someone who is a "good fit" to our company's design culture.

Adam House, Senior Design Engineer, Great Coasters International (GCI)
At least one course featuring hands-on experience would be helpful that points out how important tolerances are for mechanical systems. I started as an intern at GCI helping build the company's Millennium Flyer wooden roller coaster trains. This proved to be invaluable for learning how to be a good team member and later going on to help design the Mini-llennium Flyer junior trains.

It is nice knowing the basics of what has been done before, but also incorporating new ideas and thinking what can I do differently or has not been done yet. You can take successful features from previous designs and incorporate on upcoming rides. This also includes tweaking an element that was not quite right, where an improvement was needed to make it more comfortable or thrilling.

Locating talent does not necessarily come down to what school one attended, but rather possessing the strong problem solving mentality. We frequently bring on interns who could become full-timers if hard work is shown. After that it takes displaying a personality that would be a "good fit" at GCI. Theme park engineering clubs at various universities have become an awesome resource for the intern program. It's great to reach out to these groups and, for example, talk to the club president and request five resumes to review for upcoming needs.

What's the story behind your latest big achievement?

In the ride attractions world, the next big idea could be a new way to spin, flip, drop, or soak willing riders. Sometimes development can also mean modernizing existing rides in the field to make them not only more appealing, but comfortable as well. Take the classic wooden roller coaster, for example - the last 20 years have seen a great deal of improvements that have led to smoother and more re-rideable coasters.

Many steps are covered during the research & development phase. Studying the market is a given before the first drawing is created or

prototype fabricated. New products can come about by listening to customer feedback as well as internal initiatives to gain market share. Testing is integral to the design process, and could be the indicator on whether the project scope is scaled back, moves forward, or the idea is shelved for later.

Bragging rights for a rides manufacturer to have designed and built the world's (insert superlative and ride type here) began with challenges. With safety paramount and strict standards in place, there are no "easy" projects.

Great Coasters International - GhostRider refurb & Mini-llennium flyer trains

One of GCI's major projects for 2016 occurred at Knott's Berry Farm where a refurbishment took place on the GhostRider wooden roller coaster. The effort to make GhostRider a more enjoyable experience involved replacing nearly all track sections, smoothing out rough areas by re-profiling, and adding a pair of GCI's own Millennium Flyer trains. This marks the latest of several wood coaster enhancements the company has handled.

How did the Knott's GhostRider refurbishment compare to designing a new layout?

It was a little shorter process for the refurbishment than a complete new ride, but we also faced certain challenges that we don't typically face with a new ride. The biggest challenge was trying to keep GhostRider true to what it is; a classic wooden coaster, but still adding enough changes to enhance the ride and make it feel new. The structure moved quite a bit prior to

the work we did and there were difficulties my team faced to figure out how to brace and strengthen the structure. GhostRider was re-profiled - this refers to shooting ledger elevations, understanding how the ride currently exists, then going back in and literally redesigning sections on the ride to enhance it and make it better. GCI as a whole has done this on several rides most notably the Coney Island Cyclone and Boulder Dash at Lake Compounce, but this was really the first time we could almost literally re-build a ride and truly make it a 'Great Coaster'.

How do updates and modifications to trains, control system, or other mechanical hardware generally come about; operator feedback or constant in-house improvement projects?

This is really a mix of both: When I go to a park and talk with maintenance personnel they always have great, real-world experience with our trains. With their help I can take notes on general modifications; then go back and implement them with my team. We also discover general design improvements from our end and implement them as we find necessary.

Instead of upholstered seat material, the switch was made to dense foam. The very first GCI ride to implement this was White Lightning at Fun Spot, at the client's request. After having seen how well it worked and realizing that it was a competitive move, we made this switch for all rides moving forward.

GCI's newest product is the Mini-llennium flyer trains. How long was the development process and what was the biggest challenge?

Chance Rides' Hyper GT-X model, Lightning Run, at Kentucky Kingdom

Mack Rides' Big Dipper model, Lost Gravity, at Walibi Holland

RMC's Lightning Rod at Dollywood

From start to finish it was about a full year; most parts were scaled down from the Millennium Flyers. I would say the biggest challenge we faced was being able to have individual lap bars within such a small track gauge, and allow two adults to ride comfortably. The key modification was for independent lap bars, but we also found out that our modifications increased ride capacity because two riders could easily fit in each car. Also, if there's only one passenger, the empty seat's lap bar was designed to act as a seat divider securing the single rider in place.

Mack Rides - Power Splash

What do you get when aspects of a shoot-the-chutes water ride and a launched shuttle coaster combine? Mack Rides' unique new Power Splash, which recently opened at Walibi Belgium. This backwards-and-forwards water ride coaster hybrid offers an exciting way to cool down on a hot day. The layout is simple; two vertical towers separated by a splashdown pool and small bunny hill form a U-shaped piece of track. Riders experience three launches total before climbing backwards up the rear tower which leads to the splashdown finale.

What inspired a launched splashdown attraction and what was the approximate development time?

The initial idea was to create the world's first launched water ride. Therefore, we came up with several different ideas and came to

the conclusion that the Power Splash concept would have the ability to be an innovative and successful ride on the market.

We had several challenges that needed to be solved. The loading for instance is done on a turning platform where one boat can load while the other is running in order to increase capacity. Also, we could not use LSM drives in the water and had to come up with our weir system [a barrier or intercept of flowing water] to get the splash and brake effect.

The overall project was launched in 2013 – so it took about three years from sketch to finished product. Of course the idea itself was older and we had to have the approval for the first project.

Mack seems to develop rides with high capacity; does this come from operator request or is this an internal goal for each project?

We serve the customer's need with every ride. In 2016 we opened rides with less capacity (Power Splash & Big Dipper) than we used to build. As both operator and manufacturer the Mack family knows how important it is to have high capacity for the more crowded days in the parks. Mack Rides therefore is always seeking high capacity. Of course each operator can influence the capacity with the amount of trains/cars they purchase.

When a new concept is developed such as Power Splash, is there some kind of submittal or audit process?

The first studies are all under inspection here in house if it is doable. With our long history and the many projects we have already opened we know quite well where to look for problems that might occur. We also have a constant drawing review to ensure proceeding with the right content.

Rocky Mountain Construction - new single rail "Raptor Track" system

Author's note: Also if you visit Dollywood, check out the new RMC-built Lightning Rod, being billed as the world's fastest wooden roller coaster at 73 mph (118 km/h). Featuring customized hot rod inspired trains also made by RMC and numerous airtime hills, this coaster also uses the company's Topper Track design where the top two layers of wood are replaced by a steel counterpart.

Last November, RMC revealed two new single rail steel track coaster systems. How did these come about?

The development of the single track systems was initiated for a couple of reasons. First, we want to have a small-scale, cookie-cutter type of ride on the market. We believe this will allow our product to become available to smaller parks or family entertainment centers. The Raptor Track design is small scale, has lower loads and a less complicated train design. However, it is still capable of the banks, inversions, and other elements that people enjoy on our rides.

READY FOR THE MOST (INTER)ACTION-PACKED RIDE?

TWO AUDIENCES. ONE WINNING TEAM. LET THE BATTLE BEGIN!

EAS BOOTH #842

©2015 Electronic Arts Inc., Plants vs. Zombies, PopCap, EA are trademarks of Electronic Arts Inc.

PLANTS VS ZOMBIES GARDEN WARFARE: 3Z ARENA
The World's First Dueling Interactive Theater

Alterface Projects is proud to work with Cedar Fair to create the world's first Dueling Interactive Theater in 3D. This multisensory experience inspired by EA Games/PopCap's worldwide video game hit Plants VS Zombies allows two audiences to join the wackiest battle as team Plants against team Zombies.

New 2016 at Carowinds, USA

INTERACTIVE ATTRACTIONS · UNLIMITED POSSIBILITIES

Alterface Projects HQ - Europe
alterface@alterface.com
+ 32 485 620 390

Alterface Projects - USA
info@usa.alterface.com
+ 1 417 973 0301

Alterface Projects - China
info@asia.alterface.com
+ 86-10-64391088

www.alterface-projects.com

alterface *projects*

Rather than custom building each coaster this type allows us to do the design and engineering once to lower product cost. Second, both the erection and remodeling of a wood coaster consumes a tremendous amount of material and labor resources. By moving to a steel structure, we hope to eliminate much of the labor required. This benefit will again provide us the opportunity to lower the cost of the ride. The T-Rex Track is a similar concept, but will have the capability to be a more intense ride. We hope to obtain the benefits from erecting a steel structure for this design as well.

With regard to ride layout, it has taken no extra time since there is less structure to engineer, detail, and manufacture. Overall this process has required less effort than a wood coaster rebuild or new construction, but the trains will require more time for development. The nature of the function and mechanics require thorough investigations into each component, but this is not unlike the arduous development process that we went through to develop our current trains.

There's obviously financial risk involved during product development, would you think the attractions industry is unique or are all industries similar in some regards?

We are in a good position with regard to product development. The workload keeps steel flowing through our facility which results in plenty of steel remnants that we can use to mock-up assemblies, refine welding procedures, and test parts. Since the nature of the product is so similar to the type of business we are currently conducting, we have little invested into the materials. The majority of our costs are related to design time, which has remained fairly low. I think this would be true for other industries as well. The start-up costs are certainly a barrier to enter the market, and all investments are out of pocket without the certainty of generating revenue. Those already in the industry will have advantages related to cash flow, purchasing power, and personal connections throughout the industry.

Vekoma - Space Warp Launch Coaster
Sixteen riders at a time blast off from a standstill on the Space Warp Launch Coaster, Vekoma Rides' latest steel roller coaster concept. This new thriller just made its first appearance at Poland's Energylandia which includes three inversions, airtime hills, and a new train design. Since a traditional lift hill is absent expect to reach 50 mph (80 km/h) in three seconds after leaving the station; from there the action is nonstop until the brake run.

Is Space Warp a completely new coaster design or a variation of an existing and how long was the design period?

Space Warp launch coaster is a brand new design produced from our state-of-the-art concept creation process which results in a super smooth ride. Further to this, Space Warp is the first

ride to feature our brand new MK1101 train which matches this sleek design. This is the first of many exciting new custom designs getting built around the world over the next few years by Vekoma that feature our new train system. For Space Warp in particular, from concept design to testing and commissioning, it has taken around 1 year 8 months.

Not only are new products and innovation keys for success, but what about updates and modifications for older ride models (redesigned trains and/or restraints)?

For existing Vekoma coasters our Parts & Services department offers not only spare parts, but also new trains, track improvements, and rehab services. For example, we have a new train design for our Suspended Looping Coaster with improved ergonomic seating, a special integrated vest replacing the over-the-shoulder restraint for a secure, comfortable, and unrestrained feeling. Other features include a hydraulic locking restraint system and solid machined wheel carriers.

Our upgraded MK1200 sit down trains are also a good replacement for the MK1200 track system. These new trains fit the existing Vekoma MK1200 track systems & similar non Vekoma track systems. Basic ergonomic improvements featuring more space & comfort in its semi-open design permit an improved ride experience. For our family coasters we offer new wide bodies with individual seat pads and U-shaped lap-bars, or individual T-Lap bars for existing bodies, so passengers are individually and comfortably seated and secured.

Chance Rides Hyper GT-X steel roller coaster
Bigger is not necessarily better. This newer Chance model became a big hit when it debuted at Kentucky Kingdom in Louisville KY. A mere 100 foot (31 m) lift hill and a top speed of 55 mph (86 km/h) may seem tame by today's standards, but the pops of airtime and quick ground hugging directional changes will more than make up for the lesser stats. The smaller footprint would certainly appeal to smaller parks or anywhere space is limited. According to Steve Gladow, approximate development time was roughly 12 months. • • •

Kevin Dazey has a mechanical engineering background and works in R&D at a manufacturing company in St. Louis, MO. His passion for roller coasters and amusement parks began early on while growing up in northeast Ohio near Sea World, Geauga Lake, Cedar Point, and Kennywood. To date, he has visited 41 parks and ridden 235 roller coasters. Besides a fondness for the attractions industry Kevin enjoys maintaining a collection of vintage motorcycles and ATVs. Email: dazey200x@yahoo.com

Projecting Light

Digital projection options, explained by Christie

by Curtis Lingard, Christie Digital Systems

With the range of projectors available, how do you make the right choice for your needs? How big and bright an image do you need? Do you choose 3LCD, 1DLP®, 3DLP®, lamp, laser phosphor or RGB laser? Where should the projector be installed and will it be easy to use? What maintenance is needed, and how much will all this cost?

Identify your priorities

Every installation is unique. There is no one-projector-technology-fits-all approach. Choosing the right technology comes down to environment, desired image quality, ease of use, maintenance, and cost. Defining room size, allowances for depth of display, viewing distance, and how much ambient light there is will determine your specifications for brightness and projection screen selection. Assessing lens throw distance, resulting projector placement and ongoing maintenance access will also narrow the choices. Will people be up close to the projected image or positioned farther away? An audience's proximity to and interaction with the content, along with potential obstructions to the light path, has an impact on projector setup and choice of projector.

Assess your content

After reviewing the environment you will be outfitting, your next consideration is content. Will your content be mostly black and

white spreadsheets, or brightly-colored content for maximum visual impact and perhaps 4K resolution? Beyond what the content does and how it needs to be displayed, consider how you need to interact with the content. Also, consider where your content will be placed and what resolution is required to have the image scaled and displayed correctly.

Once you know your content and how it fits into the environment, you can zero in on a particular projection category – 3LCD, 1DLP or 3DLP, laser phosphor or RGB laser. Depending on your content, color reproduction variables will also factor into the decision. If you are working with big images, bright colors and the need for high-impact visuals, you may lean toward 1DLP or 3DLP.

If the room is small, such as in a museum, you may find 3LCD projectors are a good, budget-friendly fit. This is also when you start to compare projector options and features within a manufacturer's projection lineup. If 1DLP meets your budget and performance goals, you can narrow your choice based on projector and lens combinations, light source specifications, contrast ratio, orientation, size, shape and weight.

Comparing noise levels among projectors is also important; noise levels may be less important for a theme park ride or live

Comparing projection technologies

3LCD

3LCD projectors are one of the least expensive projectors available. Most use inorganic liquid-crystal display panels that transmit, rather than reflect, light. Three panels are commonly used, one for each (red, green blue) color. Optical filters split the white light from the lamp into the three colors and direct the colors through their respective panels. An image forms on a panel by varying an electrical signal sent to each pixel in quick succession, creating incredible color accuracy and contrast. With typical brightness levels up to 12,000 lumens, they are ideal for higher education, corporate and worship facilities.

DLP (1-chip, 3-chip)

A step up from 3LCD is the 1-chip (1DLP) and 3-chip DLP (3DLP) projectors. The heart of every digital light processing (DLP) chipset is an array of highly reflective aluminum micromirrors known as the digital micromirror device (DMD). The 1DLP approach places a rapidly spinning disk (color wheel) between the DMD chip and a light source. The 3DLP method uses a DMD for each primary color (red, green, blue) which are optically converged, producing a single image. DLP technology provides excellent color control and consistency. Because the light is reflected out of the projector, DLP projectors tend to offer really high brightness in a smaller unit, while using less power. Using a proven robust reflective technology like DLP also makes DLP more suitable for high usage applications. Brightness for 1-and-3-chip DLP projectors ranges up to 60,000 lumens and resolution from SVGA to 2K and 4K. They are used in meeting rooms, auditoriums, small venues and attractions (1DLP) to large venues, live events, projection mapping spectaculars and theme parks.

Illumination sources for all projectors range from mercury and Xenon lamps to solid-state illumination like LED, laser phosphor and RBG laser.

Lampless (also called solid-state illumination)

In recent years, solid-state illuminated projection technologies have become available. Laser phosphor and RGB laser are two main illumination platforms. Typical laser phosphor projectors use a blue laser diode and a spinning phosphor wheel as the light source instead of a lamp. This means no lamps and often no filters need replacing, which reduces downtime and maintenance costs, while providing high brightness. Laser phosphor projectors are popular in high-use settings like boardrooms, classrooms and location-based entertainment.

Pure laser

RGB laser technology, often referred to as 'pure laser,' uses individual red, green and blue lasers to generate light. Producing the brightest images and the purest colors, RGB laser technology is the pinnacle of solid-state illuminated projection, generating light up to 60,000 lumens today. RGB laser is ideal for giant screens, rental staging, projection mapping, location-based entertainment and applications where high-brightness and reliability are important.
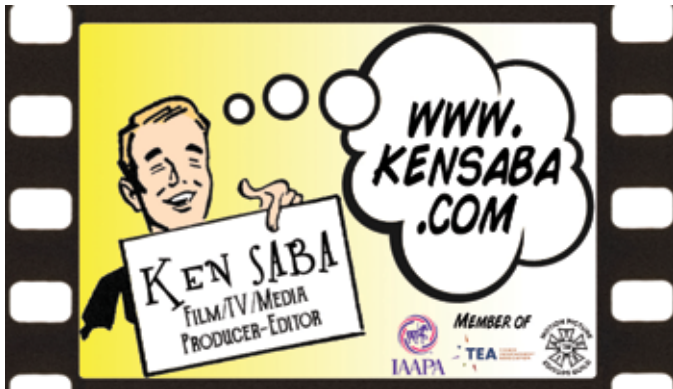
Above: Fly over Canada is in Vancouver, Canada, and uses both 1DLP and 3DLP projectors
Page 16: Twenty-six Christie 3DLP projectors light up the Empire State Building during a
temporary August 2015 installation that called attention to endangered animals.

event, but it is a big factor in a meeting room or smaller venue. For multi-projector setups in theme parks, built-in warping and blending capabilities of DLP lamp-based and laser projectors allow you to adjust the content precisely so it appears as intended.

You can also compare how easy it will be to replace consumables and perform maintenance tasks on your projector without removing it from its installation. For instance, will you need to take your projector down to replace a filter, or can you access the filter while your projector is mounted? If it is in a difficult to reach spot, consider solid-state illumination so replacing lamps or filters doesn't come into play.

Finally, there is total cost of ownership (TCO); which is purchase price + maintenance costs + operating costs. Know how your budget works. Larger venues may be able to invest more up front – such as in 3DLP or true laser – and achieve a lower TCO since maintenance and operating costs are much lower over the long-term. • • •

As Product Manager, Christie Digital Systems, Curtis Lingard is responsible for the lifecycle of 1DLP and 3DLP projectors that meet the needs of global clients in various applications including fixed installation, rental staging, artistic and architectural displays, simulation and visualization. He is also responsible for developing marketing collateral that highlights product requirements and specifications. Lingard has spent more than two decades in the AV industry, beginning with stage and theatrical lighting before joining Christie in 1998.
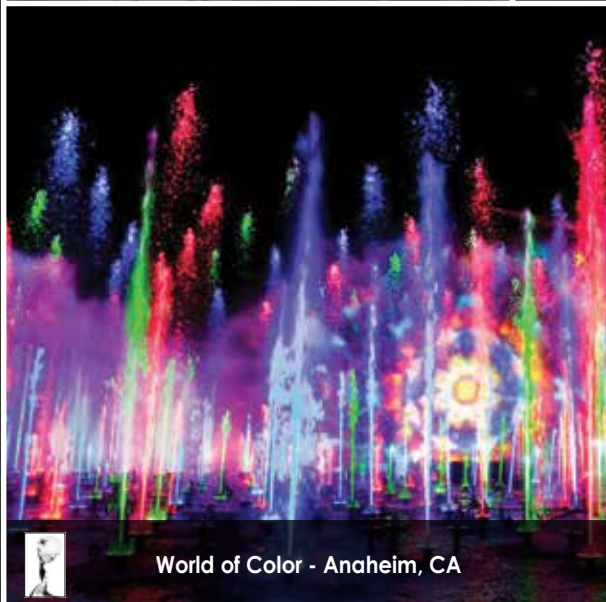
Infrared inspires the new interactivity

Designers imagine ways to develop Gantom Torch Technology in new attractions

edited by Judith Rubin

Gantom Torch Technology, developed by Gantom Lighting & Controls, received a Thea Award this year – a prestigious honor conferred by the Themed Entertainment Association (TEA) that was in recognition of the technology's creative potential.

The company began rolling out the Torch technology about a year ago, with demonstrations at various trade events. At its heart is simple infrared (IR) communication between beacons placed in the environment and devices worn or held by the guests. The best known applications so far are a flashlight type device, the eponymous Gantom Torch, and ZTag, a zombie tag game in which players wear responsive badges (described in more detail in sidebar).

Gantom Torch supports what we call the new interactivity – narrative environments that respond in real time to actions initiated by the guests. Thanks to technologies that are more sophisticated and more affordable and integration-friendly than ever before, designers can create and visitor attractions can offer environments that are more immersive, more intuitive and more magical than ever before.

Torch technology has so far been demonstrated mostly in a haunt context, but its possible applications go much further. We asked several experience designers to imaginatively explore the possibilities. Here are concepts from Dan Faupel (Creative Visions), Entertainment Design Corp., Visual Terrain, Melissa Sain, Ken Saba, Beaudry Interactive and Gantom itself.

PHOTOS: (Top) Gantom founder Quan Gan stands in front of a photo of the Gantom Torch while he sports a yellow ZTag; (Bottom) Quan and Landin Fusman accept a Thea during the 2016 Theas gala
Photos courtesy of TEA - Themed Entertainment Association

Interactive Dark Ride

Dan Faupel, VP, Creative Visions, www.CreativeVisionsOnline.com outlines a dark ride concept that includes using the Torch for tasks that are traditionally the province of theatrical lighting design, such as UV-painted scenery effects.

A Gantom Torch looks like a handheld flashlight, but is not completely controlled by the user. It receives signals from IR beacons to change colors of its light beam, turn the light on or off, and to make the Torch vibrate in the guest's hand.

I would like to see a theme park with an old dark ride update the ride and make it interactive using Torches.

As guests board the ride car, each passenger is given a Torch. As they roll forward into the dimly lit environment, they need to use their Torches to help them see the scenes they are passing through. This adds a creepy "exploring a haunted house" feel. Changing colors from scene to scene affects mood and accentuates action.

In one scene, the walls can be scenic painted to look one way under normal lighting, and another way under ultraviolet (UV) light. When people ride into the scene the Torches are emitting ordinary white light. Midway through the scene the

Torches switch to UV light, darkening the scene and magically transforming the room and revealing a community of ghosts.

In another scene, the Torches start to flicker and go out. The guests spend a few moments in pitch blackness. Suddenly scenic lights pop on revealing monsters right next to the guests which shoot loud bursts of air at the guests. At the same time the Torches vibrate in the guests' hands, all combining for a great startle scare.

Another scene has hidden speakers down both sides of the room. A mysterious voice whispers, "I can see you," taunting the riders to shine their Torches this way, then that, revealing nothing. Finally an animatronic monster (a shark, for instance) jumps out to scare the pants off the guests.

Dan Faupel (DanFaupel@aol.com) is VP of Creative Visions. He is the former owner of Themed Attraction Design, and former Senior Designer at Sally Corp. Creative Visions designs and builds attractions, animatronics and scenic props for theme parks, museums, zoos, haunted houses, retail stores, restaurants and FECs worldwide.
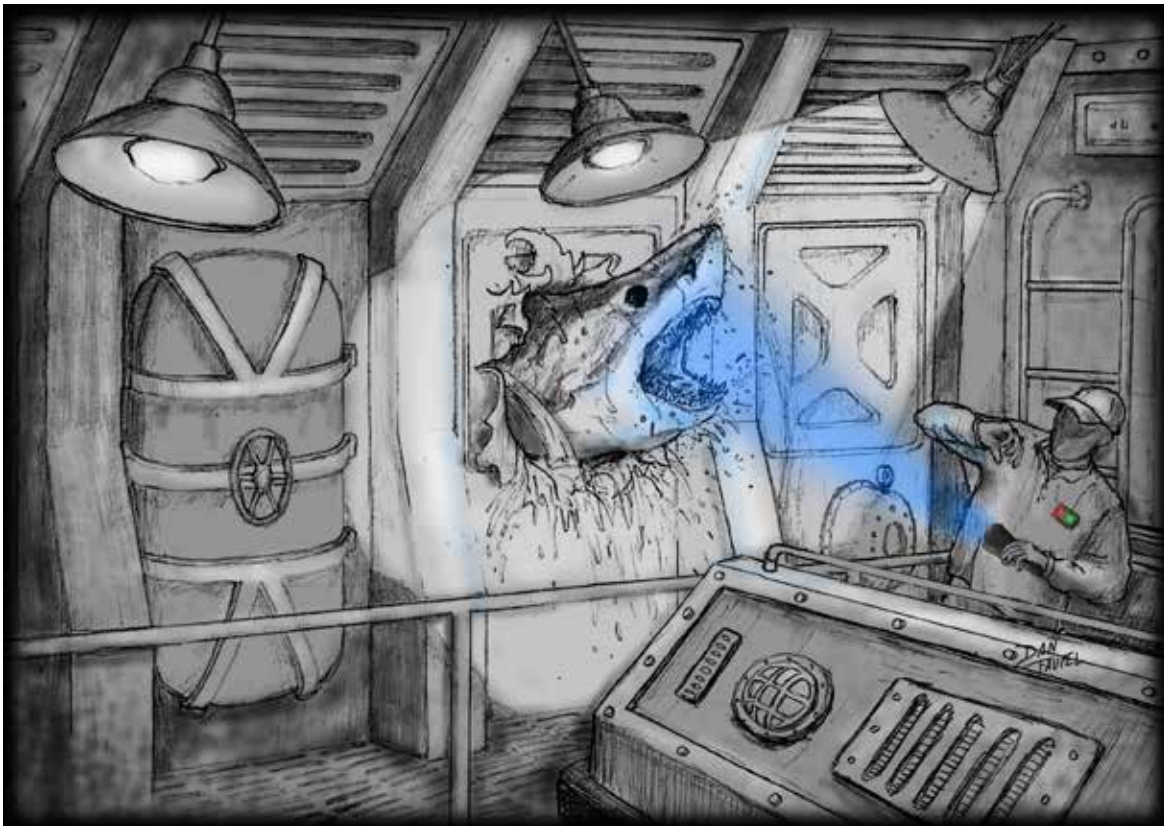
Sketch courtesy of Dan Faupel

Escapology 2.0

Richard Wechsler, Entertainment Design Corp. www.entdesign. com, describes a maze environment that uses both a handheld and a worn device, plus a variety of other immersive effects.

Sharing a table at the 2016 Thea Awards in Anaheim, EDC and Gantom compared interactive notes. We told of creating the Wishing Crystal for Galaxy Macau, an interactive attraction where guest circulation around giant crystals set in a reflective pool of water triggers an ever-changing sound/light environment.

The conversation morphed into an ad-hoc blue-sky symposium (Greek word for 'drinking party') as we explored the possibilities of an interactive-immersive experience that fused the thrills and frissons of haunter technology with EDC's recent foray into escape room designs.

Quan kept reminding us to just dream up a cool experience and he and his team would figure out the 'Gantometry.'

We riffed on the concept of Ariadne's Thread - after the legend of Ariadne giving the hero, Theseus, a ball of thread to unwind as he went deeper and deeper into a maze so that he could eventually find his way out (primitive GPS). Our maze would have four sections, representing different decades from the '60s to the present. There would be two teams and each team player would be armed with a 'Gantometer' (Torch) and a vest with embedded 'wink buttons.' As teams found their way through the four different segments of a mirror maze, their devices, programmed by a puzzle master would activate UV clues, augmented reality (AR) effects, and pop-up, holographic period-costumed icons that would point the right (or wrong) way and then vanish. The colored 'wink buttons' would indicate which team members should work together - in essence, a mash-up of multi-narrative and interactive modalities, integrated into an escape-oriented, interactive and immersive experience.

NDAs forbid me from saying more…

Richard Wechsler (richardw@entdesign.com) the Academy Award-nominated producer of the film classic, Five Easy Pieces, is EDC's head writer and director of projects. Following a collaboration in 2000, he teamed with EDC founder Jeremy Railton to help create the live shows, events and attractions that EDC creates for audiences around the world.

Sleep no more, Hamilton

From the team at Visual Terrain, www.visualterrain.net: "While we have used previous Gantom products for architecture and attractions, we think Gantom Torch has particular applications in the arts and live productions." Three examples:

- Interactive theatrical productions, such as "Sleep No More" (currently showing at New York's McKittrick Hotel). This site-specific retelling of Shakespeare's Macbeth has the audience wandering through the halls of an old hotel, where they see scenes as they unfold. (Similar to the well-known "Tamara" production that played in Toronto, Los Angeles, New York and around the world in the 1980s and '90s.) Audience and actors could be given Torches, and the intensity and colors could be adjusted throughout the space and the show to support and tell the story. The audience's lights could act as regular flashlights as they are wandering the halls, then change color as they entered a room where a scene is unfolding.

- Live stage show environment. At the 2016 Thea Awards, Visual Terrain principal lighting designer Steven Young worked with Thea Awards producer The Hettema Group and composer Andy Garfield, who conceptualized a "Hamilton" - inspired rap and dance sequence highlighting Gantom Torch Technology. The song's verses listed off each feature, and the Torches were programmed to match, and then explode into other effects during the choruses of the song.

- Signature device and souvenir. Visual Terrain CEO and Principal-in-Charge, Lisa Passamonte Green, said, "Imagine you go to a live theme park show, and at the beginning of the show, you are handed a customized Gantom Torch, that is either themed to the show, or has the name of the show or park printed on it. You experience the production using the Torch; at the end of the show, you either return it to a bin, a la 3D glasses, or you have a cool souvenir to take home with you."

Founded in 1995, Visual Terrain is celebrating over 20 years of lighting design for architecture, attractions and the arts. The company's main office is in Los Angeles, with an additional office in Chicago, as well as an international representative near Paris. Contact David Green davidg@ visualterrain.net. Photos: Lisa Passamonte Green (top) and David Green (bottom).

A dark and stormy escape room

Melissa Sain's concept features a handheld weapon that tells you when it is out of ammunition, as well as an interactive badge.

It's a dark and stormy night. Scattered around you is the aftermath of a homicide. The stiletto in the victim's back is still damp with blood. The deceased is clutching an old skeleton key. Lightning strikes and the house is suddenly dark. An evil cackle rings out. Your attention is riveted to the only light source: the grisly, frightening, spectral image of the murderer in a mirror above the dusty fireplace. His bony hand now clutches the skeleton key.

The lights flicker back on. Armed only with your detective's badge, your wits, and a weapon, you must investigate this paranormal homicide case and retrieve the mysterious key, all while trying to catch a killer and not end up the next victim.

In this escape room, you can touch the props, explore the scenery, and live in the environment – and all the elements are active participants. Sensors in your detective badge register when you near a certain prop or area that propel the story/investigation further. For instance, a book on a shelf lights up when you approach it. When you pull the book forward, it activates the secret passage in the fireplace and now you can go through and experience the next room.

Your weapon simulates a laser gun. It also lights up to notify you when you are low on ammo - or out completely. Now, not only are you trying to outsmart a phantom murderer, you must juggle the challenge of finding ammo. The weapon will vibrate when you near a spot where you can "reload" and then continue on with the investigation.

What if the lamp were to get brighter when nearing a clue and dim when you've traveled too far? It enhances that moment of problem solving and helps guide you to the next step.

Melissa Sain (ladylola007@yahoo.com) is a recent graduate of the Art Institutes with her Bachelor's in Graphic and Web Design. As a freelance novelist and illustrator with a touch of theatre experience, she has begun the arduous task of creating her graphic novel. Her love of all things Halloween, paranormal, and murder investigating help to fuel her creativity for being sophisticated and creepy.

Sketch courtesy of Melissa Sain

Sherlock - an elementary deduction

Ken Saba, www.kensaba.com conceives an experience around a popular IP and adds new dimensions of interactivity with an app and a rich web of communications.

Welcome to modern day London and 221B Baker Street – home of Sherlock Holmes and Dr. John Watson. Created and produced by Steven Moffat and Mark Gatiss, Sherlock (2010 - present) is a crime-drama movie series based on Sir Arthur Conan Doyle's Sherlock Holmes detective series. It is reimagined in the present day; Sherlock (Benedict Cumberbatch) and Dr. Watson (Martin Freeman) are "consulting detectives" for Metropolitan Police Service Detective Inspector Greg Lestrade and others as they solve a variety of crimes and counter Holmes' arch-nemesis: Jim Moriarty.

Recruited as "Special Constables" for the Metropolitan Police, guests journey through the world of Sherlock. Their "Special Constable's" torches trigger sensors of various interactive elements within the stories and scenes. Whether photographs, portraits, or radio and television broadcasts that come to life with immersive media or theatrical tricks of animated props or theater devices – pointing the Torch in the right direction enables these clues to magically present themselves as a step closer to the elementary solution.

The Torch is also a lighting device that visually helps the drama and mystery unfold - and it also prompts the Sherlock app. Via the Sherlock app on their mobile devices, guests receive clues and texts from Sherlock and Dr. Watson – and can send them as well. However, Moriarty is not far behind with his taunting messages of chilling insanity. You can never be certain who is receiving your texts.

From 221B Baker Street – the "Special Constables" adventure takes them to the crime lab of the Metropolitan Police, Baskerville testing site, and other, well-known settings within Sherlock's world and episodes from the television series. Guests experience Sherlock's art of deduction through his solving of the crimes with Dr. Watson but also by entering Sherlock's "Mind Palace."

Ken Saba is a media producer and editor for the themed entertainment industry, most recently with Walt Disney Imagineering where he worked on media for several new and updated attractions and preshows that recently premiered in Disney parks. His experience also includes editing and visual effects design for Louisiana's Old State Capitol: The Ghost of the Castle (for BRC Imagination Arts), Director of Photography and Editor for NASA, and numerous broadcast credits.

An expressive luminaire

Ryan Dorn, director of production, Beaudry Interactive (binteractive.com) takes Gantom Torch technology into operations as well as guest experience.

The Gantom Torch is effectively a mobile lighting fixture with real-time wireless control. As such it's possible to utilize this technology to create show elements anywhere by placing them in the hands of cast, crew and even guests.

Staff members equipped with Torches lining a nighttime parade are able to step into the show on a given cue and provide a choreographed light show without any prior rehearsal. Guests are equally able to join in the fun without any prior instruction and participate in a group experience simply by holding a Torch and becoming a part of the moment.

Operations is another place that the Gantom Torch can provide an easy assist. Ushers using Torches are able to fall under control of the lighting board at any moment. Want all lights on or off? Hit a cue. Wish your ushers were in red light mode to not interrupt a key show moment? Hit a cue. Crowd control can even take on new methods by integrating color coded lights that change as

your Stage Manager calls from behind the scenes. Hold back a crowd from crossing a parade route by turning your staff lights red. When the moment is clear to cross, the SM calls a clear and the lights change to green. Both staff and guests are instantly cued and all by a simple localized lighting shift delivered via IR blasters. The same level of control could be exerted in ride cues, maze experiences or simply directing traffic outside the venue.

Whether it's a quick interactive moment where your guests take part of a choreographed light show or you want operational control over your staff's hand-held luminaire, the Gantom Torch is a versatile tool to have in the bag.

Ryan Dorn (ryan@binterative.com) has always been at home abusing technology for the sake of art. He has worked in formats ranging from live theater to themed entertainment to industrial showcasing and experiential design to episodic television. He has primarily worked with digital media and its various work flows and spent the most recent part of his career focusing on practical applications of physical interaction design.

ZTag zombie infection

Gantom has just launched a new business venture around ZTag, an interactive, zombie-themed role playing game that uses the Gantom Torch Technology. We interviewed Quan Gan while he was in Shanghai running a promotional ZTag event.

How does ZTag utilize Gantom Torch Technology?
ZTag uses bi-directional IR communication. Each ZTag badge worn by a player can receive a signal, act upon it, and send its own signal.

Tell us about the game.
Humans get hunted by zombies but have the ability to fight back by completing a mission to visit all the checkpoints (collecting ingredients to the antidote). Should they succeed, they become immune and can disable zombies. if a zombie catches a human, the human will turn into a zombie and must further infect other humans.

People are sprinting most of the time to either hunt or escape, and there are elements that encourage teamwork. Eight-minute rounds seem to be ideal, within which humans need to find six checkpoints on the field. We start with only a few zombies, watch the infection spread and see players develop strategies. Costume elements and props add hilarity.

ZTag shares similaries with Pokemon GO in several ways: it's getting people outdoors and exercising! It's bringing back some old familiar concepts and adding a new twist. And it's highly addictive. Where I think ZTag stands out is that it's a much more active game - people aren't looking down at a screen and walking but rather dashing to the next checkpoint while dodging zombies. By its nature, ZTag, encourages more social interaction.

What made you decide to base a new business on ZTag?
We just see so many options that we know it's worth the investment.

- Bi-directional communication opens up a wide range of possibilities simply through player behavior. Since the players are sending signals and acting as stimulants to the system, very complex results can emerge.

- We see a huge trend blending the lines between offline and online experiences - entertainment venues are constantly adding new "connected" tech to interact with their audience while online games are finding their way into the physical space (Pokémon GO is an example). ZTag sits right in between: people are chasing people in real life and then telling their friends on social media

how well they did. We're bringing schoolyard tag back with a tech twist.

What are some of the possible ways to customize?
There are many variations from simple parameter changes (already supported in the game) to complete game architecture rewrite for a specific application.

- Tourist destination: Players go on a scavenger hunt that takes them to local businesses and landmarks.

- Obstacle course with physical challenges and puzzles to solve.

- Trade shows: Drive traffic to sponsor booths.

- Haunted attraction

- Race: Zombies chase you. If you get infected, you have a certain amount of time to try and reach the mile marker before turning into a zombie.

- There are more complex possibilities where the platform can be reworked for speed dating or interviews, or even to use as a research tool to study certain kinds of behavior. ZTag is a simple wearable computer with input and ouput - what you want to do with it is entirely up to the software.

What does an operator need in terms of a venue or setting, and the investment?
We need running space that's at least the size of a basketball court. Having some varied terrain or obstacles can add to the excitement. We are getting lots of interest from paintball and laser tag operators. ZTag is similar to lasertag but without guns - which can potentially capture more female players. Many paintball fields don't operate at night, which is actually when ZTag works really well (lights are more visible) and goes with the zombie theme... so this would be an easy addition to their existing business model.

Investment is minimal because the ZTags are designed to be high volume consumer products on a range of a few dollars. Generally a few thousand dollars is what is takes to get started hosting a ZTag game. • • •

Altered States

Alterface Projects alters the face of interactive media attractions
by Joe Kleiman

In 2015, Alterface Projects, a leader in the manufacture of interactive attractions, helped Six Flags St Louis and Six Flags Over Texas thrill guests in new ways with the 3D interactive dark ride technology in Justice League 4D: Battle for Metropolis, produced in creative collaboration with Sally Corporation and others. Justice League 4D proved so popular that in 2016 it was added to Six Flags Great America in Gurnee, IL and Six Flags México, with more locations anticipated on the way.

Meanwhile, two more new Alterface-powered, family-oriented attractions have recently opened, on opposite sides of the globe. Benno's Great Race at Ferrari World Abu Dhabi uses Alterface Drag & Drop gameplay; Plants vs Zombies at Carowinds (Charlotte, NC), a Cedar Fair park, features the Alterface Dueling Interactive Theater.

Benoit Cornet, founder and CEO of Alterface Projects (which is headquartered in Belgium) describes these experiences as "made in a clever way where the technology is not visible, but is highly effective."

The immersive guest experiences these attractions deliver (described in detail below) were previously not possible on this level - especially for regional parks. The technology has taken huge leaps, becoming so transparent and intuitive - so nearly invisible as technology per se - that guests can take them for granted, and slip into an experience and lose themselves in the magic - and regional parks can be just as innovative as the biggest operators.

This is gamification on a real-world scale like never before. The kind of interactivity and graphic realism that were once confined to the gaming console have migrated successfully to the theme park platform.

- The technology empowers designers to approach attraction design and storytelling in new ways that serve today's tech-savvy audience
- The theme park environment responds to the guest in real time, in ways that couldn't be done before. As Cornet says, "Play is never the same" [from one time to the next].
- Real-time video graphics have achieved a level of sophistication, fluidity and speed that conveys a sense of realism and detail
- Using gameplay mechanics familiar to young children optimizes the attractions for family play
- It enables communal play, in a shared physical space. Guest-players compete against one another but must also cooperate towards a common goal

Individual player stations and controllers inside the Plants vs. Zombies attraction at Carowinds.
Photo courtesy of Alterface Projects.

Benno's Great Race - the changeable wrench

In order to bring in new customers, encourage return visitation, and remain competitive, theme parks consistently add and upgrade attractions. Ferrari World Abu Dhabi is no exception. It recently finished Phase 2 of its expansion, no doubt with an eye on the four new theme parks opening in the UAE this year. Part of that expansion is Benno's Great Race, an interactive 4D family ride using original characters and story developed for the park.

On the six-minute ride, guests join Benno the mouse, Rossa the fox, and their animal friends as they attempt to win the Maranello Piccolo Prix. On board one of the 11 trackless, MultiMover vehicles from Dutch firm ETF, each of the five riders takes hold of a tethered game controller shaped like a wrench, which acts as a series of tools throughout the ride. When not in use, the controllers live in holders located directly in front of each seat. As with Justice League, Alterface partnered with Pure Imagination Studios for the attraction's animation, which takes place on nine interactive screens with subtitles in both Arabic and English. Physical sets and animatronic figures round out the décor.

According to Cornet, "This is not action driven. It's a task-oriented ride. The wrench becomes a gathering tool, scissors, and other tools. It changes from scene to scene." The concept behind the interface is quite simple: riders point at the object they'd like to move on the screen, they press the button on the wrench and hold it, finally, they drag the object anywhere they want, and release the button. It's designed to be very familiar for an audience already used to the click and drag functionality of a computer mouse. "You can't aim with a wrench, like you could with a gun," continues Cornet, "This attraction is based on the movement of your tools."

Riders use the "wrench" to build Benno's car, fight off a barrage of tomatoes, free a friend from a spiderweb, and light fireworks. "We found this to be a good fit between the player and the device," says Cornet, "It really opens up new gameplay allotment."

Plants Vs Zombies: 3Z Arena -
Not your great-aunt's garden society

"At PopCap Games, we're fans of new and cool projects," says Jeremy Vanhoozer, PopCap's Senior Creative Director. "We were looking at different directions we could take our Plants vs Zombies games and considered a pretty broad range of attraction concepts – from 4D theaters to dark rides."

This desire to evolve the popular video game franchise into new directions took one step closer to becoming reality a few years ago when Cedar Fair began discussing options with PopCap's parent company, Electronic Arts (EA). According to Christian Dieckmann, Cedar Fair's Vice President of Strategic Growth, "We've been pursuing a broad range of digital attractions. Our 'Amusement Dark' dark rides [Wonder Mountain's Guardian at Canada's Wonderland and Voyage to the Iron Reef at Knott's Berry Farm] were the first model, and that will continue. Part of our more recent digital attraction initiative involves our partnership with EA and how we can present new ways to present their properties using unique technologies."

This unique partnership resulted in a new Cedar Fair attraction - Plants vs Zombies: Garden Warfare 3Z Arena at Carowinds. As Vanhoozer points out, "There are two Plants vs Zombies franchises. The original one is a strategy game, whereas Garden Warfare is meant for families or friends to play together, with one side battling the other. It was an ideal fit for Alterface's new theater system."

At Benno's Great Race at Ferrari World in Abu Dhabi, UAE, riders use a "wrench" (left) to solve a series of problems and games to help the main character, Benno, win his car race (right). *Photos courtesy of Alterface Projects.*

2

★★★★

TO

★★★★

4

=== CHRISTIE ===
BOXER SERIES

Undisputed performance in its weight class.
Upgradable from 2K to 4K in minutes.

Visit christiedigital.com/boxer2K4K for more information

CHRISTIE®

Alterface's Cornet points out, "We opened our first interactive theater in 2006, so some of those theaters are now celebrating their 10th year of operation. In the Dueling Interactive Theater, it's one team versus another team. This adds a layer of fun because now everyone's teaming to defeat the other team. You can see everybody in the theater, so there's visual contact between teams."

"We had a pretty good conversation from day one with Alterface," says Vanhoozer. "We were finishing up Garden Warfare 2, and as we were completing them, we sent our models to Alterface. The team at PopCap worked with them on how to present the characters. We worked directly with them on storyline, the custom experience, artwork, everything for the preshow, including preshow dialog, to make sure the voice was correct. We worked closely with them to make sure computer graphics were right."

Players sit on one of 62 motion-based seats with a custom, Alterface-designed shooter attached. The audience is split in half, each half facing its own 14.6' x 26' 3D screen. Cornet points out that "the process was relatively simple – this was not a simulator approach. We concentrated on the quality of the game, rather than moving players in all directions. Since our focus was on gameplay, we needed to perfectly position each person. There are some gates, some bridges in the game. Some elements from one team will appear on the screen for the other side, and the gameplay on one side affects the other side. Play is never the same."

An introductory preshow video featuring the character Dr. Zombot sets the stage and allows both those familiar with Plants vs Zombies and those who have never played the game to understand the back story and the gameplay they're about to encounter. As animation is rendered in real time with the Unreal game engine, characters, scenery, and storylines can be switched or added as they are introduced into future iterations of the franchise.

According to Cedar Fair's Dieckmann, the attraction fits in perfectly with planned improvements at Carowinds. This year, it wanted to concentrate on families and Plants vs Zombies was part of that. "It's doing very well with families. Parents will come out of it with their kids and they're both excited. It's very important that our park fans know this is an attraction we created for them, and not something generic we just ported in, so among other things, we've included Carowinds Easter Eggs inside Plants vs Zombies."

The future holds new ways to interact
Alterface continues to explore new ways to interact on 4D attractions. "We're putting lots of R&D into a new non-linear dark ride," says Cornet, "It provides a completely random approach to how you experience a dark ride."

The company is also working with a number of leading universities in Belgium on virtual reality research, primarily in the fields of tracking and signals. Cornet sees this desire among companies to turn the living room into an attraction via VR technology, but Alterface is leaving the in-home entertainment sector to others. Alterface, on the other hand, will continue to concentrate on new ways for guests to experience out-of-home interactive attractions. • • •

A view inside the main theater of the Plants vs. Zombies attraction at Carowinds
Photo courtesy of Alterface Projects.

International Association of Amusement Parks and Attractions Presents

EURO ATTRACTIONS SHOW 2016

Join the premier European trade show for the amusement parks, attractions, and leisure industry.

10,000+ net sq. meters of exhibit space

20+ educational seminars

Over 50% of buyers are CEOs, owners, or directors

9,000 attractions industry professionals

425+ exhibiting companies

WHERE THE
BUSINESS
OF FUN BEGINS

Register by 31 July and Save 25%

Fira Gran Via, Barcelona, Spain

Conference: 18–22 Sept.
Trade Show: 20–22 Sept.

www.IAAPA.org/EAS | EMEA@IAAPA.org

EAS
Euro
Attractions
Show

IAAPA

InPark goes to InfoComm

by Judith Rubin & Joe Kleiman

InPark Magazine editorial staff visited InfoComm 2016 in Las Vegas to check out companies, products and trends in AV technology in context of the visitor attractions industry that InPark serves. The show enjoyed a record turnout, reporting 1,000 exhibitors in 527,105 square feet of exhibit and special events space, and 38,833 visitors. Next year's InfoComm is in Orlando, June 10-16.

In-house synergies

In the themed entertainment world, it's big news that Barco recently acquired Medialon, creators of extensively used show control software. At Barco's booth we spoke to Eric Cantrell, whose new title is North American Sales Manager, Medialon Division, and Alison Maxson, Press & PR Specialist, Americas. Cantrell explained that the familiar Medialon team is still in place, with himself in the Americas, EMEA Sales Manager Robert Chong in Europe and Medialon founder Alex Carru leading the Medialon division from Montreal, where he will be located with the software development team. Cantrell is enthusiastic about the opportunities within this synergy. "We're talking to all the different groups within Barco," he said. "There may already be a new product in development… Everything wants to talk to everything." Barco projectors on display at InfoComm this year included the expanding HDX-4K line, and the F90-4K13 laser.

Harman Professional's way of doing business also shows the benefits of having a range of products under a big umbrella. The company has set up a business vertical headed by Bradford Benn to address the theme park and attractions market. Benn related that Harman has already tailored certain products specifically with this market in mind – such as the JBL CWT128 outdoor speakers. According to Benn, the company stands ready to customize its loudspeakers for jobs both large and small. Harman's international sales and support staff locations include China, to support the expanding market. In addition to supporting integrators, Harman also plays something of an integration role itself in the field. Benn indicates that doing so can mean an early seat at the project development table and a fruitful partnership with the end user, as he says, "by being able to find solutions for new and unique projects."

Bigger, better and uncompressed

Today's top-end video playback must move rivers of data at high frame rates, high resolutions of 4K and beyond, edge-blended and preferably uncompressed. Alcorn McBride's Scott Harkless (director of sales) and Loren Barrows (business development) showcased the company's A/V Binloop Uncompressed multichannel video and audio player. The solid state, playback device is scalable in 2K increments and can handle up to 60

GET DOWN TO BUSINESS, THEN JUST GET DOWN!

We promise to give you all kinds of opportunities to learn, network, shop and grow your knowledge – all while experiencing the rich flavors of our historic host city, New Orleans! But first you need to **BOOK** your flight, **BOOK** your room at the Hilton New Orleans Riverside and **REGISTER** online – advanced prices are available now!

Visit WWASHOW.org today to check off your registration list.

World Waterpark Association Show
October 11-14, 2016
New Orleans, Louisiana, U.S.A.
+1-913-599-0300

WWASHOW
2016

fps. Harkless and Barrows report that it is already in place at major themed entertainment venues in Europe, Asia and US, and integrated by SimEx-Iwerks in the new Penguin Encounter attraction at the Detroit Zoo. "Everyone wants uncompressed now," said Harkless.

Alcorn was also displaying the latest V16 Pro, featuring an upgraded processor with capabilities providing integration between control and video playback for larger attractions such as 4D theaters. And while we tend to hear about paging stations more often in connection with performing arts centers, it's also a critical function in themed entertainment according to Harkless and Barrows: thus V-Page, the Alcorn McBride facility wide intelligent paging system also on show at InfoComm.

Lucky sevens

Leyard and Planar received no fewer than seven awards recognizing their innovative Leyard TWA Series LED Video Wall and Planar LookThru Transparent OLED display. Jennifer Davis, chief marketing officer at Leyard, went on record saying, "the massive, eye-catching Leyard TWA Series 8K LED video wall was the talk of this year's show and the highest resolution LED video wall ever shown at InfoComm." This 8K installation of 64 individual Leyard TWA Series 1.2 millimeter pixel pitch displays measured more than 31 feet wide by 18 feet tall.

Supporting the 8K x 4K uncompressed display playback at the Leyard Planar Systems booth: the 7thSense Design Delta Infinity Media Server – described by that company as "a fully uncompressed single-box 8K 60fps media server." 7th Sense products supported exhibits at seven different exhibit booths at Infocomm 2016, including Crestron, SiliconCore, Lightware, Da-Lite, Electrosonic and Vivitek.

Modulated blinking and spacewalks

As soon as Tokyo secured the 2020 Olympic Games, Panasonic created its Pan Olympic Enterprise Division in Tokyo. The company has a history as a major sponsor of the Games and is developing various technologies that will affect the 2020 guest experience. Ian Woozley, senior business development manager based at the company's Innovation Center in Japan, showed us a communicative LED display system (working title, Light ID) that by modulating the blinking of its LEDs can send a signal to users' smartphones and trigger a URL, among other things. Some of Panasonic's other ventures in creating magical, visitor-responsive environments include collaborating on Denver's smart city initiatives, and partnering with museums in North America and Europe.

More technology, less paperwork

As Product Marketing Manager at Vectorworks, Inc., Frank Brault champions the recently acquired ESP Vision product and Vectorworks Spotlight. Vision is a previsualization software that interprets standard DMX signals from a lighting console to display the lighting cues with lighting devices in a Vectorworks light plot model. Vectorworks Spotlight has tools made for designers (lighting, events, exhibits, scenic), and the people who work with them (electricians, programmers, riggers, projection/media designer, technical directors…)

Brault developed the first version of Spotlight (then called the Theatrical Lighting Toolkit) and related products. He came into the industry via theater as have so many others, and hands-on theater and theme park experience led to the supplier side and hands-on programming. Vectorworks Designer combines multiple workflow products in a CAD software system that rolls in lighting design, event design, museum exhibition design, rigging tools, documentation, plans and worksheets. Having

Buyers survey the latest technology equipment at the Panasonic (L) and Sony (R) Booths *photos courtesy Panasonic and Sony*

NWAVE PICTURES DISTRIBUTION
PRESENTS

EAS
Euro Attractions Show
IAAPA
September 20-22, 2016
nWave Booth #1151

SHIPWRECKED ON AN ADVENTURE ISLAND

ROBINSON CRUSOE 4D

NORTH/SOUTH AMERICAN SALES		INTERNATIONAL
Janine Baker	Jennifer Lee Hackett	Goedele Gillis
+1 818-565-1101	+1 386-256-5151	+32 2 347-63-19
jbaker@nWave.com	jleehackett@nWave.com	ggillis@nWave.com

nWave pictures

RobinsonCrusoe4D.nWave.com

nWave picturesdistribution

nWave.com | f /nWavePicturesDistribution | /nWave | YouTube /nWavePictures | /nwavepicturesdistribution

Buyers explore the different areas and products on display at Harman's booth *photo courtesy Harman*

the capacity to access libraries of available product information and attach data to objects within the model, it can provide relief to designers and integrators faced with vast amounts of documentation for one-off projects, according to Brault.

Work meets fun and we get geeky

The evening of June 9 we joined a well-attended party hosted by AVNation, to which we were invited by George Tucker, co-founder/producer at AVNation.tv.

We followed this with the annual Geekout of two other thought leaders in AV and show control, Jim Janninck and John Huntington. Brooklynite John Huntington is a Professor of Entertainment Technology at New York City College of Technology. Huntington and colleague Jim Janninck, president of TimberSpring Design & Engineering, put out the call every year for presenters to share case studies that involve unique applications of show control. We are indebted to AV industry connector Tommy Bridges for introducing us to the Geekout a few years ago, which always takes place offsite during the week of InfoComm.

Bob Athey of ATI and Kevin Ruud of Design Horizons (Ruud worked on the High Roller observation wheel in Las Vegas, see InPark Issue #53) helped secure GameWorks as this year's location and the excellent turnout of some 40 people were well served in the Vintage Vegas Room. The post-talk festivities in the bowling area were sponsored by ATI and GameWorks. The facility itself was buzzing with families and teens.

ATI, a prolific provider of AV to Las Vegas venues, especially nightclubs, also maintains an office in Orlando, and in Shanghai. ATI has been involved in the latest round of Gameworks facility reboots and rollouts. We see the resurgence of GameWorks as fueled by the selfsame technology advances that one encounters on the InfoComm floor – along with the meteoric rise of online gaming and its increased number of female fans.

Elizabeth Swaffield, Associate Software Engineer at Electrosonic, talked about The Hunger Games: The Exhibition, the traveling exhibition based on the blockbuster movie franchise, developed by Lionsgate in association with Imagine Exhibitions and designed by Thinkwell Group. It premiered in July 2015 at Discovery Times Square in New York City, and is currently at the Palace of Fine Arts in San Francisco. Technical components of the system included Medialon show control, QSC audio, 7th Sense servers, a Grand MA lighting console and a Pelco video surveillance system. There are two 4×8-foot Stewart film screens with Christie DWU555-GS projectors that use laser phosphor illumination. Because it would be set up and broken down numerous times in a variety of spaces, the show had to be modular, with custom cases designed for each piece of gear, "ready to go, ready to ship, ready to fall off the back of a truck," as Swaffield quipped.

Scott Harkless of Alcorn McBride talked about the Volcans Sacrés dark ride at Volcania, an educational park themed on volcanoes, in France. The AV integrator, Nightlife Productions, utilized gear from Alcorn McBride 7th Sense Design, Peavey, JBL, and Crown, and an ETF trackless ride system. The designer was Jora Entertainment.

Over refreshments later, we chatted with Bill Nearhood, senior tech director at Thinkwell, who reported that he's been doing a lot of traveling lately to China and Canada. He praised John Huntington's authoritative book, Show Networks and Control Systems, and said "it's the most dog eared and eroded book in my reference library."

8K and beyond

During a press conference, Sony presented a number of ways that its media technology could be utilized for connectivity in conference and education settings. Among those speaking were Dr. Stephen Brown, a board member of the Houston Museum of Nature and Science, which had recently upgraded its Burke Baker Planetarium to use Evans & Sutherland's (E&S) True8K Digistar 5 fulldome projection system. A new floor was constructed along with a new screen, creating a tilted theater environment, with the images projected from 10 4K Sony SXRD projectors. According to Brown, the system was chosen because it's "future proof. It's compact and fit quite well into our existing space. There's this sense of transparency. You feel immersed in the starfields. And our visitors have been amazed."

At the center of the Sony pavilion sat a 4K immersive dome where E&S was demonstrating the new Digistar 6, under the watchful eye of Michael Daut, E&S Director of Show Production and Marketing. Two 4K phosphor laser SXRD projectors provided the 8K wraparound image.

Also on display was Sony's CLEDIS (Crystal LED Integrated Structure), 32 feet long and 9 feet high, with an 8K x 12K image.

Devised of multiple panels, the display showed strong colors and blacks, with a contrast of more than 1,000,000:1.

Smart cameras

Hitachi was showcasing camera systems for video capture. Among the items being showcased were the KT-PN490S pan-tilt head and KT-RW8804 multi-function control panel, both from KXWELL. The head has a dampening effect for startup and stop to facilitate smooth movement and has remote focus, allowing the camera to remain upright. It attaches to the controller, which can operate up to four cameras via joystick, through a CAT5 cable. Already the system is being used for live events being filmed in 4K in Las Vegas, including Blue Man Group and Cirque du Soleil's KA.

Smart projectors

A visit to DPI's (Digital Projection International) booth showed what a difference 14 years can make! In 2002, Joe Kleiman, then manager of an IMAX theater in Harrisburg PA, asked DPI to send one of its Lightning projectors for a trial, to see how the 16,000 lumen 1280 x 1024 image would hold up on the giant screen. When the projector arrived, at 30 inches wide and more than 3 ½ feet long, only one person could fit in the elevator with it. Today, DPI's 12,000 lumen Insight 4K Laser projects 4096 x 2160

images from a 27.5 inch by 3 foot chassis. Although only slightly smaller than the Lightning was, the weight of the two machines shows the difference smaller and lighter components produce over time – the Insight, at 148 pounds, is 100 pounds lighter than the Lightning.

2K and 4K projectors abounded at the show, and in much smaller frames. At Christie's sports themed booth, the company's Boxer series of projectors took center stage, showcasing how a presentation can be composed on a curved screen through blended images from multiple projection surfaces, and in projection mapping. Chris Gordon, a software developer for Christie, guided us through the company's Mystique software suite, designed exclusively for the planning of projection mapped productions.

With Christie Mystique, a virtual model of the projection surface is created in the computer, which can then be viewed via an Oculus Rift viewer. A physical 3D model is then printed via a 3D printer. This can be any shape – the exterior of a building or the floor of an arena, for example. Using small, interlocked Pico projectors and a camera, the actual projection can be tested, refined, and changed on this 3D surface.

Audio embraces Dante

You can't have AV without audio, and very much in evidence was the trend to using Dante, an uncompressed, multi-channel digital media networking technology for audio transmission over standard IT networks developed by Audinate. (This indicated a switch from using Cobranet, which was an early success at audio transmission over Ethernet.) Audinate CEO Lee Ellison shared the extent to which the professional AV industry has adopted the technology – it's integrated into 90% of equipment from the top vendors, 100% of the top mixing systems, 60% of the top amps, and with 300 licensed companies, with more on the way, has been adopted into 80% of all new products. For an example in the attractions world, The London Eye systems recently were upgraded to use Dante.

One of the companies that has begun integrating Dante into its equipment is MSE Audio, which features a number of brands for a number of audio solutions under its umbrella. MSE recently acquired Museum Tools, and its Secret Sound parabolic speaker line, used in museums for over 20 years.

Audio that is sensitive and smart

Barix's audio over IP solutions, distributed in the US by LineQ, are so powerful and sensitive, that they've been employed by Pacific Wild to capture and stream live sounds of Humpback Whales in the Canadian Pacific and by Seismic Warning Systems to monitor earthquakes in California. In 2009, Barix audio over IP and automation devices used for on-demand audio playback, live music streaming and message repeating were put into action at Nickelodeon Universe at Mall of America.

An intriguing new product from Sennheiser was the Mobile Connect assisted listening device, which transmit the audio signal directly via WiFi to an app on the patron's mobile device. Not only does this promise to eliminate concerns about transmission issues, but the app features a touchscreen balance function, where by sliding their finger over four quadrants on the app, hearing impaired patrons can select the best audio balance for their needs. MobileConnect is a joint project with the Fraunhofer Institute for Digital Media Technology near Oldenberg, Germany.

Audio that is interactive and interconnected

From Italy comes Powersoft and its deva interactive audio system. Housed in a weatherproof, tear-shaped structure, each unit is solar powered and designed to handle bi-directional wireless AV communication. In addition to audio, the units are designed to house LED lighting, take still photos or 1080p video, or operate with a GPS housing and motion sensor. Powersoft reps see it as a good fit for theme park rides where the audio is along the route external to the vehicle. This system allows for in-ride photos or complete video of the ride to be taken for sale afterwards.

As important as audio and visual systems are, they can go down without a reliable power source. According to Mike Brown, Middle Atlantic Products President, "Our RLNK is the only power outlet with surge protection on the market in compliance with InfoComm's energy standards." With 350 patents on power systems, Middle Atlantic's power units are designed for devices interconnected with the Internet of Things and with a smaller hardware footprint.

The Internet of Things (IoT) has become a buzzword, and among the various developments we found at InfoComm were increased connectivity over the Internet and to mobile devices through wifi, larger displays with higher definitions, increased capacity in projectors with ever-shrinking sizes, and the convergence of varying technologies to provide new opportunities for digital signage and audio. • • •

Buyers survey the latest technology equipment at the Audinate (L) and Alcorn McBride (R) booths *photos courtesy Audinate & Alcorn McBride*

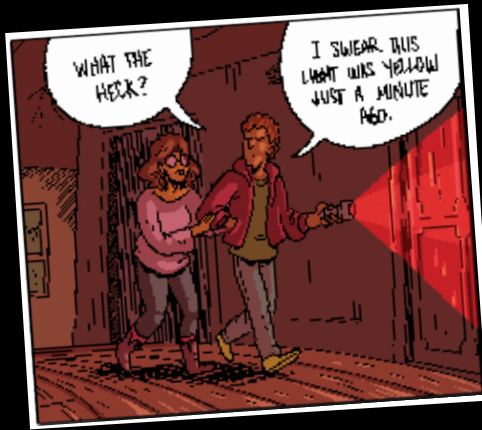*View more photos and details from Infocomm online at inparkmagazine.com*

THIS MONSTER SLIDE
IS GOING TO CREATE
SCREAMS
AND SMILES
ON THE FACES
OF OUR GUESTS

Steve Mayer
Director of Marketing, Typhoon Texas
Katy, Texas

WHITEWATER.®

whitewaterwest.com

The new realities

How theme parks and museums are adopting VR and AR

Contributors: Keith Loria, Hilary McVicker, Randy White

Augmented reality (AR) and virtual reality (VR) rides and attractions are being rapidly adopted at theme parks, museums and other popular visitor attractions, with a lot of new activity just in the past year.

VR goes for a ride

VR Coaster GmbH & Co KG was instrumental in producing the world's first virtual reality experience on a roller coaster. The Alpenexpress VR-Ride opened at Europa-Park in Rust, Germany in 2015. Passengers put on VR headsets as they board the Mack-built coaster. The wraparound 360-degree visuals delivered via the headset are synchronized with the movement of the ride. In this instance, the animated, virtual world is based on a 4D show called "The Mystery of Castle Balthasar," in which passengers ride on the back of a dragon through a fantasy environment.

Europa-Park's pioneering Alpenexpress VR-Ride proved the concept, and its success has quickly led to more, again with the involvement of VR Coaster GmbH. Multiple Six Flags parks have introduced VR coasters, such as The New Revolution Virtual Reality Coaster, which opened this season at Six Flags Saint Louis, in partnership with Samsung Electronics America and using Oculus headgear. The Virtual Reality Coasters powered by Samsung Gear VR can be found at nine Six Flags locations across the U.S. These pioneering virtual reality roller coasters tie the VR experience to the hard ride via specially formatted media that plays on Samsung Gear VR headsets, synched to the ride by VR Coaster GmbH technology.

Tom Harding, Director, Immersive Products & Virtual Reality, Samsung Electronics America Inc. said, "It offers a cutting-edge, innovative way to ride roller coasters - and without the nausea some might expect."

Thomas Wagner, Managing Partner, VR Coaster GmbH said, "Extending roller coasters with VR is not only giving older coasters a renaissance, but it also creates a totally new kind of attraction. It's actually the very first setup that allows for real forces, real drops and zero gravity (or air-time) in a simulation ride. The trick is to have a precise, automated synchronization between the real ride and the virtual ride. Then you can do almost anything. You can virtually extend the size of the coaster, remove the rails, increase heights and speeds and more. By the end of 2016, we will have more than 20 theme parks worldwide equipped with

our system. We are also working on projects with slowly moving dark rides and so called 'people movers,' like trains."

The technology, said Wagner, is "very flexible and robust. As our hardware is wireless, the headsets don't need any cables, and you also don't need to attach any CG hardware or computers onto the train. We only add our sensor system and our black box with a micro controller to the train, and that system wirelessly transmits the information to the headsets. This way, everybody can still make a choice whether to experience the ride with or without VR. We've not only been the first team to develop this, but we've also filed a patent for the process of enabling a coaster to synchronize with a mobile VR headset, which gives us kind of a head start in this industry."

Samsung has gained product positioning from the Six Flags collaboration, as the Gear VR package is designed for home entertainment as well. "The latest version of the Samsung Gear was designed to support the move of VR into the mainstream," said Harding. "It's 19 percent lighter and more comfortable than other VR products. It is also the first low persistence VR experience powered by a smartphone. This is hugely important as it reduces the motion lag when turning your head and provides for a premium VR experience when compared to other mobile VR. Gear VR has multiple sensors (accelerator, gyrometer) working together with the display to provide 360 degrees of content that moves as naturally as you move your head."

The Alpenexpress VR-Ride at Europa Park *Photo courtesy of Mack Rides*

AR time machine

Several museums are getting into the act as well. For example, Epson Moverio smart eyewear is being used in several venues in Italy. Brescia Museums in Brescia, Italy has employed the technology to provide 3D digital reconstructions of archeological ruins. The Interactive Film Museum in Milan is using it to help open up access to its extensive archives. At the leaning tower of Pisa, the glasses furnish a virtual look back into history.

"AR is a technology with enormous potential in the field of cultural heritage," said Eric Mizufuka, product manager, Epson Moverio Smart Eyewear. "There is high demand. Working closely with the Brescia Museums and a software developer, we created a solution that enables visitors to stop at key points along a path in Northern Italy. Wearing their smart glasses, they can view transparent, 3D digital reconstructions overlaid on top of the ruins showing how the structures looked 2,000 years ago. It's an AR time machine."

The company has its eye on theme park markets as well as museums and believes AR will outpace VR in time. "Most well-funded venues are either testing AR/VR content or actually implementing experiences for visitors, initially in VR," said Mizufuka. "Epson's Moverio AR glasses are currently undergoing pilots at two major attractions and we are collaborating with other key players in the industry as well. With its enclosed visual system, VR experiences are easier to create than AR at the moment, but we believe AR will eventually dominate because of its mobility and the interaction that's possible with real-world environments."

Disney, Dali & the future

Disney and Dali: Architects of the Imagination was an exhibition co-organized by The Walt Disney Family Museum in cooperation with The Dali Museum, the Gala-Salvador Dali Foundation in Figueres, Spain, and The Walt Disney Studios. It premiered at the Disney Family Museum in San Francisco, where it ran July 2015-Jan 2016, and then ran at the Dali Museum in St. Petersburg, FL Jan-June 2016.

The Dali Museum added a VR experience entitled "Dreams of Dali" that allowed visitors to enter and explore the multimedia exhibition within a 360-degree virtual world, and that remains available for home users. Kathy Grief, Marketing Director, Dalí Museum said, "There are lots of innovative experiences coming out of museums around the world so it's an exciting time to be part of this industry. I think we're all embracing the notion that people want more – there's no doubt they want to see the original works and that is certainly their main drive for visiting and our main mission, but consumer mindset is changing. We live in a digital world, people now desire to be part of the art, and VR is a prime way to offer people a truly engaging experience and allow them to appreciate art in new ways."

Pokémon GO: a watershed moment
by Randy White

In less than two weeks following its release Pokémon GO had become the rage for millions of people throughout the world who are roaming around gazing into their smartphone screens with a goal to capture 151 Pokémon. It's not the first use of augmented reality (actually mixed reality), but it's the first to gain mass mainstream adoption. Experts consider Pokémon GO a moonshot that establishes augmented reality for many future consumer applications.
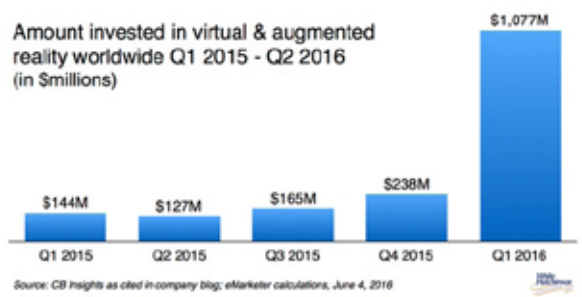
In a few years when Magic Leap, Hololens and other AR companies allow us to look thru glasses instead of at screens to mix digitally created and real world experiences and to connect with other people, we'll be looking back at Pokémon Go as a really crude form of augmented reality.

What Pokémon GO has done is take video game play off of the sofa and out into the real world. In a sense, the entire world has now become a giant 3D screen that you are physically in. And although other video games can be digitally social, Pokémon GO is bringing strangers physically together in the real world at its Gym locations.

Pokémon GO is a true defining chapter in the history of technology. It is a watershed moment as a new form of interactive entertainment, and a no- or very low-cost one at that (to the consumer). Out-of-home entertainment is no longer confined to a specific building, a piece of real estate where you have to pay a considerable price to enjoy it.

Pokémon GO and future applications of augmented and mixed reality are sure to add to the already digital disruption we are seeing to existing out-of-home entertainment options. And that disruption is sure to accelerate if the growing investment in augmented and virtual reality is any indication. In the first quarter of 2016, over $1.0 billion dollars was invested in AR and VR companies, 60% more than all the money invested in those technologies during the whole of 2015. • • •

Amount invested in virtual & augmented reality worldwide Q1 2015 - Q2 2016 (in $millions)

$144M — Q1 2015
$127M — Q2 2015
$165M — Q3 2015
$238M — Q4 2015
$1,077M — Q1 2016

Source: CB Insights as cited in company blog; eMarketer calculations, June 4, 2016

Randy White is the CEO of the White Hutchinson Leisure & Learning Group, a multi-disciplinary firm that specializes in feasibility, concept and brand development, design, production and consulting for entertainment and eatertainment venues. Over the past 27 years the company has worked for over 500 clients in 33 countries and won 16 first-place design awards. The company publishes an occasional Leisure eNewsletter and Tweets (@whitehutchinson) and Randy blogs. Randy is also a founder, co-Regent and presenter at Foundations Entertainment University, now in its 14th year. Randy can be reached at 816.931-1040, ext. 100 or via the company's website at www.whitehutchinson.com.

EVERY EXPERIENCE MATTERS

IAAPA ATTRACTIONS EXPO 2016

Conference: Nov. 14–18 • **Trade Show:** Nov. 15–18 • **Orlando, FL, US**

IAAPA Attractions Expo 2016 is dedicated to helping you exceed the expectations of your guests. Supporting you with new products, solutions, technology, and connections that allow you to completely immerse yourself in a powerful learning environment, customized for your professional needs.

Take that inspiration back to your facility, recreate it for your guests, and deliver an experience that keeps them coming back for more.

REGISTER EARLY AND SAVE!

#IAE16
@IAAPAHQ

www.IAAPA.org/IAAPAAttractionsExpo/InPark

IAAPA Attractions Expo

IAAPA

"The Walt Disney Family Museum has an on-going commitment to engage visitors in innovative ways that are reflective of Walt's visionary approach to interactive environments," said Kirsten Komoroske, Executive Director of The Walt Disney Family Museum.

"VR will grow and eventually convert into true augmented/ mixed reality," said Wagner. "I believe the next big thing is to use devices like the Microsoft Hololens and to render objects directly into your field of view. But the industry has discovered that VR opens up a lot of opportunities to create amazing worlds that wouldn't be possible in real world theming for a fraction of the usual budget. Not only for rides, but also for walk-through mazes and stationary VR experiences." • • •

-KEITH LORIA

VR beyond the headsets

by Hilary McVicker, Communicatrix, The Elumenati

It's an exciting time to be in the field of immersion. The high levels of interest and investment in virtual reality technologies mean that new applications are coming up across a wide range of industries. The Elumenati's founders were working in VR in the 1990s, and bring decades of experience to designing immersive environments that are both elegant and effective. Our domes and panoramas provide an excellent complement to head-mounted displays (HMD).

A phrase we hear often is "It's VR without the headset!" Inside our domes and panoramas, groups can explore spherical content together. Whether it's a family experiencing a themed entertainment ride or a design team previewing an architectural model, the experience is social and collaborative. Immersive environments are accessible to audiences of all ages, with none of the physical limitations that may arise with HMDs. We're also hearing that our panoramas are an critical part of the production pipeline for our clients who are creating VR content, as the creative team can make aesthetic and practical decisions together in the immersive space.

It's always been our goal to innovate, finding new ways to leverage immersive technologies for impactful experiences. We're actively seeking opportunities to collaborate with partners to grow and expand the possibilities of working in the VR medium – and we're looking forward to what comes next. • • •

Augmented Reality enters theme parks

The virtual realm of augmented reality collides with the tangible, traditional guest visit to Cedar Point with the debut of "The Battle for Cedar Point," an interactive, competitive gaming experience inside the new Cedar Point mobile app.

Developed by UK-based, sensory experience design experts Holovis, in partnership with Cedar Point, the free game allows guests to compete against each other in a fun new way as they walk through the park, wait for their favorite ride or sit down to enjoy a meal.

Guests who choose to play The Battle for Cedar Point will first join one of five "clans" on the day of their visit – Valravn, GateKeeper, Millennium Force, Top Thrill Dragster or Maverick. Each clan is signified by its own unique character avatar, along with a custom battle shield.

They will then "battle" against other guests inside the park that day as they earn points by scanning select ride signs, t-shirts and game symbols located throughout the park. Once scanned, these items will come to life on the guest's mobile device, enabling them to see characters, animated signs and achievement symbols as they appear to co-exist with the real world. They can then share these interactive experiences on social media, encouraging others to join their clan.

Amy Steele, VP of Development at Holovis said, "There's something exhilarating about watching the real world come to life with a layer of AR magic. Augmented reality is not a particularly new technology, but it still remains new to most people, and it is a really unique and powerful way to extend the experience of an attraction into queue lines, attraction exteriors, and even into the guest's own home."

The victor of the day's crusade is revealed nightly at the park's Luminosity show, a multi-sensory musical experience featuring talented aerialists, live singers and dancers, mesmerizing pyrotechnics and dramatic visual elements. The Battle for Cedar Point resets each operating day.

"Because of the real-time and updatable nature of these apps, AR apps can benefit a park by driving traffic to where you want your guests to be, when you want them to be there. It can benefit the whole park eco system by, for example, driving traffic to an underperforming food and beverage area as a 'quest' in the AR game, or by driving repeat visitors back to the park with new in-app downloads and AR experiences that can only be experienced in a ride's queue line," said Steele. • • •

Printing for profit

Why dye-sublimation tech is ideal for cost-effective photo souvenirs

by Cliff Reeves, US and International Sales Manager,
DNP Imagingcomm America Corporation

For the attractions industry, merchandising the guest experience represents a significant opportunity for improving bottom lines and maintaining steady growth. One of the leading opportunities is the print photography souvenir package. High quality printed images with a branded, custom border or folder/frame are among the best selling souvenir items at parks around the world.

Consumer technology over the last ten years, such as the smartphone, makes it easier than ever to capture, share, and access photos. However, the general consumer and park/attractions visitor cannot easily move photos off their screens and onto their walls or refrigerator at home, especially photos of high quality. This increases the value of a physical print created on-demand.

That's not to say digital images are of no value to customers. Digital files are a great complement to a printed image and can be offered as a value add-on for customers purchasing a souvenir package. But the printed package represents the best value for the guest and also the biggest return on investment for park and attractions operators. Because consumers print far fewer images than in the past, these high quality, unique images have great value.

Cliff Reeves

US and International
Sales Manager,

DNP Imagingcomm
America Corporation

From the capture device to the printer output, the technology behind cost-effective print photo souvenirs is critically important. For a photo printing souvenir station, the implementation of professional-grade dye-sublimation photo printers is an absolute must.

What is dye-sublimation photo printing?

The two most widely used photo printing methods available are inkjet and dye-sublimation. Inkjet printers spray droplets of ink onto specially coated papers, whereas dye-sublimation 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 and absorbed by a special receiving layer on the paper. The special paper and ribbon are called printing media.

During the dye-sublimation printing cycle, heating elements on the print head change temperature rapidly, laying different amounts of dye (depending on the amount of heat applied) on the paper. After repeating this process several times, a final transfer lays laminate over the top protecting the print from ultraviolet light, fingerprints, and moisture.

Why dye-sublimation? (quality, speed, cost, maintenance)

Dye-sublimation printing offers several advantages for park operators, including an impressively low total cost of ownership (hardware, software, and media) thanks to minimal maintenance needs, high margins, and speed. When it comes to printing via dye-sublimation, the price per print remains consistent, regardless of content, since there are no expensive ink cartridges to refill. Dye-sublimation media prices generally don't fluctuate and are shipped to produce hundreds of prints in a single box.

Unlike ink technologies, there is no smudging, running, or blotching because 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.

Like any business owner, park operators inevitably face maintenance issues. At theme and amusement parks those costs can be especially high. An inkjet printer's thermal print head sweeps back and forth over the paper; a dye-sublimation printer's does not. The benefit: in dye-sublimation printing, there are fewer moving parts that can break - minimizing downtime and ensuring photo operations are producing prints without delay.

Park operators also need to be able to produce prints quickly before a guest loses interest, and dye-sublimation printers are the fastest photo printers available. They can print full-bleed customized images in a matter of seconds, ensuring every print is ready and available for purchase before a ride is over.

With available space at a premium throughout parks, it's important to ensure printing solutions are compact and won't compromise an area that could be used for other revenue-generating assets. Dye-sublimation technology offers high-output in a small footprint, perfect for photo booths and concessions. Versatility is also critical, and here, too, dye-sublimation printers deliver -- most are capable of producing several different print sizes without changing out hardware.

Dye-sublimation printing is also the industry standard for photo booths, green screens, and any photo print merchandising opportunity where quality and speed are required. • • •

Real-world success stories

Cashman Photo

For over 50 years, Cashman Photo has been the premier provider of shoot-and-print souvenir photography services for many of the most prestigious hotels, casinos, and entertainment venues throughout Las Vegas, including the Stratosphere thrill ride. After relying on wet printing processes since their inception, the company recently upgraded all its photo labs with approximately 250 DNP dye-sublimation dry photo printers.

Spec printing high quality photos at a profitable price point was a key factor in Cashman's search for a dry solution for their labs. By switching to a dry solution the company not only improved its costs-per-print but also their sustainability, an initiative to which Cashman and its clients on the Strip are committed. After carefully comparing the energy consumption, operational costs, and environmental factors associated with the wet process machines to a dry solution, DNP's dye-sublimation printers became the clear choice.

Vegas Off-Road Experience

When the Vegas Off-Road Experience (VORE) wanted to offer souvenirs of adrenaline-infused adventures, it chose DNP's DS40 high speed, high quality photo printer. VORE recently began offering photo packages to help capture their unique experience.

As the photography packages became a key revenue component, the company needed a printer that could produce high quality images quickly and cost-effectively. Since implementing the DNP dye-sublimation printer VORE has seen a 10-percent increase in revenue.

Hot Shots Imaging

Hot Shots Imaging handles photo concessions for some of the most beloved landmarks and tourist attractions across the country, including the Hoover Dam. The company provides photo souvenir stations that offer visitors specialized memorabilia that are printed directly on-site as a complete photo package. To meet the needs of their extensive photo printing services, Hot Shots Imaging deploys DNP's dye-sublimation printers to provide exceptional image quality at unparalleled speeds.

Controlling the flow of visitors to the sales stations is vital to the success of Hot Shots' operations. The DS40s print at a very high rate, with 4"x6" photos produced in under nine seconds, ensuring they are able to sell, print, and package memorabilia before the next group of visitors finishes its tour.

3db Solution Inc.

Specializing in the development of digital photo systems for the amusement park and attractions industry, 3db Solution Inc. has capitalized on the growing demand for instant photo souvenirs at attractions throughout Canada and the United States. In addition to photo souvenirs for amusement park rides, the Quebec-based company also develops computerized photo systems for photo booths, haunted houses, zoos, and other entertainment attractions.

To ensure customers receive a high quality souvenir with near-instant speed, 3db Solution Inc. integrates DNP's dye-sublimation photo printers into every photo system it installs. By integrating DNP dye-sublimation photo printers into their systems, 3db Solution Inc. offers high quality images with custom borders at a price many park visitors find hard to resist.

Visit www.dnpphoto.com

Pixels anywhere you can imagine

—

Light up your vision

Bring your one-of-a-kind vision to life with Christie's cutting-edge display solutions. We're committed to helping you create the world's most compelling visual experiences.

christiedigital.com/pixelpower

CHRISTIE®

Making Mako

SeaWorld dives back into the roller coaster genre with the latest
Bolliger & Mabillard addition to their Orlando park

by Martin Palicki

Quite simply, SeaWorld Orlando's newest roller coaster is an elegant ride. Like the shark it is named after, Mako is sleek, sophisticated and fast. But above all, it is simply elegant. It's not a word used to describe coasters often, but it fits. The ride is thrilling, but the cars gracefully maneuver the flowing track in a way that is repeatedly "re-rideable" and, well, elegant.

The process to get to Mako's opening day (the first new capital investment to open in the Orlando region in 2016) began years ago with SeaWorld Parks & Entertainment's VP of Theme Park Development, Mike Denninger and VP of Theme Park Experience Design Brian Morrow.

According to Denninger, the idea started with the desire for a dynamic ride to follow up on 2013's Antarctica: Empire of the Penguin attraction. From there they determined a coaster was appropriate and, more specifically, that a hypercoaster would be ideal. It was then that they made the connection to sharks and using sharks' strength and agility to inspire the coaster design.

"We looked at our ride collection and asked ourselves what will thread the needle between what our other attractions already offer," said Denninger. "The answer was speed and airtime."

"It's about the product mix, and making sure we are telling the right stories through the attraction," said Morrow. "There's so much more shark story to tell [than what the park had already done] so this was a chance to refresh everything in this area and continue telling the Mako shark story."

Mako is the company's ninth collaboration with Swiss coaster design firm Bolliger & Mabillard (B&M). In addition to other projects, the two companies worked together in 1999 to create the first hypercoaster: Apollo's Chariot at Busch Gardens Williamsburg. Denninger explained that the components of the hypercoaster are still the same, but have been enhanced for Mako. Parabolic hills provide the extensive amount of negative G's or "air time." Overbanked turns provide a feeling similar to cresting a wave. And the aptly named Hammerhead turnaround

Riders on Mako enjoy smooth airtime
All photos courtesy SeaWorld Orlando

Mako passes through themed shipwrecks as it races by the ride's entrance

provides a zippy midpoint to what is essentially an out-and-back coaster.

For their part, B&M have improved the ride technology as well over the 17 years since Apollo's Chariot. Powerful design systems and computers allow for precise design and create a smoother ride. Magnetic brakes are used on the ride course, making for less jarring stops.

"We always enjoy projects with SeaWorld," said B&M Head of Marketing Sophie Bolliger. "They always know exactly what they want and it's a great experience working with them."

The actual coaster is only one component of the whole experience. As guests enter the queue they really are starting a journey to becoming a Mako shark. As they move towards the station they go "underwater" as they approach a pier and a shipwreck beneath it. The station is themed to be a giant shipwreck, and an LED screen above the track shows shadowy figures of fish and sharks swimming overhead.

When the operator dispatches a train, music plays and the overhead screen turns purple (in Morrow's world, sharks see purple when they attack) and sharks speed forward, just as the train pulls out of the station. The music continues through speakers mounted to the lift hill until the only sounds heard are screams and rushing wind.

Morrow wanted to make sure the experience extended to those not on the ride as well. As a train approaches the final loop around the queue entrance area, the park background music shifts into four different musical tracks written to emulate sharks coming after their prey.

Guests can go on their own hunt when trying to find the 45 hidden sharks scattered among the themed structures and props surrounding the ride. Metal sculptures simulate waves around an aluminum welded ship coated with epoxy and themed to look like it's been sitting at the bottom of the ocean for decades.

The inclusion of the audiovisual equipment in the station and surrounding the ride entrance area is indicative of just how pervasive media has become in every theme park experience. For a long time, roller coasters were isolated steel structures separated from the more media-based attractions. While hybrids have existed in varying forms for some time, Mako really showcases how AV integration can further a storyline of what most would consider a thrill ride.

"It's always important for us to create multi-dimensional experiences for our guests…and you're going to see us doing more of that," said Morrow. "It's not just a ride; it's a ride and a realm and an animal…because we don't want anyone left out of an experience."

"Ultimately, our goal with any attraction is to connect people with nature and give them a deeper appreciation of the world around them," explained Denninger. "In the case of Mako, we want them to feel like a shark, and then after, go out and learn a bit more about this magnificent creature." • • •

Mako's Supporting Team

SeaWorld's internal team included:

- **Brian Morrow** (creative director/project manager)
- **Michael Spencer** (project manager)
- **Mike Denninger** (ride design and install)
- **Jeff Hornick** (regional director for the company's attractions in Florida)
- SeaWorld's educational and zoological teams were also involved

The external team included:

- **PGAV** (design)
- **Luce Group** (lighting design)
- **ThemeWorks** (design/build of all scenic elements, theme paint and graphics)
- **exp** (electrical engineering)
- **Erik Essig** (creative production)
- **The Producers Group** (technical and production management services)
- **Pro Sound** (audio design)
- **Bolliger & Mabillard** (roller coaster)

Shanghai Stories

InPark Editor Martin Palicki chronicles IAAPA's week of events and education surrounding the 2016 Asian Attractions Expo

On the 14th of June, IAAPA CEO Paul Noland opened the 2016 Asian Attractions Expo with a moment of silence for the victims of the Orlando shooting that had happened a day prior. It was a somber and appropriate tribute - a necessary time of quiet in an event otherwise bustling with noise and activity.

InPark Editor Martin Palicki was on hand for the expo, including the opening ceremonies, trade show, education sessions and special events.

Martin Palicki (l) and Wartsila FUNA's Scott Arnold (r) enjoy the Tron LightCycle coaster during IAAPA's day at Shanghai Disneyland

Interview with June Ko, Paul Noland and Ocean Park Hong Kong's Chief Executive Matthias Li

International parks are getting more active in China. Does this present an opportunity or a challenge?

Matthias Li: This is a good opportunity for the theme park industry in China. The market is huge and as more theme parks come to China each park must develop and come up with new ideas. It is also good for supporting industries as well, including local manufacturers and consultants.

With the arrival of Shanghai Disneyland, Hello Kitty and other branded parks, what is your outlook for the region?

June Ko: Many new parks in the region is great for the industry in China and the Asia Pacific area. They bring up the entire standard in the industry as well as attendance.

Matthias Li: In the Shanghai area we have a population base of 100 million. With new parks and domestic parks both available it will give consumers many choices and be good for the region.

What is the biggest challenge the industry faces in China?

Paul Noland: The good news is the challenge isn't a lack of demand. People are being educated on what parks offer and all parks are better off when an international park comes into the region. It helps encourage parks to strive for repeat visitors.

VR technology is emerging in the theme parks. What's your take?

Paul Noland: It is an emerging trend and successfully being used to synchronize video with motion. It allows operators the ability to revitalize old attractions and I think it will be very successful.

How is the Chinese tourist impacting parks in other Asia Pacific countries?

Matthias Li: The mainland Chinese tourist is very important for us all. Many of the countries are starting to implement friendly tourist policies as Chinese visitors seek out more vacation and recreation destinations. Chinese companies are now buying up other facilities such as Club Med in nearby countries with the goal of marketing them to Chinese tourists.

June Ko: In some parks I've been to I've noticed a trend to cater to Chinese and Southeast Asian visitors in their food and beverage offerings. Many parks are starting to cater to those different needs, which I think is very important.
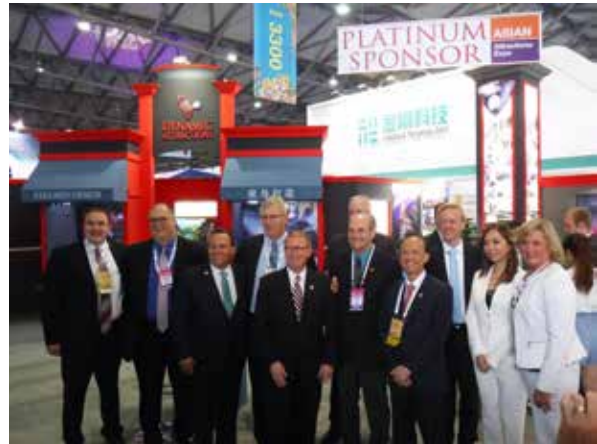
IAAPA leaders visit the Dynamic Attractions booth

Paul Kent, Jennie Nevin, Steve Birket and David Willrich meet in the TEA booth

Quotable Quotes from the Opening Ceremony

June Ko, Vice President of Asia Pacific Operations: We encourage everyone to create opportunity through innovation.

Paul Noland: The Asia Pacific region is leading the world in theme park attendance. Over 540 million visitors are forecast by 2019.

John McReynolds, IAAPA Board Chairman: 414 companies exhibited over 12,339 square meters during the 2016 Expo. Compare that with the last time the show was in Shanghai (2006) with 120 exhibitors over 2,500 square meters.

Paul Noland: Not only is the industry coming to Asia, but it is buying products from Asia.

News & trends from the trade show floor

Bollywood

Many industry pros are saying Dubai Parks & Resorts' Bollywood park will be the unexpected hit when it opens as part of the larger multi-park resort (scheduled to open in October 2016). Attractions, themed to Bollywood film IP, include multiple media-based rides, and highly themed shows (InPark's Judith Rubin previewed Bollywood's new stunt show and highlighted the park's promising future in Issue #62, 2016).

Holovis is providing an immersive tunnel attraction based on a car chase scene and helicopter ride around Dubai. Matt Dobbs, Holovis' Project Manager, reports the ride will have two independent systems, each holding 30 people with back-to-back 3 DOF motion platforms. The film will be projected on a 6.2m tall curved screen.

Triotech is installing one of their IDR (Interactive Dark Ride) attractions at the park. The dark ride experience is themed to the "Sholay" Bollywood film IP.

Additionally, Wärtsilä FUNA is doing AV, projection and show control for over 80 venues at the Bollywood and Motiongate projects, as well as working with ITEC on show supervision for six attractions between the two parks.

Waterparks

According to ProSlide's Chelsea Ogilvie, the trend in waterpark attractions is mega-capacity. Driven largely by Asian waterparks that serve extremely large markets, slides need to accommodate a higher throughput. One solution ProSlide has available is using six-person rafts on slides previously using four-person rafts. Although not available for every attraction, most slides can accommodate the larger rafts without any engineering adjustments.

Similarly, the company's RocketBLAST™, which uses side mounted water jets to propel riders uphill, can handle two, three or four seat rafts with the same amount of water propulsion, making the ride flexible for different size parks.

WhiteWater was promoting its LatiTube and WaveOz, both providing wave riding options, the former offering a kid-friendly honeycomb surface with nozzles that direct the water in an adjustable wave format while the latter can create up to 180-degrees of surfing for those looking for a tougher challenge.

During the Expo, WhiteWater offered a free seminar on the company's line of Wave products and how they integrate within the larger park structure. According to WhiteWater's Una DeBoer, "Sharing our expertise in waterparks is a way for us to provide extra value to customers."

Polin showed off their Aquatube and Space Hole slides recently installed on the world's largest cruise ship, Royal Caribbean's "Harmony of the Seas." As a side note, since AAE, Polin has reported that their team is thankfully safe following the recent unrest in Turkey.

Virtual Reality

Many vendors brought a variety of VR experiences to the show floor with VR goggles dispatched to riding, reclining, siting and standing experiences. Watching attendees attempt to navigate virtual worlds highlighted that we are just at the beginning of learning how to best integrate, design for and use the technology. At best, many participants looked awkward, and those able to move around seemed to have to be re-oriented back into their designated virtual spaces with regularity.

"There are operational issues and costs for VR that will get better but people are also talking about the group experience," said Triotech's Christian Martin. "Not being able to see the people you are with [in a VR experience] is like going to a restaurant together but sitting at different tables."

Iconpath founder Michael Reid is also cautious about VR's application in a park setting.

"The theme park is a form of media where you have to move through space," explains Reid. "In that environment, technology like Google glass or AR would function better."

Despite critiques, VR is already enjoying a certain level of success at theme parks around the world, and the quantity of vendors committed to enhancing the product likely indicates that the tech will continue to proliferate in the market.

Partnerships

Falcon's Creative Group, Kraftwerk and CAVU announced a new partnership in developing the Circumotion attraction. The team was introducing the concept at AAE 2016 but the first one is currently being built in Dubai. The base-model ride situates 134 passengers in concentric circles on a round motion platform under a dome outfitted with Christie projectors. The 40-ton ride offers 3 DOF plus heave, and Falcon's CEO Cecil Magpuri calls it "nimble and elegant."

Left: A buyer tries out a VR game while others ride a VR simulator in the background
Right: Peter Schnabel (CAVU), Cecil Magpuri (Falcon's) and Manfred Meier (Kraftwerk) discuss Circumotion

Photos from the TEA mixer at AAE 2016

TEA's mixer was held on the trade show floor after the hall closed on Wednesday. Guests enjoyed lively networking and refreshments.

What's New in Asia?

IAAPA's Vice President of Asia Pacific Operations, June Ko, moderated a panel of industry leaders focused on what was new in the Asian market during the 2016 Asian Attractions Expo. Matthias Li (Ocean Park Hong Kong), Jim Pattison Jr. (Ripley Entertainment) and Dennis Spiegel (International Theme Park Services) each spoke about their company's involvement in the region and answered questions about where the market is headed.

Dennis Spiegel
- Based on International Theme Park Services' research, Japan currently has the highest in-park spending in the region. Asian visitors tend to highly value good merchandise and currently Japanese parks have great merchandise available for sale, resulting in higher spending.
- The period of growth and development for theme parks that happened in the US during the 1970s is what is happening in Asia now. In particular, we are in an "immersion period" where very technology-heavy attractions are at the forefront of the park experience.

Jim Pattison Jr.
- We are always looking for the next wave of the middle class. That group has the time and money available for leisure attractions. The middle class is growing just about everywhere in the world except the US (declining at about -5%) and Europe (relatively flat at +2.4%).
- The number one performing property in the Ripley chain is in Jeju Island, South Korea.
- Ripley's uses traveling shows to test out new markets. We expect to launch one in Asia soon, targeted for science centers.

Matthias Li
- In recent years, Hong Kong Ocean Kingdom had to overcome several challenges: the depreciation of currencies of other destinations, regional competition, and changes in tourism policies.
- The outlook is positive. A rising middle class and rapidly increasing income levels will drive the number of outbound tourists and positively impact attendance and growth.

How does theme park growth compare with the US?

Spiegel: [Compared to the US, Asia has] a much larger land mass, so continued outpacing of the US is expected. The only difference is in the area of mobility. The US had significant highway infrastructure already in place. [Editor's note: China is rapidly expanding its highway and high speed rail networks]

What is the effect of non-Asian brands entering the marketplace?

Pattison: There is a lot of interest in American entertainment and interest in what is happening in the US.

Li: Some local parks are very creative. Foreign IP is one route, but local folklore and local stories matter too.

Spiegel: IP is more important today than before. It requires capital reinvestment to drive repeat visitation. It's an expensive game and you can't stop, but if it is done right, you will earn a solid ROI.

What trends are you noticing?

Spiegel: Technology in attractions is more immersive and participatory. Also, it is making the experience easier for the guest.

Pattison: The fundamental basics of attractions haven't changed, but technology has helped. The attractions business is about getting the whole family to communicate together.

What are Western companies learning about doing business in China?

Pattison: As American companies enter China [as Ripley has done], we have to adjust to the culture and better understand the guest. To help move that process along, we always find a partner in the country to work with right away. We also focus strategically on locations. Before launching an attraction in a new location, I always ask myself three questions: 1) Will they understand our product? 2) Will they have time to go? 3) What does a Big Mac cost? With those answers I have a good idea if the location is a match for our attractions. • • •

Kraftwerk provides AV services, CAVU supplies the hardware and Falcon's contributes design and project management.

Magpuri says the team will use cinematic techniques and multiple storytelling viewpoints to create narratives that all guests, facing different directions in the dome, will be able to follow. "Each seat has roughly a 270-degree view," says Magpuri, "meaning 80-90% of the experience is available to riders at any given moment."

Magpuri also pointed out that the system's software is able to extract the x-y-z positioning data from the film and automatically import it into the ride vehicle. Then the artist / programmer can go in and enhance the motion. The technology saves time and reduces rider sickness as the ride is already synched to the film.

According to Magpuri, the partnership was driven by customers wanting turnkey solutions. Smaller parks often don't have a way to manage vendors, and the partnership reduces the risk involved in that process.

Design firm Rhetroactive and technology provider Holovis are partnering on a series of projects for Discovery Communications and are marketing their collaboration to other potential developers.

"There are two approaches when designing a large project. You can pick attractions that will appeal to a certain audience or you can take our approach: We ask what is the story the client is trying to tell and what is the desired end result. Then we go and select the best ride systems available to fit that goal," explains Rhetroactive's Steve Trowbridge.

"We are not competing against master planners," cautions Holovis' Stuart Hetherington. "We are combining planning and guest experience (Rhetroactive) and the tech and media and innovation (Holovis). This allows us to focus on providing the latest technology."

The partnership has been developing for some time. The two companies have worked together on various projects and started discussing bringing skills together.

Trowbridge notes that the industry has evolved to a point that with Disney and Universal now firmly established in China and Japan other studios are shifting their focus to the Asia Pacific marketplace. "We as consultants are able to streamline the process for these studios," says Trowbridge. "There is a tremendous opportunity to help these parks reach that quality and the best way to do that is to partner with other providers."

Rhetroactive and Holovis are also working with vendors like JBA Artistic Engineering to provide infrastructure and engineering expertise to projects.

Attraktion! is continuing its partnership with Intamin on their Dome Ride product launched at AAE in 2014. Two Dome Rides have been sold in China and is now in the master planning stages for more than 20 parks globally. The attraction requires a custom building so Attraktion! CEO Markus Beyr says Dome Ride is "ideal for new parks."

The partnerships, of course, don't mean companies are not available for individual work, or partnerships with others too. Holovis, for example, is also partnering with Dynamic Attractions on their media and effect-laden roller coaster currently being installed at Ferrari World Abu Dhabi. **•••**

Aqualand Maspalomas
Gran Canaria, Spain

Aqualand
Costa Adeje, Spain

Camping Chateau Vieux
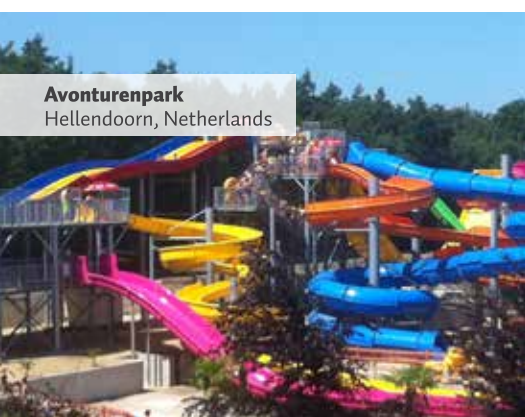Saint Hillarie de Riez, France

Agua Magica
Sevilla, Spain

EXPERIENCE THE EXPERIENCE

COME AND MEET US AT EURO ATTRACTIONS SHOW **20-22 SEPTEMBER** BOOTH 1816

Avonturenpark
Hellendoorn, Netherlands

Aquasplash
Marineland, France

Ondaland
Italy

PolinWaterparks
THE EXPERIENCE **40**YEARS

polin.com.tr   polinwaterparks