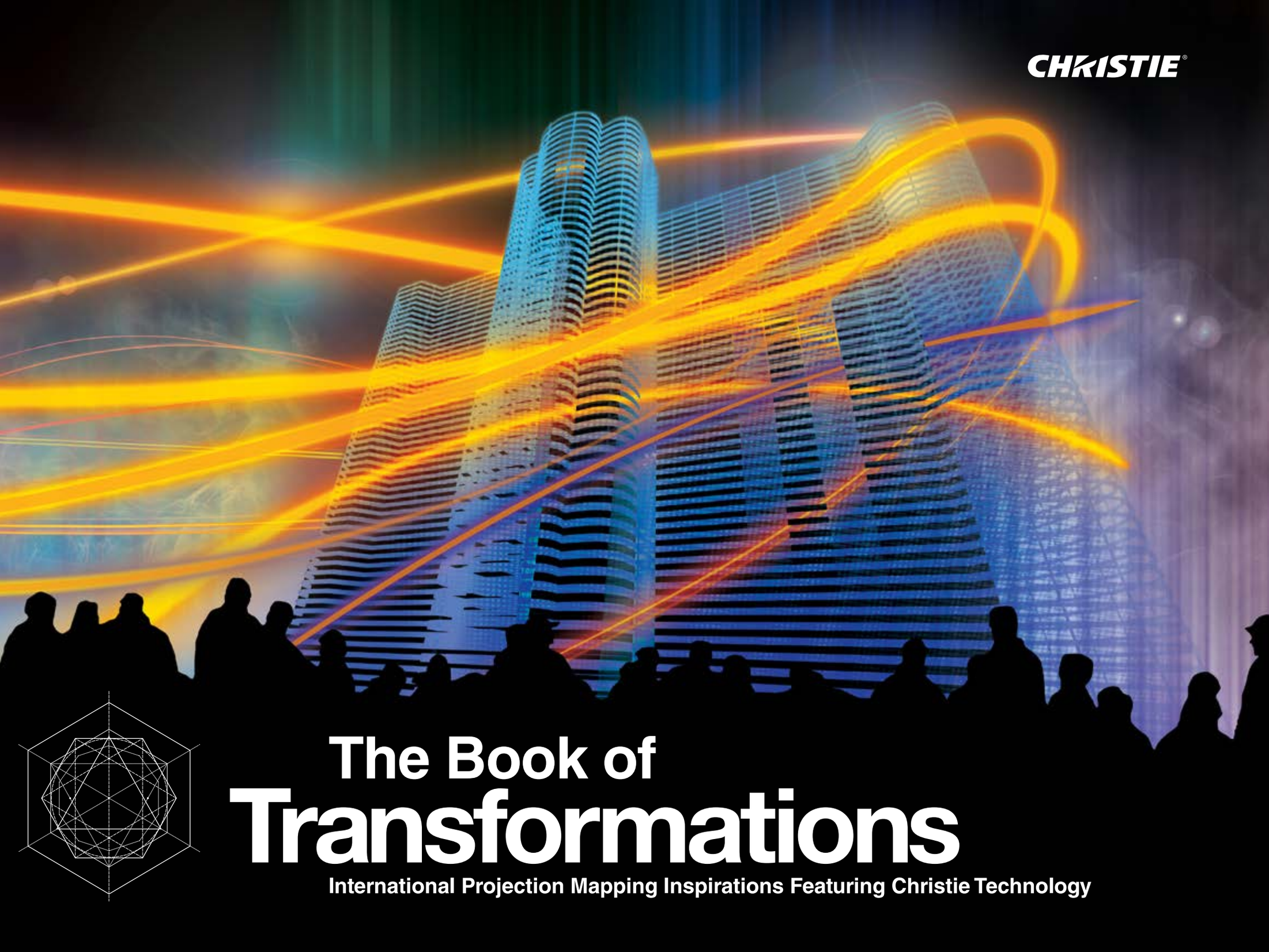

CHRISTIE

The Book of Transformations

International Projection Mapping Inspirations Featuring Christie Technology

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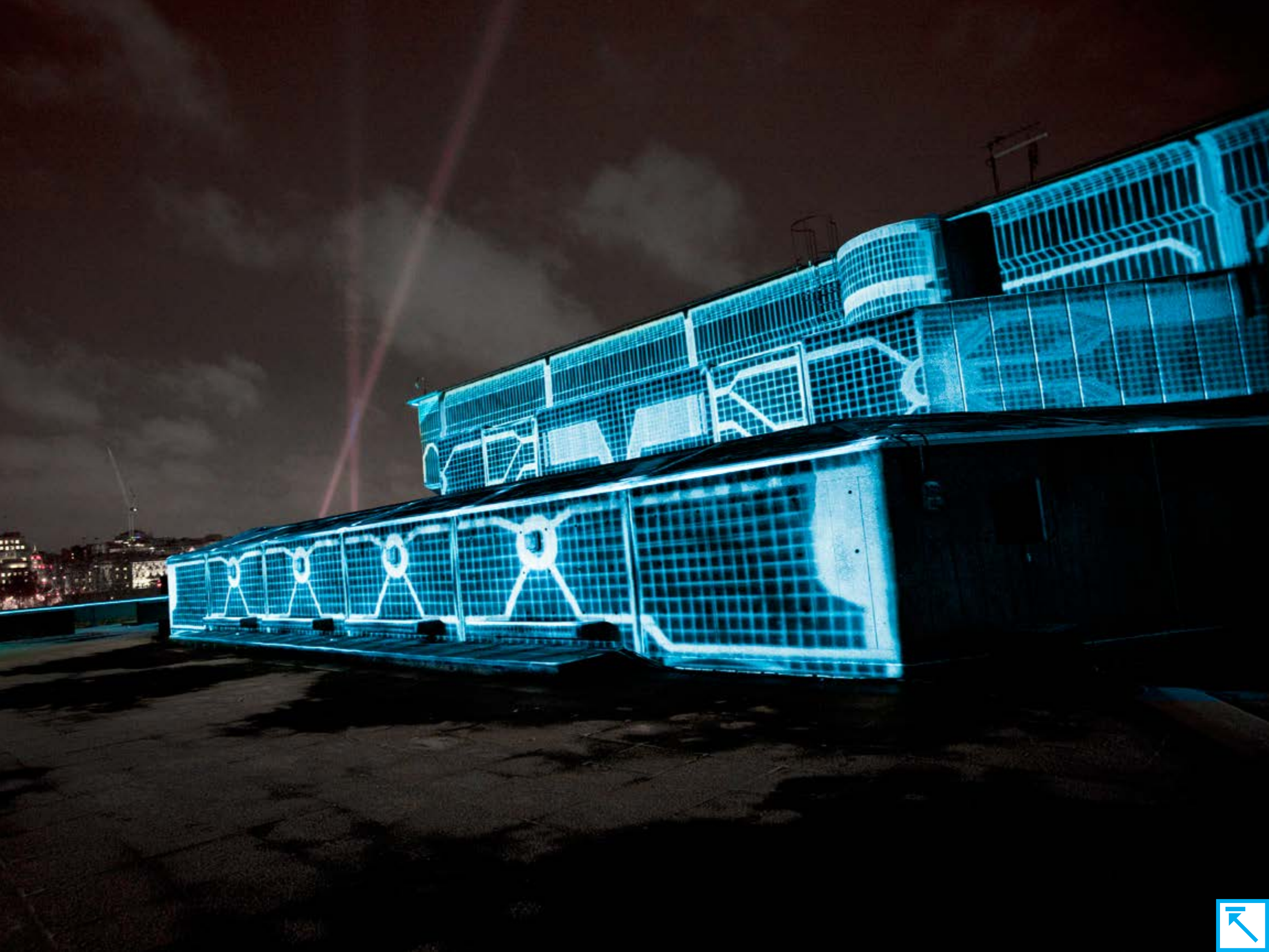


Foreword

We exist in a world where digital screens and displays are not only at our fingertips, but they're also becoming integrated into our environments. The idea of "pixels everywhere" is a tantalizing thought when you consider the impact on how we communicate and share experiences. Compelled by the desire to truly move people – whether in spirit or action – we now have the tools and knowledge to virtually transform physical structures using extreme-scale visuals.

This growing, global demand for bigger, bolder visuals, fused with enriched content, is pushing artists and content creators to think beyond the traditional canvas. Bringing together concepts like projection mapping and augmented reality with the right technology opens the door to approaching any surface as an edge-free canvas.

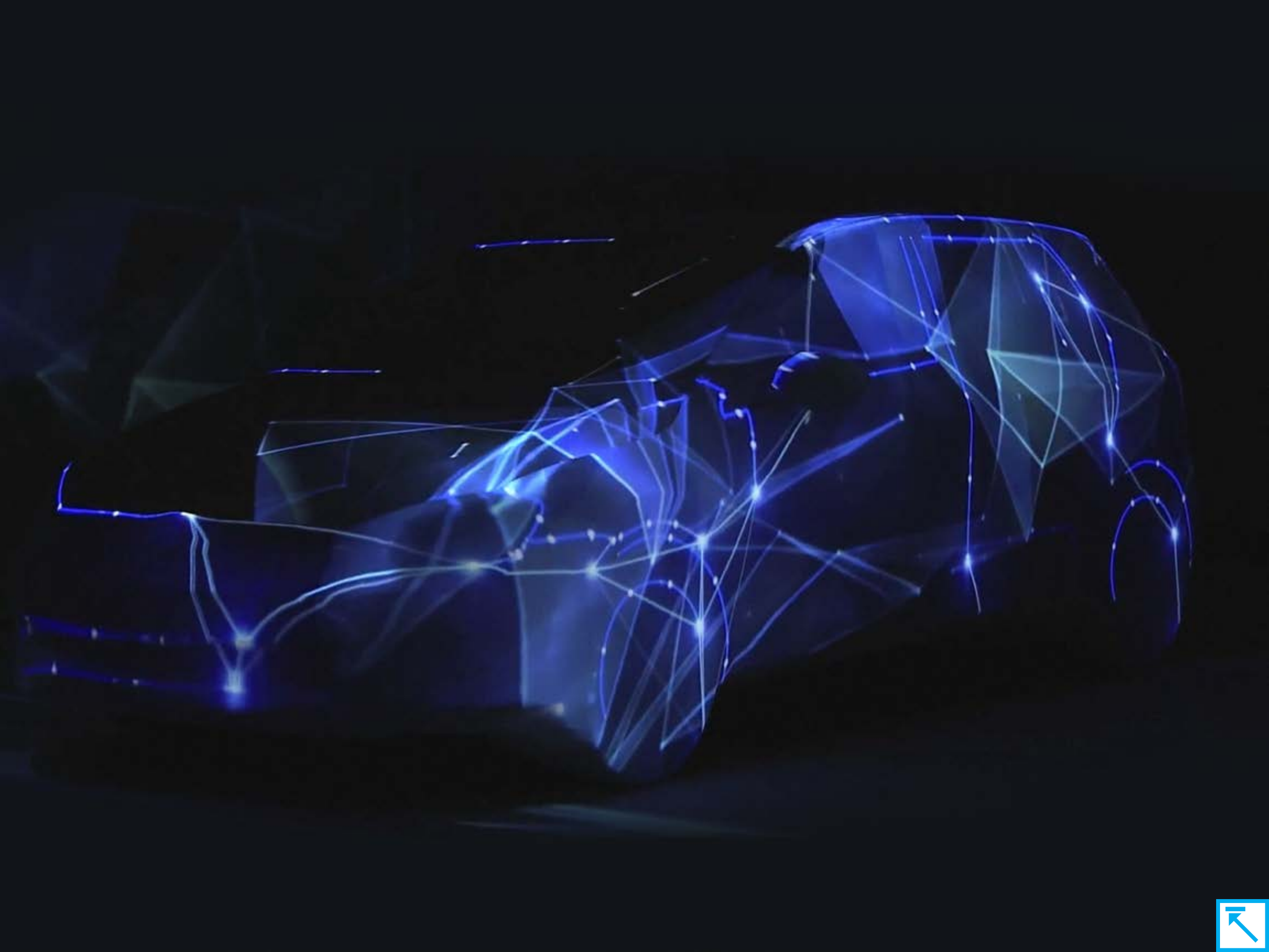
Historic buildings, national monuments, water, glass – these are all fair game for the digital artist's brush. Artists bring their own style and aesthetic values to the canvas, demonstrating the breadth of creative possibilities using projection mapping as the tool.

Any structure, any shape,
the world is our canvas.
Share the experience.

Projection mapping taps into both science and art to expose and enhance what we know about the world. Egyptian temples, French castles and Abu Dhabi mosques transition from grand artifacts to living structures when projections start to tell the story and relate the culture and beauty.

Some of the most clever work done with projection has stepped well beyond just using structures as canvases. The structures, instead, come alive. Spirals on historic domes spin. New cars at auto shows shape-shift, even appearing to move and turn through virtual streets.

This book explores what's possible when a projection canvas gets a third dimension, and when brilliant graphic designers and technicians try their best to boggle the minds of onlookers.



Introduction

From the most basic 2D projections, evolving to 3D and complex-curve projection mapping – we've seen a growing fascination with this art-meets-technology platform over the past 40 years.

Originally known as video mapping or spatial augmented reality, projection mapping is quickly becoming a widely-requested communication experience as a complement to large events and installations for brands, governments and entertainment. Supporting this movement is the increased accessibility to tools, resources and the knowledge required to create these larger-than-life art experiences.

Initially, it was the practical demands from corporate events that drove the development of projection mapping tools and technology. In parallel, advancements in defense simulation technology helped define the requirements for high-quality projection mapping such as creating a seamless visual experience, supporting higher frame rates, minimizing judder, improving image uniformity and enhancing color reproduction.

With the increased popularity of this form of communication and its definitive and universal "wow" factor, artists saw it as another option for creating experiences and dialogue through digital art. In the early days, an artist would painstakingly paint over images on slides to create layered content that they could project. The development of digital technology, as well as software for warping and blending images onto irregular surfaces, has brought us to the point where if we can conceive it, we can achieve it digitally.

Projection mapping as we know it now is quickly becoming a catalyst for how we approach visual communications, giving us a new way to market ideas and products, entertain in large masses…to simply tell stories on a much grander scale, while also transforming and enhancing average-looking surfaces to make them more aesthetically pleasing.

The big driver behind projection mapping projects is using compelling visuals, blended with stories, information and even calls to action, to create profound experiences. Artists pioneered projection mapping, but a lot of the early commercial work was done by technology and events companies. As the technology has improved, and the tools have grown more accessible and easy to use, we're now seeing artists and content creators take the lead on the most innovative and ambitious projects.

Christie has a long history of creating solutions and applying innovative thinking in support of leading edge visual experiences. Through the evolution of projection, visualization and simulation technology at Christie, we've developed the tools and expertise to break through design challenges and help others understand how to approach a projection mapping initiative. In this book, you'll see examples of the awe-inspiring displays and installations from around the world that have relied on Christie technology. From the 2012 Yeosu World Expo to the launch of the 2015 VW Golf in New York City to the grand opening of the Atlantis Resort in Dubai – these stories clearly demonstrate the desire to communicate through a shared visual experience that cannot be contained to a traditional canvas or digital screen.

Since projection mapping is such a unique and technology-reliant art form, there are important requirements that you need to address in order to derive the most value from an investment in this medium. Just as interesting as the creative concepts in this book are the technology and processes behind them. In addition to the featured installations, you'll also find the Project Primer, containing helpful information about what to consider in planning a projection mapping initiative. By sharing this knowledge and best-in-class practices, as well as inspiring designs, our hope is that we can open up the field to make it more accessible for people to create, captivate and communicate using projection mapping.

We are thrilled to be able to celebrate the vision of artists, production companies and A/V experts from around the world through this collection of stories. This book is also a celebration and recognition of the ability of artists to respond to and embrace this new form of creating and storytelling, while helping to shape its future direction. This is not an exhaustive or complete compilation – it's a snapshot of the world of projection mapping, and a taste of what's possible.

Transformations around the world

The Book of Transformations is a showcase of brilliant projects from around the globe that have taken structures and facades - even vaporized water - and used projected light to change appearances and amaze audiences.

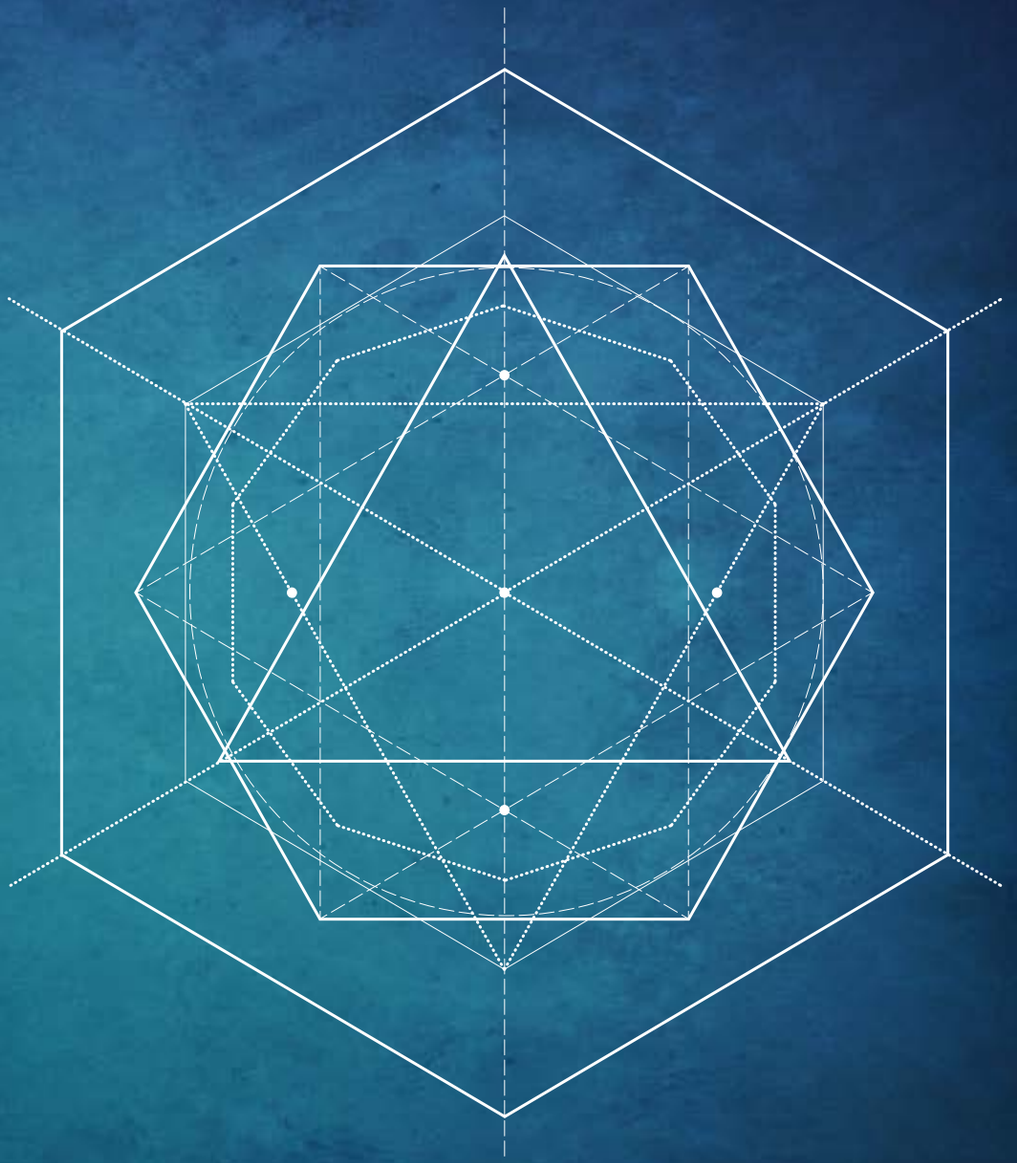
The book explores how some of the top people in the pro AV and staging world have worked with visual artists to apply technology and their immense skills and creativity to scores of diverse projects. Environments have been transformed and stories told in remarkable new ways.

The book is broken down by categories, celebrating tremendous work in projects as varied as theme parks and annual corporate meetings.


Promotional & Branded
Corporate
Celebrations & Festivals

“Projection mapping is an art form, but it's also about math and the sciences. It's about calculations on everything from color saturation to height and distance. It's about getting the geometry right for the surfaces and structures being transformed. We wanted a recurring symbol for mapping that somehow related both the complexity and simplicity of this work, and the dodecahedron really achieves that.”

- Kathryn Cress, VP Global & Corporate Marketing



Dodecahedron

The recurring symbol for this book is a shape with many edges and five-sided pentagons, known as a dodecahedron.

It's a geometric term that dates back 2,000 years to ancient Greece and the time of Plato, and dodecahedrons are also known as one of the five Platonic (or geometric solids). A dodecahedron is made of 12 pentagons, with 20 vertices and 30 edges, loosely forming a sphere reminiscent of a soccer ball.

Some physicists believe the basic shape of the physical universe is a dodecahedron. Its gem-like facets and symmetries have also led to beliefs that the dodecahedron is tied to divine thoughts and ideas.

They are three-dimensional shapes with flat surfaces that exist in two dimensions, all based on precise measurement and geometry. That's the tie to this book and the rapidly emerging art form of applying technology to illuminate and transform complex surfaces.

Technologists and visual artists have together found compelling new ways to take a medium long based on two dimensions and add a third. The same math and geometry that defines immensely complex shapes like a dodecahedron is being used to precisely define and map surfaces that are anything but flat and then fully change how they look.

It's math, physics and geometry being applied when projection mapping project teams are confronted with the challenges of accurately painting with brilliant light anything from the Brooklyn Bridge to the sails of the Sydney Opera House.

The same principles have to be applied - driven increasingly by computer algorithms - to measure, map and develop a framework in software. That framework can be used to build digital creative to transform anything from the architecturally broken surfaces of an old castle to a Hollywood streetscape.

Pentagonal symmetry is all around us - applied for centuries now to both science and art. With the rise of projection mapping, it's being applied in remarkable new ways.

History of projection mapping

The roots of projection mapping

Projection mapping is now the most commonly applied term for transforming spaces and structures with projected light. However, it's also referred to with terms such as video mapping, pixel mapping, monumental mapping, architectural mapping, scenic projections, environmental projections and large-scale projections.

The specific art form of transforming a large surface using projections traces back several decades. But the influences go back many centuries. We find references to pinhole cameras projecting images of their surroundings dating back more than 2,000 years to ancient Greece and China. In 17th century Europe, candles and oil lamps were used as light sources for "magic lanterns" that projected images painted on glass slides onto surfaces.

Projected sets

Going back some 80 years, people started using slide projectors to transform concert and theater stages. Productions on Broadway and in London's West End dabbled with projection as early as the 1930s. By the 1950s, projectors were being used to blend theater, opera and dance productions with massive projected backdrops.

Czech-born stage designer Josef Svoboda co-founded Prague's famed Laterna Magika theater and he's regarded as a true pioneer in the craft of using projected visuals to sculpt, shift and transform theatrical scenes. Through his life, Svoboda had a hand in more than 700 productions, many using projection as compelling visuals.

German-Austrian stage designer Günther Schneider-Siemssen also started experimenting in the 1950s with projection and hand-painted glass slides as an alternative to painted canvas sets.

New York performance artist Robert Whitman worked with a team of engineers and scientists from the famed Bell Telephone Laboratories in the mid-60s on early versions of today's live projection spectacles.

In the late 1960s, specialty companies like the Joshua Light Show used everything from carousel slide projectors and overhead projectors to 1,200-watt airplane landing-strip lights to rear-project imagery onto the stage backdrops of rock concert venues. At the height of the psychedelic era, they used drops of colored oils and dyes on glass slides, resulting in wild, living backdrops.

Also at the end of the 1960s, the "imagineers" of the Walt Disney Company started applying projection technology to small, very focused surfaces. For the Haunted Mansion ride at Disneyland, Disney's creative engineers shot the faces of five actors singing the attraction's theme song and then projected the 16mm film output onto busts. The ghostly, disembodied singing heads were what some technical observers say was the first commercial instance of projection mapping onto a complex curved surface.

Outside art

By the 1980s, artists started taking their work outside, using powerful, large-format projectors, forerunners to today's architectural projection spectacles.

Polish-born artist and academic Krzysztof Wodiczko used 35mm slide projectors beginning in the early 1980s to project often provocative visuals on the facades of public spaces around the world.

Schneider-Siemssen took his theater and opera experience and used his hand-painted glass slides to fully illuminate and artistically transform Klessheim Castle near Salzburg, Austria in 1985. He followed that with more projections on buildings in Tokyo, Chicago, Salzburg, Vienna, Trieste and Berchtesgaden.

The German arts team, Casa Magica, also started using large format slide projectors in the mid-1990s as art installations, breaking up projected surfaces by sections and wrapping them perfectly to the proportions of the target buildings.

Hungarian artist Dora Berkes also used glass slides as her canvas in the ’90s in a technique called “Raypainting”, transforming large-scale environments - buildings and streets - with stunning, vivid visuals.

Brightness changes all

While artists found ways to push the limits of slide projectors, the introduction in the 1990s of bright, computer-driven commercial projectors was the big moment for the art form. More brightness led to greater possibilities and ideas constrained by limited light started to get turned on. Computer graphics sped production and made full-motion video and graphics possible without film.

“It didn’t happen until the projectors were bright enough,” explains George Tsintzouras, a senior director at Christie. “It wasn’t until there were enough lumens coming out of these boxes that you could replace the slide projectors with these video projectors. There was a massive inflection point when 5,000 and 10,000 lumen projectors came around and people could rent them.”

By the early 1990s, corporations started working with staging and event companies to use projection as the powerful, over-scaled backdrop for presentations to investors, customers and the press.

Staging companies began keeping projection technology in rental inventory, allowing fast turnarounds on events while controlling costs for event producers. Over time, corporate presentations evolved and started to include product launches and splashy events that also let the general public see these ambitious shows projected onto flagship stores and public landmarks.

As the equipment became brighter, portable and rugged, mapping outdoor structures evolved beyond simply projecting onto large buildings as screens. Instead, intrigued artists started looking at the shape, contours and colors of a structure, and wondered how they could work with all of that.

The first few years of using large-format projections for business has had much to do with the “wow” factor of scale and the sizzle of mind-bending visuals. Ancient churches virtually collapsed, angels appeared, sea creatures swam inside office tower windows, buildings de-constructed and reconfigured. While the best projects told stories, many were about visual tricks that stunned onlookers.

Many of the best and most active companies now have years of experience. The tools and technology are steadily getting better and more visual artists are finding their way to this medium, intrigued by all the possibilities. Great projects now have storylines and visuals that fully work with surfaces.

There’s no doubt the artists and technicians who started pushing the boundaries of projected light would be pleased and amazed by the possibilities ahead. From the roots of using elemental tools to put visuals on an unusual surface, technology, tools and bright, creative minds are reinventing and transforming our surroundings.

Celebrations & Festivals

International Projection Mapping Inspirations

FESTIVAL OF LIGHTS

LYON, FRANCE

THE FACTS

CUSTOMER
City of Lyon

LOCATION
France

PROJECT TEAM
VLS, Audio Technique, Yves Moreau, Alabama Media, Damien Fontaine

CONFIGURATION
Christie Roadie 25K projector (9)

Christie Roadster S+20K projector (8)

Christie Roadie HD+30K projector (2)

Christie LX1500 projector (2)

Christie Twist Pro

The citizens of Lyon, have, for more than a century, marked the immaculate conception by placing candles in their windows, and since 1989 hold a Festival of Lights honoring that tradition.

Built around a series of projected light displays placed along 1,500 meters (5,000 feet) of the banks of the Rhone River, the festival's displays used the themes of time and weather.

The "Jouons avec le temps" display created by artist Marie-Jeanne Gauthé illustrated the flow of the seasons, with spectators seeing successive scenes in which the buildings of the Place des Terreaux were covered in ice, submerged under water, warped and finally crumbled under oppressive heat.

The Lyon Prefecture's facade was transformed by scenic artist Damien Fontaine into a candle factory with a playful storyline about animated candles.

In Old Lyon's historic district, Fontaine, in a separate presentation, paid tribute to the craftsmen who spent more than 300 years building the Cathedral Saint-Jean. Two giant projected hands kneaded the front of the cathedral, showing the successive phases of construction. The show culminated with a completed facade virtually opening to reveal the cathedral's interior.

Scenic artist Yves Moreau created a giant hourglass at the entrance of the Parc de la Tête d'Or, using a white Lycra screen as the canvas.

EMMYS AFTER-PARTY

HOLLYWOOD, USA

THE FACTS

CUSTOMER
HBO

LOCATION
USA

PROJECT TEAM
BARTKRESA design
Billy Butchkavitz

CONFIGURATION
Christie Roadster HD18K projector (4)
Christie WU12K-M projector (4)
Christie Roadster HD10K-M projector (2)

PLAY VIDEO

The Home Box Office (HBO) cable TV network celebrated its wins at the 2012 Emmy Awards with a psychedelic-themed party enhanced by big, ambient projected visuals.

As part of the after-party on the Pacific Design Center plaza in West Hollywood was reworked by program designer Billy Butchkavitz with a wash of wildly-colored fabrics and fittings, topped with a projection wall that related the event's '60s theme and steadily reinforced the HBO network brand.

BARTKRESA design provided the digital visuals for the event, using projectors to illuminate a tall, angular surface looming above the main event area - the vivid floral images transforming through the evening. Founder Bart Kresa says his mandate was to complement the decor and theme and not overpower it.

SENTOSA RESORT'S 40TH BIRTHDAY

SENTOSA, SINGAPORE

THE FACTS

CUSTOMER
Sentosa Corporation

LOCATION
Singapore

PROJECT TEAM
Hexogon Solution Pte. Ltd.

CONFIGURATION
Christie HD20K-J projector (4)

PLAY VIDEO

Singapore's iconic mythical creature, the Merlion, came to life - bobbing to pop tunes and roaring for the crowd - when the country's popular Sentosa Island Resort celebrated its 40th birthday.

The resort's 37-meter (121 foot) tall Merlion sculpture was lit up for a nighttime party, used as the canvas for a series of visuals set to pop music and supplemented by pyrotechnics. Half-fish and half-lion, the Merlion is seen as a national mascot and the personification of Singapore.


TOYOTA

DUMBO ARTS FESTIVAL

BROOKLYN, USA

THE FACTS

CUSTOMER
DUMBO Arts Festival

LOCATION
USA

PROJECT TEAM
WorldStage, d3 Technologies, Nationwide Video, Glowing Bulbs + John Ensor Parker, Integrated Visions

CONFIGURATION
Christie Roadster S+10K-M projector (16)

Christie Roadster S+16K projector (6)

Christie HD 10K-M projector (4)

PLAY VIDEO

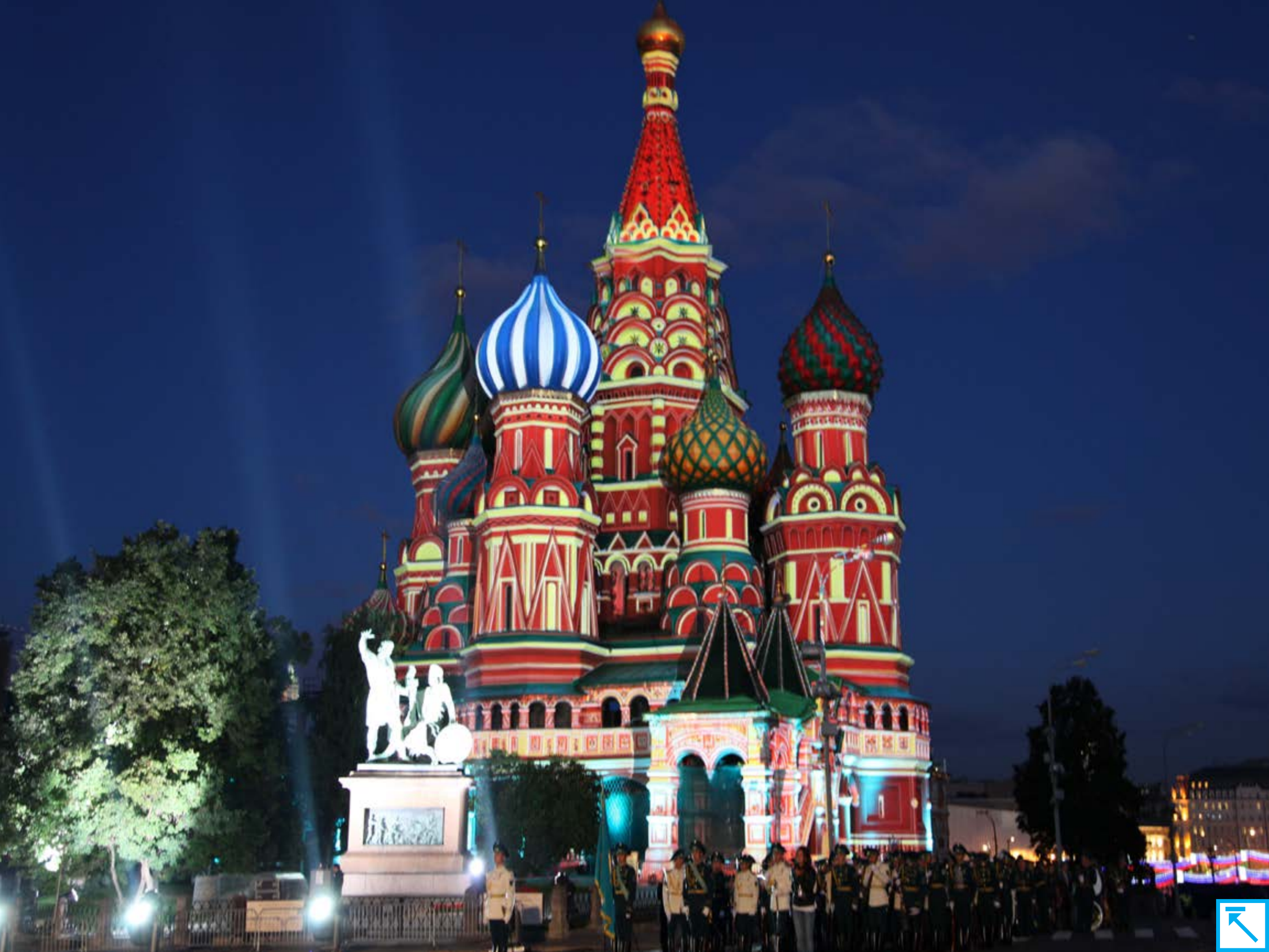
The Brooklyn-side abutment, archway and tunnel of the Manhattan Bridge in New York were completely transformed by stunning, vivid motion art during the DUMBO Arts Festival.

The annual DUMBO Arts Festival attracts some 200,000 visitors over three days each fall to the New York borough of Brooklyn, showcasing more than 500 artists, 100 studios, 50 galleries and stages and 100 programming partners. Sites vary from gritty warehouses and street corners to hip gallery spaces.

An exhibit called Codex Dynamic painted the Manhattan Bridge anchorage and archway with work by selected media artists, all playing to a theme of man's evolving relationship with time and space. The installation was curated by artists Leo Kuelbs and John Ensor Parker, and both sponsored and technically supported by WorldStage.

Festival-goers were drawn to staggeringly beautiful motion art, prompting them to sit on benches by the walls of the tunnel or even laying down on the cobblestones to look up and get immersed in the shifting avant-garde visuals.

"The Dumbo Arts Festival has a unique setting: a combination of gritty urban warehouses, cobblestones and the Manhattan Bridge itself," WorldStage president Josh Weisberg, who grew up in the neighborhood, told Live Design after the event. "To transform the bridge structure into a media canvas is remarkable. Its great archway span can look forbidding at night, but project video on it and get thousands of people to watch, and it's just the coolest thing."



SPASSKAYA TOWER MUSIC FESTIVAL

MOSCOW, RUSSIA

THE FACTS

CUSTOMER
Moscow Public Council

LOCATION
Russia

PROJECT TEAM
ETC Russia

CONFIGURATION
Christie Roadster
S+20K projector (9)

PLAY VIDEO

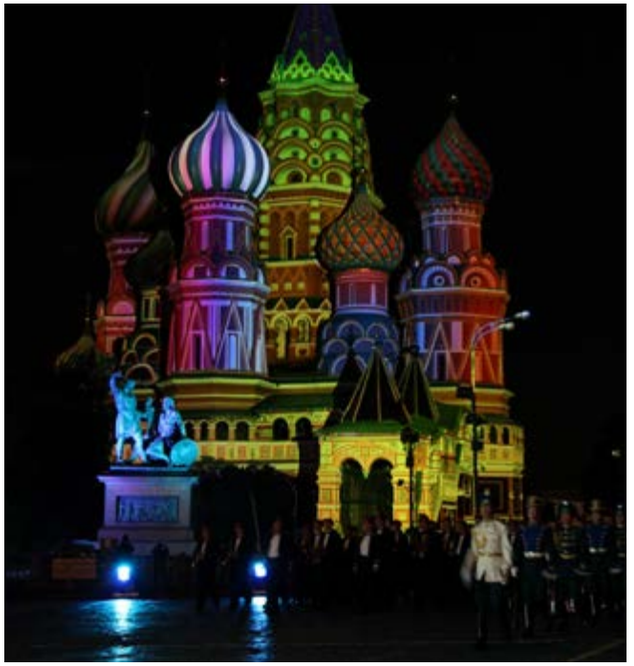
The iconic onion domes of Moscow's St. Basil's Cathedral were the visual centerpiece of a stunning multimedia show.

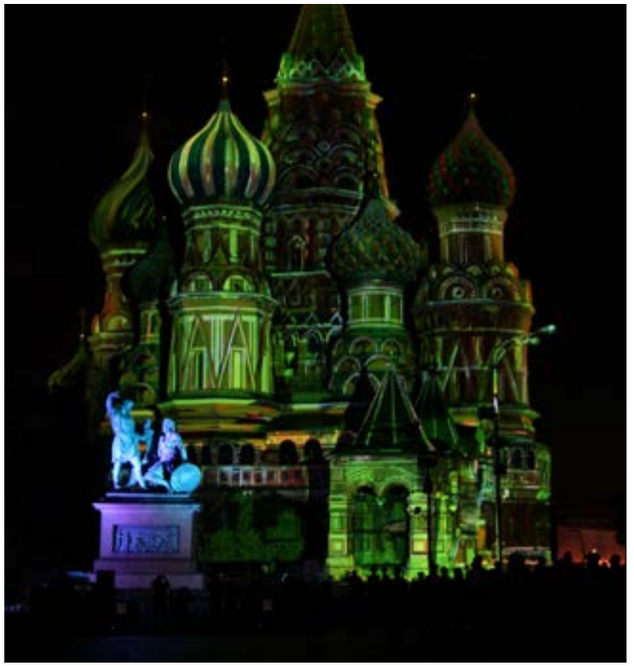
Set against the darkening night skies over Red Square, projection-mapped images made the 450-year-old domes sparkle each night during the six-day Spasskaya Tower International Military Music Festival.

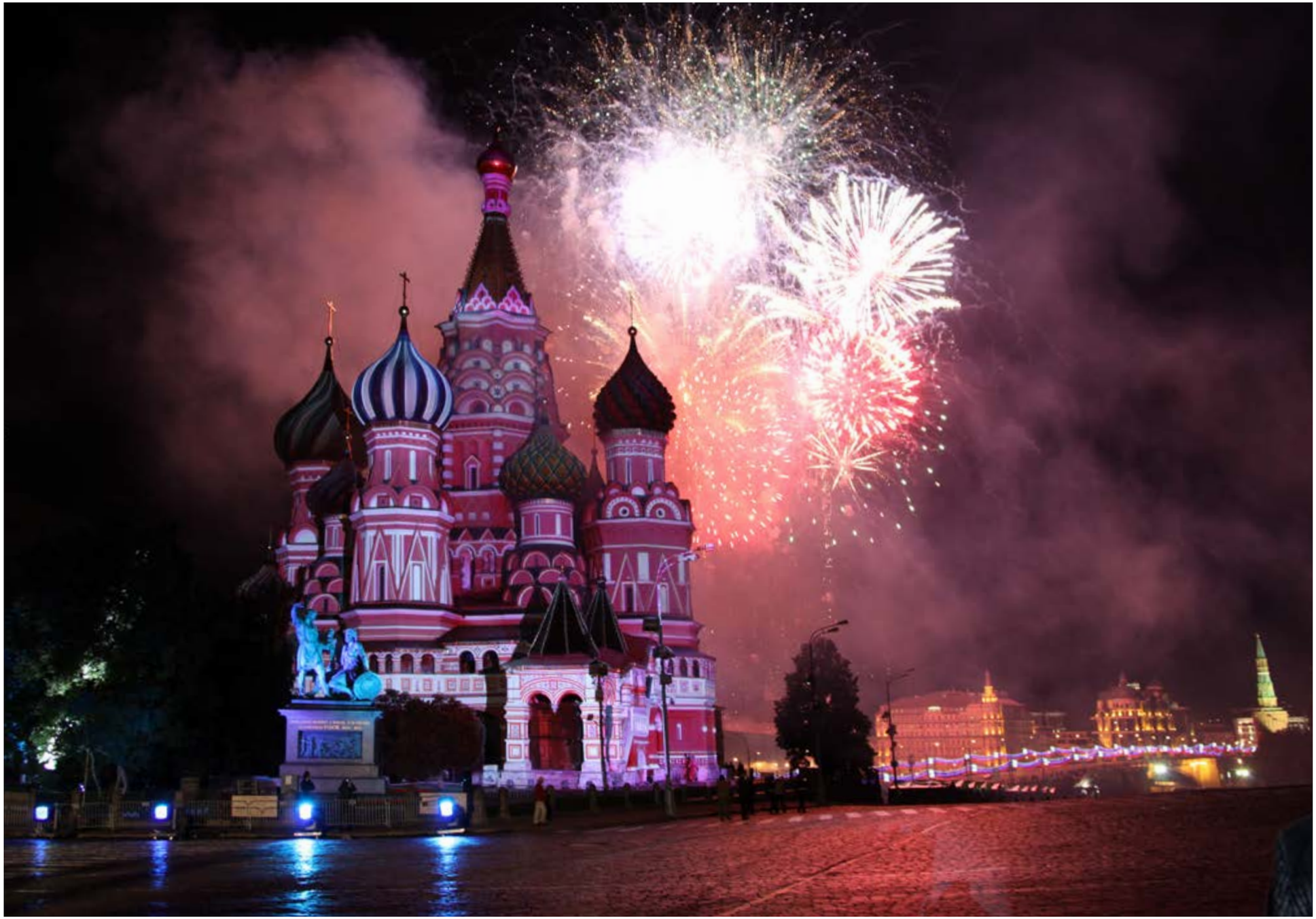
ETC Russia managed the 10-minute projection show, working out the unique 3D geometry and angles of the structure. Projectors were installed at multiple angles around the cathedral and more were fixed across Red Square to produce visuals on a special sphere installed for the event.

Andrey Efarov, technical director of ETC Russia, recalled the project team being challenged to find the right technical and content mix because of St. Basil's peculiar design. "Nevertheless, according to the audience, the achieved visual effects were really striking."

Director Roman Markholia said the crowds at the military tattoo were wowed by the multimedia show. "Such visual effects are not familiar to the Russian audience. They have seen lots of fireworks, but have never seen such picturesque architectural transformations in Red Square."







CALIFORNIA SCIENCE CENTER BALL

LOS ANGELES, USA

THE FACTS

CUSTOMER
California Science Center

LOCATION
USA

PROJECT TEAM
BARTKRESA design
Pro One Stage

CONFIGURATION
Christie Roadster
S+20K projector (9)

Guests at the California Science Center's 15th annual Discovery Ball in 2013 dined under the wings of the Space Shuttle Endeavour and a virtual night sky.

The charity gala's environment was completely transformed using mapped projections, even virtually transporting diners to the shuttle's old home, the Kennedy Space Center.

Called Space Exploration: Past, Present and Future, projections created sunsets and a night sky filled with stars and comets high on the walls of the pavilion hangar. The visuals were pulled together by LA-based BARTKRESA design. With cross-beams, girders and the shuttle itself looming overhead, the team had to map the environment cleanly, without breaking up the images.

"I knew that if we just projected over everything it would not look professional, the image would break up because of the beams," recalled founder Bart Kresa. "We started by creating the design for the background and separated the elements in the show from the construction elements."

"We ended up projecting at angles," he added. "Because the space shuttle took up pretty much the entire hangar, we had to place the gear – including the projectors – in odd spaces. We placed some projectors underneath the trunk of the shuttle and used the Christie projectors' keystone correction to make it all come together. Everything looked wonderful, and it was really something to see."

PORTUGAL CENTENNIAL

LISBON, PORTUGAL

THE FACTS

CUSTOMER
Frente Tejo

LOCATION
Portugal

PROJECT TEAM
ADLC Audiovisuais
Custódio Cardoso Pereira

CONFIGURATION
Christie Roadie
HD+35K projector (4)

Portugal's first centennial as a republic was marked with a massive multimedia projection show on the face of a historic Lisbon building, taking onlookers on an audio-visual journey through the country's history.

The nine-minute show, done for five consecutive nights, was run on the north side of Praça do Comércio, a building more commonly known as Terreiro do Paço, located in one of Lisbon's most magnificent squares.

Called Praça dos Cidadãos, the show included animations and 3D effects, highlighted by a sequence simulating the demolition of the building during a 1755 earthquake and its subsequent reconstruction.

The show was funded by Frente Tejo, a public capital company that was created for the re-zoning and restoration of Lisbon's waterfront and also supported by the National Commission for the Celebration of the Centenary of the Republic.

The 134 x 40 meter (440 x 130 foot) high virtual canvas was illuminated by projectors mounted on three towers, one in the middle and two at flanking angles.

"The projection size and quality was really amazing," recalled José Manuel Cordeiro of event producer ADLC Audiovisuais, "and it was the first time such a large screening event was staged in Portugal."

WINTER CARNIVAL MAPPING FESTIVAL

QUÉBEC CITY, CANADA

THE FACTS

CUSTOMER
City of Québec/LumoCité

LOCATION
Canada

PROJECT TEAM
PaintScaping

CONFIGURATION
Christie Roadster
S+20K projector (4)
Christie Twist

PLAY VIDEO

As a special prelude to Carnival du Québec, Palais Montcalm's facade was lit up.

The circa 1931 Palais Montcalm concert hall was painted in light in February 2013 as a preview to LumoCité, where in 2014 will become North America's first international projection mapping competition. The event will run in conjunction with the renowned Carnaval de Québec, which celebrates winter and Québécois culture.

Called Winter Dreams, the light show on the old stone building worked on the premise of imagining what the world would look like if the carnival's snowman mascot could dream. Icicles draped the structure, water seemed to fill the inside higher than the building's huge front windows, and orca whales swam across the facade.

The demonstration was developed by Philippe Bergeron and executed by his Los Angeles-based company, PaintScaping. "Despite temperatures in the -30's (yes, minus), this was an incredible experience that the PaintScaping team will never forget," said Bergeron. "From the bottom of our hearts, to LumoCité, the Carnaval de Québec, and the warm people of this amazing city, a huge: MERCI!"

50TH ANNIVERSARY OF SPUTNIK 1

MANCHESTER, UK

THE FACTS

CUSTOMER
University of Manchester's School of Physics and Astronomy

LOCATION
UK

PROJECT TEAM
Creative Media Techniques

CONFIGURATION
Christie Roadster HD20K projector (2)

The massive dish of the Lovell radio telescope was used as an open-air projection screen to mark the 50th anniversary of Sputnik 1, the Russian satellite that launched the Space Age.

The projection was part of Space 50, a series of events celebrating 50 years since Sputnik was first tracked moving across the sky by the famed Lovell radio telescope on the grounds of Britain's University of Manchester.

UK-based Creative Media Techniques (CMT) was enlisted to supply all the technical infrastructure. "Naturally, we jumped at the chance to work on such a prestigious and unusual site," recalled CMT project lead Richard Hawkins.

Hawkins and his team expanded the original concept of visuals and audio to include lighting and lasers in the show. The 37-minute video presentation used archival, space-orientated footage, graphics and photographs, tracing the history of the telescope and space exploration. All of it was compiled by Dr. Alastair Gunn, a radio astronomer from the university's School of Physics and Astronomy, who conceived the event.

Each show attracted as many as 2,000 people, and the event was such a success that Gunn and the team from the host Jodrell Bank Observatory immediately started thinking about future projection shows using the telescope as a screen.

"We've worked in some idiosyncratic places in our time, but this was one of the most fun and challenging shows for all of us," said Hawkins. "It was a truly amazing experience."

QUÉBEC CITY'S 400TH ANNIVERSARY

QUÉBEC CITY, CANADA

THE FACTS

CUSTOMER
City of Québec

LOCATION
Canada

PROJECT TEAM
Ex Machina
ETC France

CONFIGURATION
Christie Roadster
S+20K projector (27)

PLAY VIDEO

A vast sweep of 81 working grain silos along the St. Lawrence River were mapped and used as a giant screen to celebrate the 400th anniversary of Québec City.

The story and culture of the historic city was brought to life in images, motion graphics, video and supporting audio on a canvas that was 657 meters wide by 30 meters tall (2,155 x 100 feet), guided by much-loved Québécois artist Robert Lepage, who made the 40-minute spectacle an ode to his birthplace.

Dubbed The Image Mill, a nightly showcase saw the Bunge company's silos cleverly transformed into rows of leather-bound books, stained glass windows, a printing press, cigarettes and bullets, and even other buildings, like an airport and factory.

Lepage's vision was to share the story of Québec City - which he considers "the best kept secret in North America" - with the world. He wanted everyone to remember the different views, the people who built it and the challenges of the growing city while retaining its culture and heritage. He also wanted to share hidden treasures and show the beauty of the region through imagery and sounds.

The Image Mill took Lepage and Ex Machina production company, working with ETC Paris, more than two years to plan, create and execute. Lepage knew from project inception his celebration had to be focused and located along the river.

He couldn't remove the grain silos that dominate the old port, so he decided to work with them. To make the long row of concrete silos a canvas, 27 projectors were used to create a continuous image across them, and also around one side of the structure.

The team had to address and overcome numerous challenges:

- the many kilometers of network and fiber cabling needed for control and communications;
- accurately projecting on the many uneven concrete contours of the silos;
- working safely near potentially explosive flour powder in the storage silos;
- designing in the obstructions of trees, buildings, hydro wires and poles on the projection path;
- factoring all the possible weather hazards of 10 weeks of outdoor shows.

“The Image Mill is a magnificent gift from Robert Lepage to his city – an event that thousands of people will enjoy night after night during this summer,” said Luci Tremblay, director of communications for the Society of the 400th Anniversary, when the show was launched. “They will discover the history of Québec City through Lepage’s eyes and famous creativity, which is a real privilege.”

At the time, The Image Mill was the largest projection surface ever created, earning a spot in the Guinness Book of World Records. The free show was so popular it was extended through five summers.

INTERNATIONAL ARTS FESTIVAL

MELBOURNE, AUSTRALIA

THE FACTS

CUSTOMER
Melbourne International Arts Festival

LOCATION
Australia

PROJECT TEAM
The Electric Canvas

CONFIGURATION
Christie Roadster S+20K projector (1)

PLAY VIDEO

Two familiar, distinct buildings in Melbourne, Australia got into a playful visual battle - driven by vivid projections and music - during the Melbourne International Arts Festival.

At the height of the presentation, called Cacophony: The Art of Conflict, the animated buildings were splattering each other with virtual paint. Through the light and sound presentation, the visuals worked with the unique contours of Hamer Hall and the State Theater, shifting and transforming, sometimes in sync, and sometimes as responses.

The audacious light show was put together by the festival and Australian projection art pioneers, The Electric Canvas. Cacophony ran nightly throughout the two-week festival, drawing crowds to the dazzling but entirely free event on the grounds of Melbourne's Arts Centre complex.

NEW MUSEUM SPRING GALA

NEW YORK, USA

THE FACTS

CUSTOMER
The New Museum

LOCATION
USA

PROJECT TEAM
Nuit Blanche New York (NBNY)
Materials & Methods

CONFIGURATION
Christie HD10K-M
projector (6)

Artwork by leading contemporary artists enveloped the lavish interior of this NYC event venue for the museum's annual fundraising spring gala.

A 100-meter (330 foot) swath of projected visuals wrapped three sides of the ballroom at Cipriani Wall Street, treating some 560 diners to the projected work of eight renowned artists. The large-scale video projection was curated and produced by Nuit Blanche New York with technical direction from Jeff Grantz of Materials & Methods. The evening raised $1.6 million for the Lower Manhattan museum.

RHEINPARTIE FESTIVAL

RHINE VALLEY, GERMANY

THE FACTS

CUSTOMER
Rheinpartie

LOCATION
Germany

PROJECT TEAM
Skertzò
Ross Ashton
ETC
Rent4event

CONFIGURATION
Christie Roadster S+20K projector (4)
Christie LX650 projector (3)
Christie Roadster HD18K projector (2)
Christie Roadster S+16K projector (2)
Christie LX1500 projector (1)

The annual Rheinpartie Festival, built around German unification celebrations each October, focused on a UNESCO World Heritage region filled with old castles and historic towns.

A core festival event sees the crumbling inner ruins of Rheinfels Castle, sitting high above the Rhine River, given a dream-like quality through projections.

French visual designers Skertzò developed a diverse set of scenes for the first Rheinpartie show in 2009, at one point turning the castle into a giant, icing-laced gingerbread house and at another, making the castle a huge house of cards, eventually collapsing it. In another scene, spectators were able to follow the comings and goings of imaginary farmers and craftsmen working at a castle somehow brought back to life.

The Skertzò team was on site weeks ahead of the event using cameras and laser pointers to map the site and sort out projection distances.

“It was a dreamlike, romantic full moon night at the Rhine, which immersed this cultural landscape in a new light,” recalled art director Helmut M. Bien, after that first Rheinpartie. “A lot of people could not pull themselves away from the work of Skertzò. They stayed for three runs, and some even returned the next day.”

A second projection-mapped site also drew crowds high atop the Rüdesheim aerial cableway to the 38-meter (125 foot) high statue of Germania that overlooks the Rhine.

British artist, Ross Ashton, was commissioned to paint the statue with images, making Germania into a living European monument. He projected the flags and symbols of all European member states onto the surface, and created a virtual waterfall on the steps.

Rheinpartie is now an annual event, with a series of local initiatives created to show life on the river Rhine.

NATIONAL DAY PARADE

SINGAPORE

THE FACTS

CUSTOMER
Government of Singapore

LOCATION
Singapore

PROJECT TEAM
Hexogon Solution Pte. Ltd.

CONFIGURATION
Christie Roadster
HD20K-J projector (22)

Christie Roadster
HD18K projector (4)

PLAY VIDEO

Singapore celebrated its 48th birthday as an independent nation in 2013 with a multimedia spectacle that combined music, dancers, fireworks and visuals from 30 projectors.

The National Day Parade celebration, on the floating stadium and stage at the Marina Bay Sands Resort, was built around the theme “Many Stories … One Singapore.” The show featured a collection of extraordinary Singapore stories told in nine conceptual segments with music, interaction and humor. Ten custom projection towers, each with three stacked projectors, created an interactive stage floor. During one segment, local athletes showed off their skills on a virtual basketball court and a football pitch.

“Even though the projectors were elevated about 25 meters (80 feet) from the ground, the projection height remained a challenge. We did numerous experiments to ensure that each member of the audience could see the floor projections with the pop-up 3D effect that we wanted to achieve,” recalled Adrian Goh, managing director of Singapore-based Hexogon Solution, which executed the event.

Hexogon also delivered the 2012 show, and increased the use of projection by 25 percent for 2013.

NEW YEAR'S EVE COUNTDOWN

SHANGHAI, CHINA

THE FACTS

CUSTOMER
Shanghai Media Group

LOCATION
China

PROJECT TEAM
Beijing Feng Shang Century Arts, Co Ltd.

2013 Countdown for Shanghai

The Fifth Element

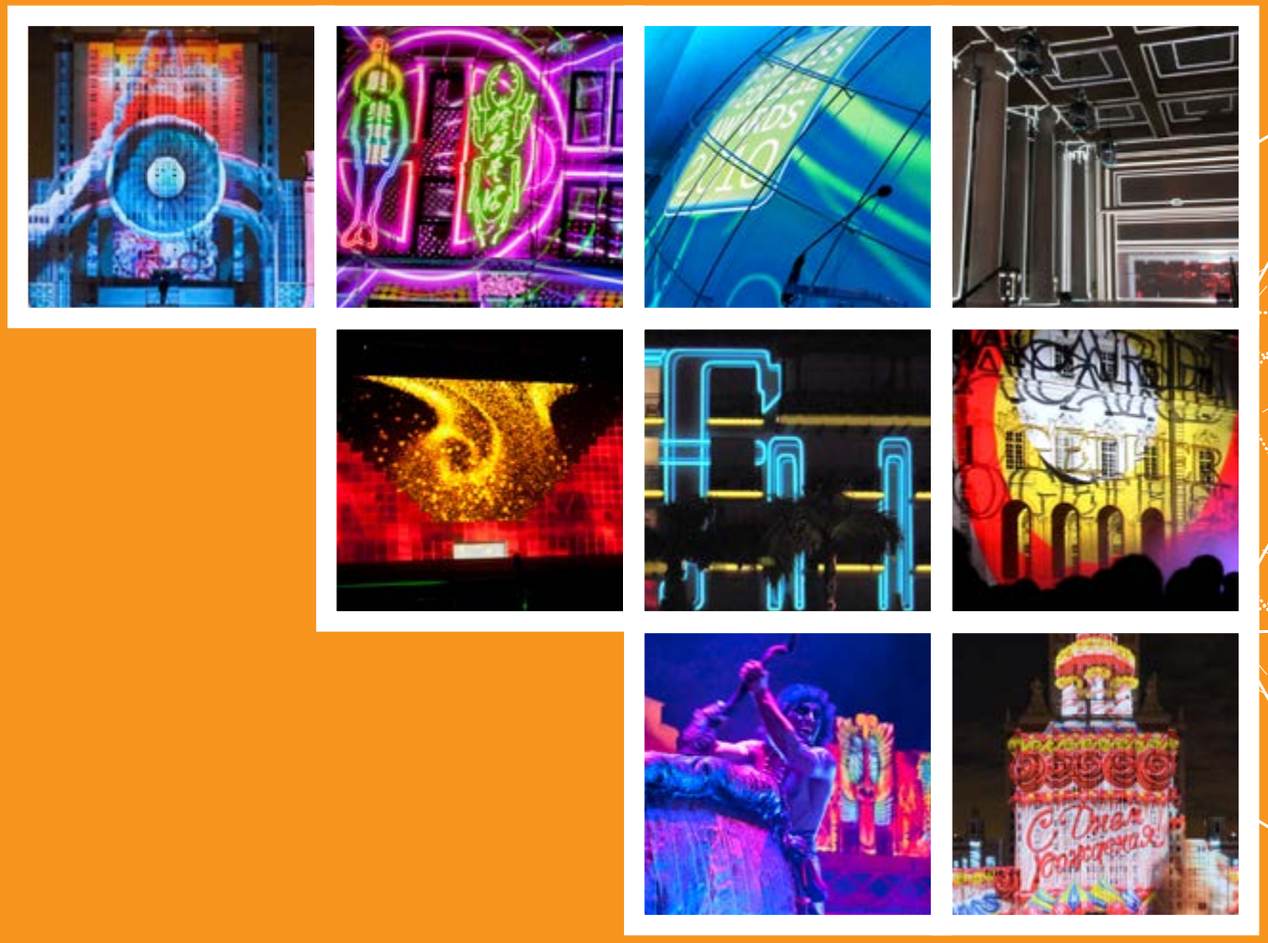
CONFIGURATION
Christie Roadie HD+35K projector (26)

Christie Roadster S+20K projector (8)

The 2012 New Year's Eve celebration along Shanghai's spectacular riverfront featured an eight-minute projection, light and fireworks show designed to entertain 200,000 onlookers.

It took 34 projectors to fully illuminate and transform historic buildings with content that varied from scenes celebrating Shanghai's infrastructure to a final, pulsing countdown on the building walls.

The projection area was more than 9,000 square meters (97,000 square feet) and stretched across 70 meters (230 feet) from the Shanghai Pudong Development Bank building to the Customs House, making it the biggest outdoor architectural projection in China's history.



Corporate

International Projection Mapping Inspirations


С Днем рождения!

ALFA-BANK 20TH ANNIVERSARY

MOSCOW, RUSSIA

THE FACTS

CUSTOMER
Alfa-Bank

LOCATION
Russia

PROJECT TEAM
ETC France
David Atkins Enterprises

CONFIGURATION
Christie Roadster
S+20K projector (66)
Christie Roadie
HD30K projector (15)

PLAY VIDEO

Russia's largest private bank celebrated its 20th year in grand fashion as 800,000 spectators watched an iconic Moscow building transformed by projected light.

Held on Moscow City Day, the strikingly beautiful half-hour visual feast blended projection with spotlights, pyrotechnics, music, balloons and live characters.

Alfa-Bank had the main facade of Moscow State University - 25,500 square meters (275,000 square feet) of visual surface - painted in light by 81 projectors for what was called the Alfa-Show 4D.

The 200 meter tall by 300 meter (660 x 1000 feet) wide building was transformed into - among many things - the Taj Mahal, Big Ben, the Eiffel Tower and even a huge birthday cake. There were angry, fire-belching dragons and eagles, but also butterflies, biplanes and trains. Through it all, the Alfa-Bank logo was seamlessly, and steadily, stitched into the visual plot line to reinforce the brand and provide a unifying element to the presentation.

The projection was supplemented by light cannons, 5,000 pyrotechnic charges and 50,000 balloons. Symbolic snow fell and thousands of soap bubbles floated into the sky. In the middle of the show, extreme urban climber Alain Robert, known for scaling the world's tallest buildings without safety gear, ascended the main tower.

“Our choice of medium for Alfa-Bank’s anniversary celebration was no accident,” said Viktor Shkipin, the bank’s director of marketing. “We consider our bank to be the most technologically advanced in Russia, so we chose the most technologically advanced public event medium available today: huge, multi-dimensional video projection.”

To pull off such an ambitious event, the bank enlisted world-renowned public events director David Atkins, whose company has produced globally-watched events like the Olympics opening ceremonies.

“This was a unique project,” recalled Atkins. “It was the first time a building of this size was used for 3D projection. It was also the first time a production included the 4D element, and the first time someone climbed a building while images were being projected on it. This show was a first for so many things!”

The technical implementation required several months of preparation and two weeks at the site. More than 1,000 people had a role in the conception, creation and execution of the event. Some 200 trucks brought in needed equipment from several countries, and almost 2,200 cubic meters (77,700 cubic feet) of metalwork was erected on the event grounds.

The projectors were divided into several groups and installed in towers built specifically for the show and set at

various distances, angles and locations. Projectors were fixed along the sides of the main building, on the roof of the central portico, and in the central equipment room located in the tallest tower, standing some six meters (20 feet) high behind the VIP viewing stands.

To ensure a consistent look across the massive canvas, each front-facing window of the Moscow State central tower was covered by special panels - the events team enlisting the help of students to get them all in place.

Alfa-Bank didn't directly address the overall cost of the event, but likened the budget to the price of a month-long national advertising campaign on TV and billboards. "This year, we decided to forgo TV commercials and do the show instead," Shkipin told reporters ahead of the event. "We are positive it will work better than any TV commercial."

WARNER BROTHERS

BURBANK, USA

THE FACTS

CUSTOMER
Warner Brothers

LOCATION
USA

PROJECT TEAM
BARTKRESA design

Pro One Stage

CONFIGURATION
Christie Roadie HD35K projector (4)

Christie Roadster S+20K projector (4)

Christie Roadster HD18K projector (4)

An urban streetscape on Warner Brothers' backlot was transformed into a futuristic Japanese neon strip as part of a massive party held by the entertainment company.

The Warner Brothers international bash attracted 1,500 people, who were treated to a riotous rotation of performers and visual spectacles that ranged from a giant burning voodoo doll to aerialists and more than 100 African dancers.

Video projection expert BARTKRESA design was commissioned to digitally paint the two- and three-story blocks along New York Street in vivid light and visuals, starting with the Blade Runner-esque neon effects then shifting with the evening's events to a backlot bathed in red and then a cacophony of colors and symbols, from skulls and bones to jungle icons. Virtual fire often poured from windows during live performances.

The event later won awards for lighting and its overall concept.


to COLLEGE
AWARDS
2010
Scotland's Colleges

BUSINESS TO COLLEGE AWARDS

EDINBURGH, SCOTLAND

THE FACTS

CUSTOMER
Scottish Funding Council

LOCATION
Scotland

PROJECT TEAM
Tapestry AV

CONFIGURATION
Christie Roadster
HD18K projector (2)
Christie Twist
Vista Spyder

The outer dome of an Edinburgh planetarium was the primary visual backdrop for an awards dinner celebrating the collaboration between Scotland's colleges and business community.

Video messages, live camera feeds and custom event graphics were all shown on the giant 15 x 8 meter (49 x 26 foot) dome, with powerful projectors and software perfectly fitting the content to the 180° surface.

The Business to College Awards event at the Stratosphere venue, atop the old city's Our Dynamic Earth planetarium and science center, required advanced planning by the technical team to pull off the visuals properly on the dome.

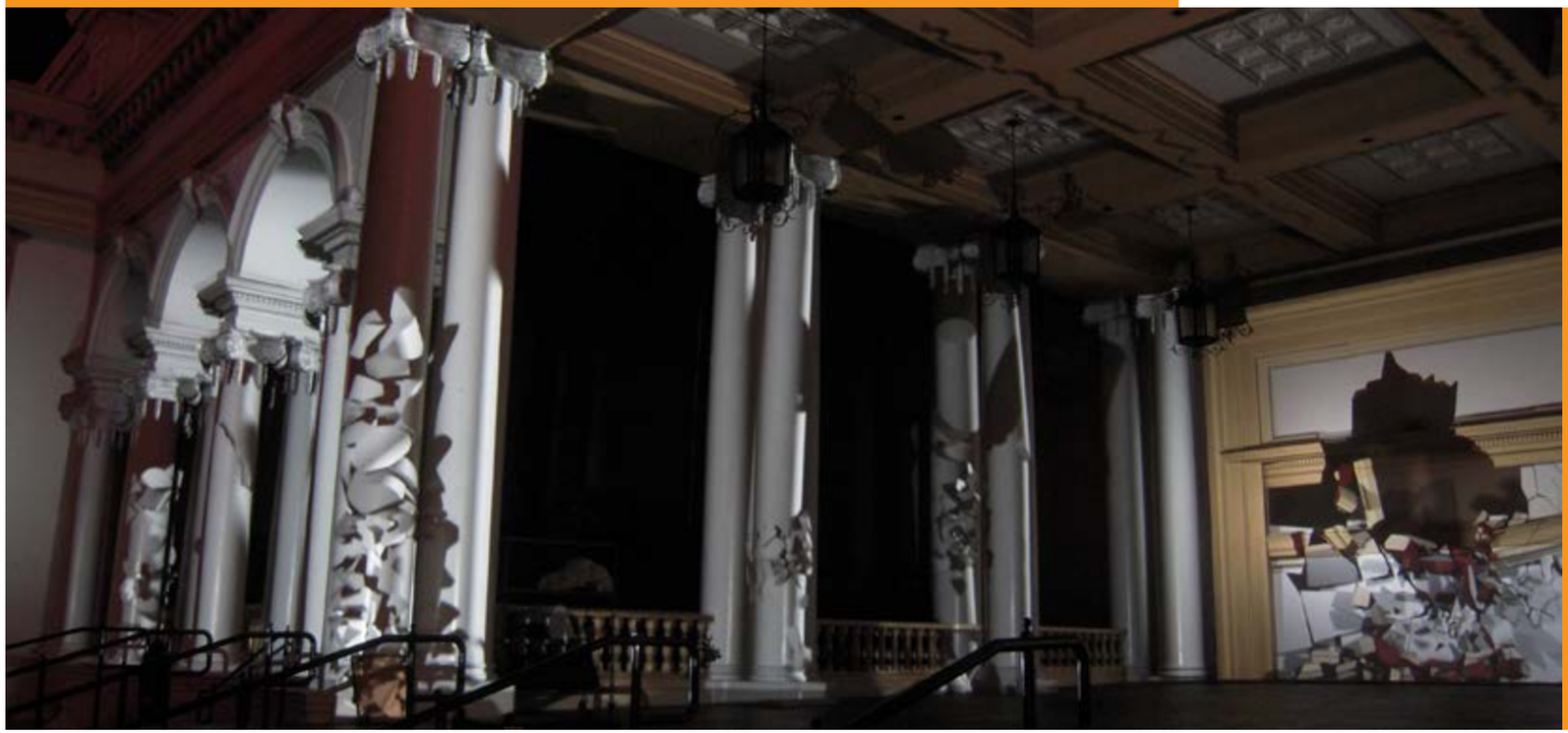
“One challenge was that we couldn’t gain access until after 4:30 PM, when the venue closed to the public and we had to be up and running by 7 PM,” recalled Tapestry AV managing drector Alex McLaren. “So we decided to carry out a dummy run the week before.”

The Tapestry team discovered all the manipulation needed to perfectly conform to the concrete dome was in the devices and their software.

Lynnemarie Tigg, the marketing officer for the awards, was so impressed by the effect she openly wondered why the dome had never been used before as a projection surface for events. “The dome projection looked fantastic and we were delighted with the result.”

MGM RESORTS INTERNATIONAL

LAS VEGAS, USA



THE FACTS

CUSTOMER
MGM Resorts International

LOCATION
USA

PROJECT TEAM
PaintScaping

CONFIGURATION
Christie Roadster
HD18K projector (6)

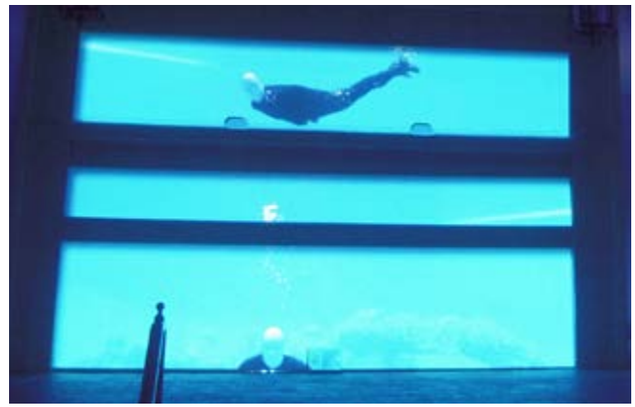
PLAY VIDEO

A courtyard section of the Monte Carlo Casino Resort in Las Vegas was transformed in jaw-dropping ways by an LA-based projection mapping firm.

PaintScaping did a projection mapping demonstration that included references to the Blue Man performing group and featured a series of creative sequences run in sync on eight huge walls. The area crumbled and was rebuilt, flooded with water and invaded by digital insects.

The company mapped the area and then rebuilt it using a green screen back in LA, working with several different artists and effects for what was collectively called Extreme Mapping. The demonstration was a private event, but drew onlookers who strained to see the visuals from the nearby Las Vegas strip.

"It may be the 3D mapping involving the most walls showing content in sync that's ever been done in North America," said PaintScaping president Philippe Bergeron.



BACARDI ANNUAL MEETING

TURIN, ITALY

THE FACTS

CUSTOMER
Bacardi

LOCATION
Italy

PROJECT TEAM
Gianni Guerrini
Visual Technologies

CONFIGURATION
Christie Roadster
HD18K projector (4)

The global liquor brand Bacardi used playful projections and its iconic bat symbol to wow a crowd gathered for its annual Europe, Middle East and Asia meetings.

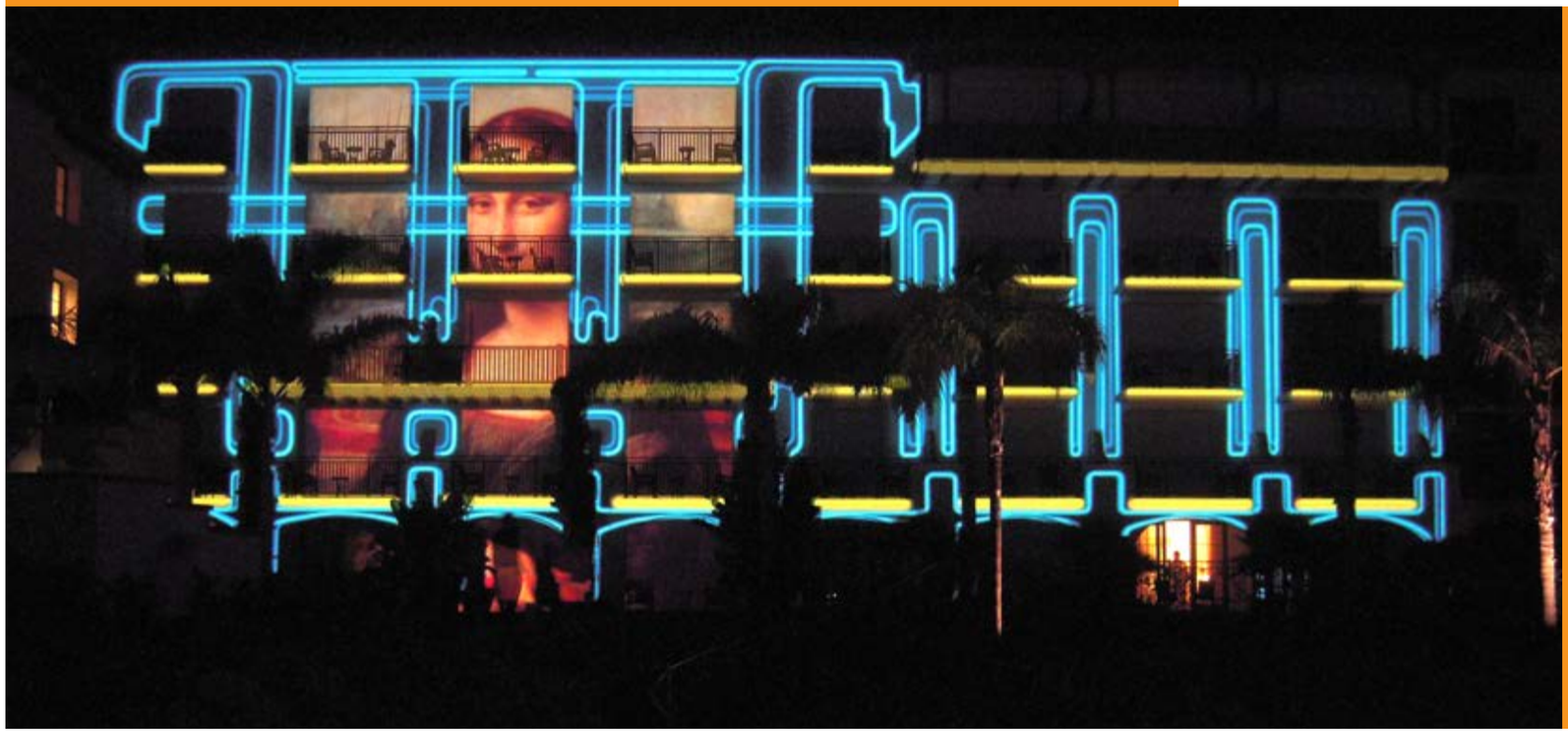
The inner courtyard walls of the 17th-century Palace of Venaria were bathed in light for a presentation that played with the shapes of the building. Sometimes, it seemed to break the building into pieces, while at other times it virtually disintegrated and morphed into thousands of bats.

"We linked the famous bat, symbolic image of the brand, with bright colors and light effects, to emphasize the party spirit," recalled Fabrizio Weiss, a show producer. "We wanted to highlight the brand's concept of 'Happy Together.' It was a spectacular visual celebration."

"For us, the event demonstrated the potential of architectural visual mapping applied to the brand communication for a company," concluded Federico Bigi of Apparati Effimeri.

TERRANEA RESORT

PALOS VERDES, USA



THE FACTS

CUSTOMER
American Hotel &
Lodging Association

LOCATION
USA

PROJECT TEAM
PaintScaping

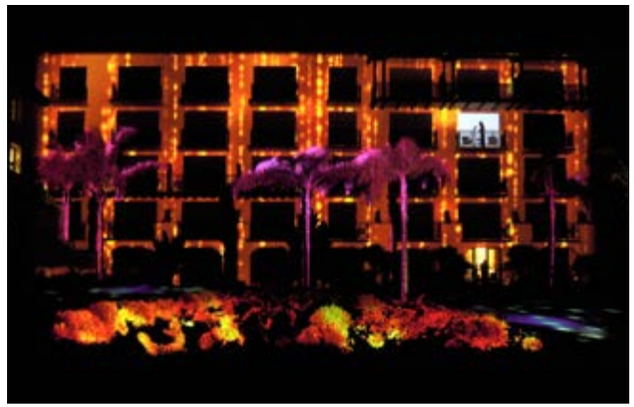
CONFIGURATION
Christie Roadster
HD18K projector (1)

PLAY VIDEO

A facade of the California oceanfront Terranea Resort Hotel twitched, shifted and fully transformed at an event viewed by many of America's top hotel executives.

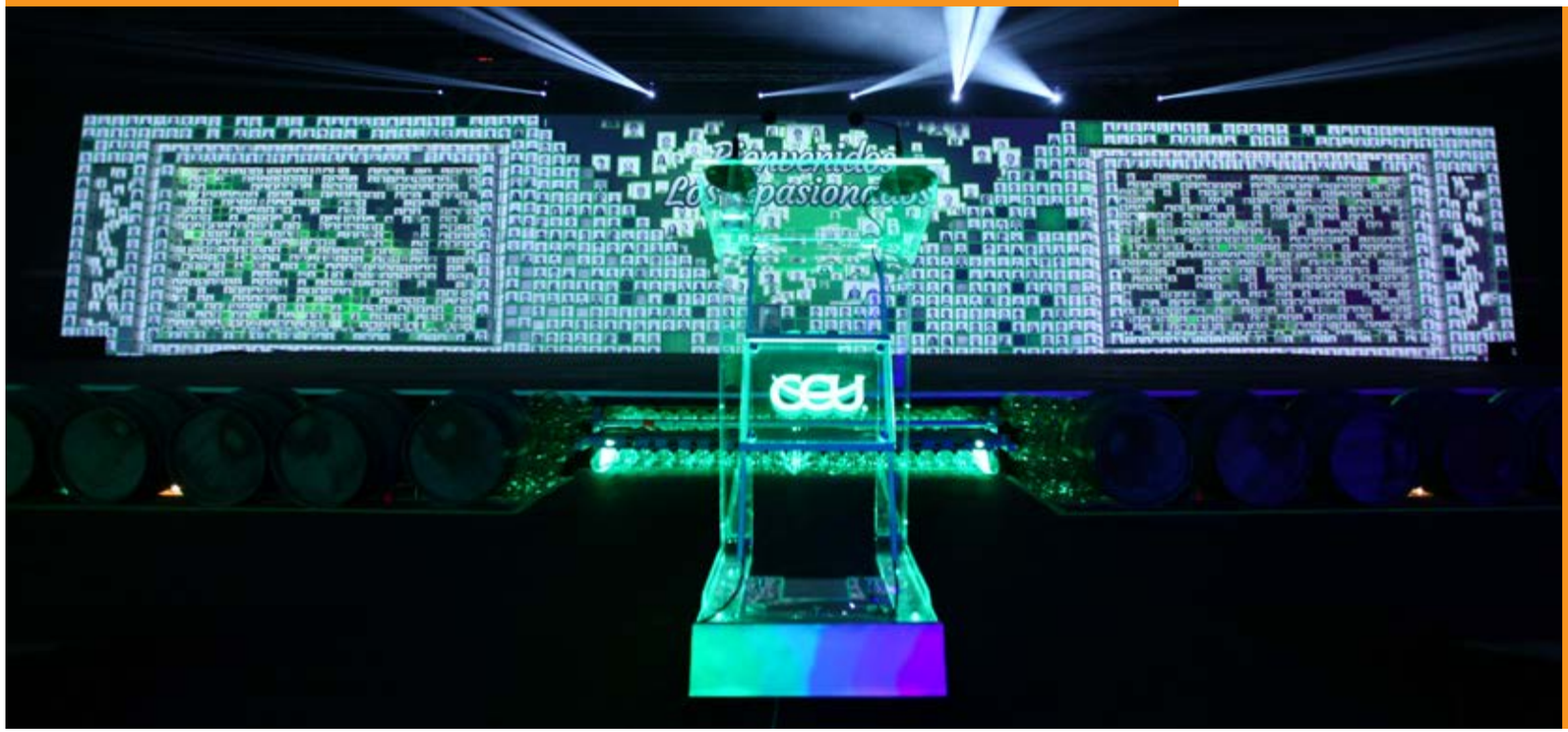
LA-based PaintScaping was selected to develop a one-time presentation, called Art Nouveau, to run as part of the American Hotel & Lodging Association's annual meetings at the Palos Verdes Complex.

The theme celebrated art and PaintScaping's creative team started with simple effects such as balcony silhouettes of painters and performers. They then painted the building and surrounding flora in vivid color and finished with an effect that saw the pulsating hotel block explode. The presentation was all managed from a single projector.



CCU SA CONVENTION

SANTIAGO, CHILE



THE FACTS

CUSTOMER
CCU SA

LOCATION
Chile

PROJECT TEAM
Proyección de Ideas,
IMAK, HMI, AudioPro

CONFIGURATION
Christie Roadie 14K M projector (4)
Christie Roadster HD20K-J projector (4)
Christie Roadie 35K projector (2)
Vista Spyder (2)

PLAY VIDEO

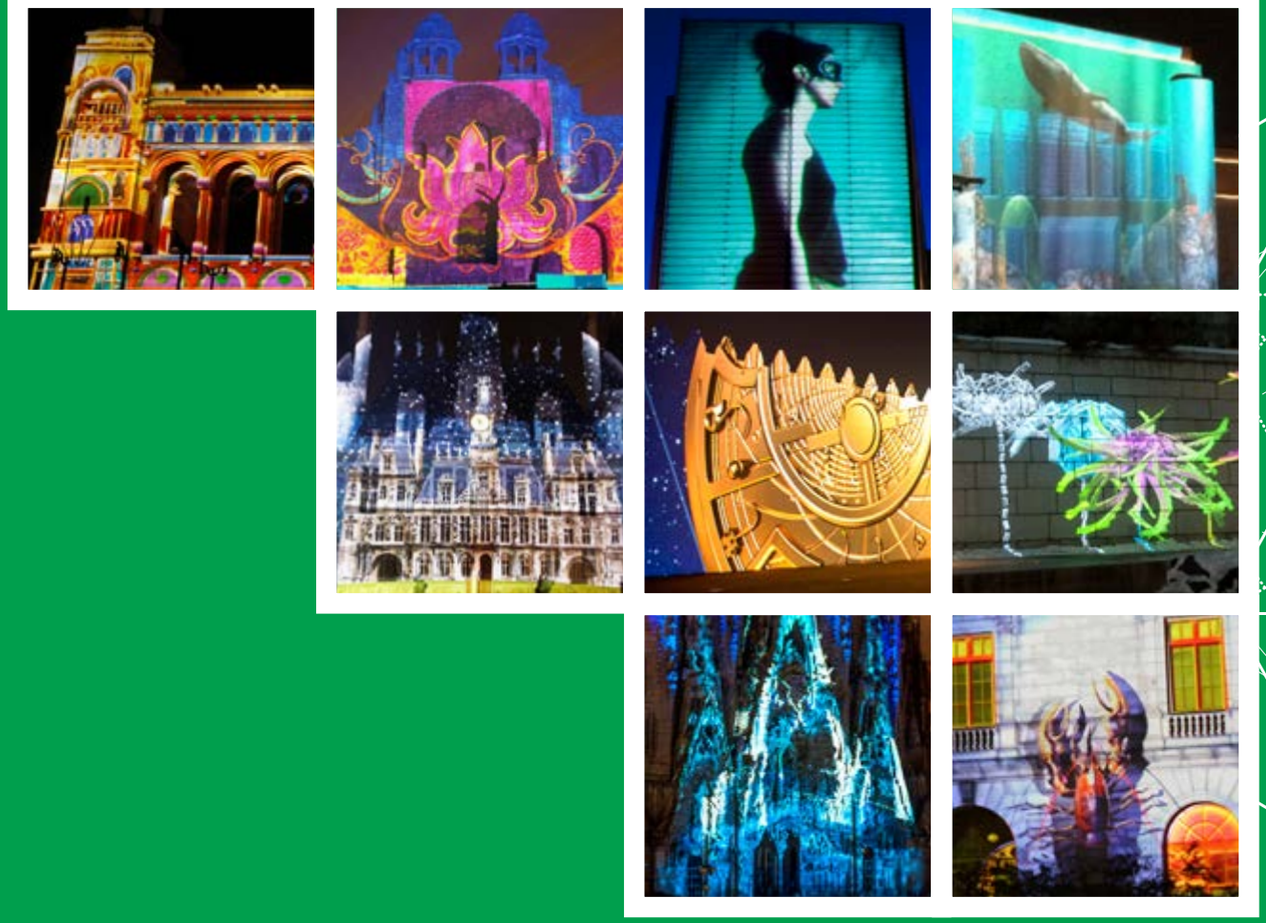
Chilean beverage conglomerate CCU SA used its own bottles and shipping crates to create a spectacular volumetric experience celebrating its products and people at its 2013 convention.

More than 2,200 bottle crates were set up on stage and each individual case was precisely mapped to a series of presentations focused on different business units and their core brands. The stage itself appears to be supported by glowing, backlit soda bottles.

Each presentation had its own set of unique motion visuals and accompanying musical overtures, all of them tied together with a six-minute main overture focused on CCU innovation, quality and service. The main overture also involved a group of Spanish flamenco dancers performing in sync with lighting and visuals mapped to the stage.

Photographs singling out CCU staff also illuminated the geometric stacks of individual crates that filled the stage.

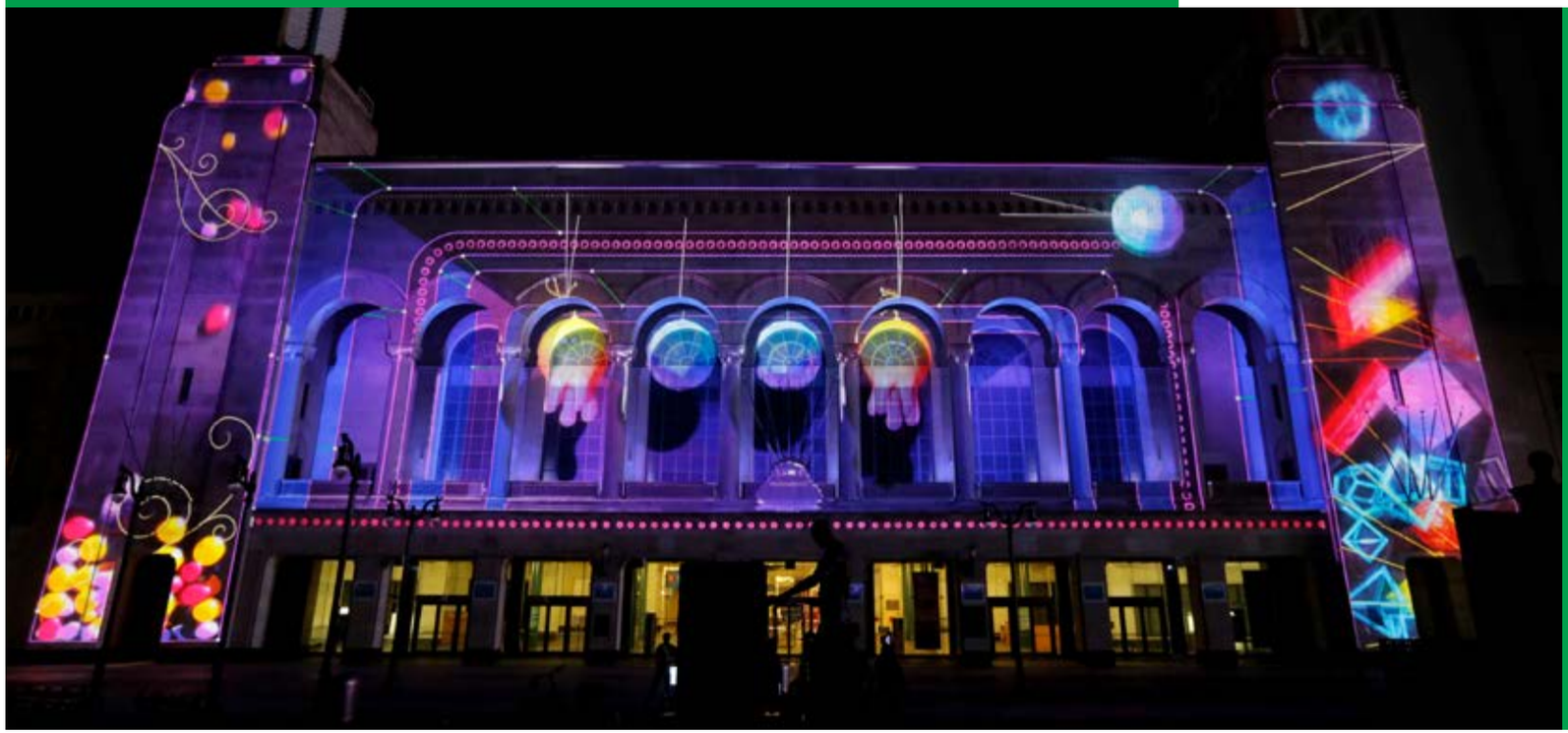
The corporate event held every two years brings in all of CCU's divisions and executives to review the results for the past two years, and unveil new products and plans.



Government

International Projection Mapping Inspirations

DUALITY
ATLANTIC CITY, USA



THE FACTS

CUSTOMER
Atlantic City Alliance

LOCATION
USA

PROJECT TEAM
Moment Factory

CONFIGURATION
Christie Roadster S+22K-J projector (12)

PLAY VIDEO

The historic Boardwalk Hall along the Jersey shoreline started virtually crumbling and vanishing.

It was part of a summer multimedia show commissioned by the Atlantic City Alliance and executed by Montréal-based Moment Factory. Called Duality, the show drew thousands each night to the boardwalk to see a spectacle termed as colorful as the city's storied history.

Duality was a vibrant blend of original motion graphics and sounds, highlighted by the riotous virtual collapse of the building, and its futuristic renewal using twirling, growing geometric shapes. The show ran for 8½ minutes, twice every hour after nightfall.

“Boardwalk Hall is Atlantic City,” alliance president Liza Cartmell told reporters ahead of the show opening. “This is an iconic destination for us. This is a good way to show people what Atlantic City is all about without being in their face.”

Duality proved so popular a second Moment Factory production was added for the winter holiday season, called Winter Sweet, and two more shows were added within a year, making mapping a year-round attraction.

THE LOVE OF DELHI SHOW

DELHI, INDIA

THE FACTS

CUSTOMER
Ministry of Tourism &
India Tourism Development

LOCATION
India

PROJECT TEAM
Tricolor India
Schauspiel Pvt. Ltd.
Modern Stage Services
The Projection Studio

CONFIGURATION
Christie Roadster
S+20K projector (3)

PLAY VIDEO

The ruins of a 500-year-old fort on a Delhi hillside provide the pixel-mapped canvas for a sound and light show that takes viewers back almost 1,000 years.

Ishq-e-Dilli (or The Love of Delhi) is a 55-minute show that depicts Delhi through the history of its 10 ancient cities, beginning from 11th century AD to the present-day metropolis.

India's first permanent projection art installation bathes the grand ramparts, parapets, alcoves and stairs of the historic Purana Qila fort in a steady procession of visuals relating Delhi's roots, all supported by narration.

The story is told in archival images, maps and 3D animations, the moments drawn from historical record and literature. The narrative begins at the first city of Quila Rai Pithora and culminates in modern New Delhi and its National Capital Region.

The multiple depths of field involved in using the fort as a projection surface, and making the content fit appropriately, were major challenges, as was a crumbling facade that displayed color in different shades and required days of calibration.

The team also had to work its way around trees on the heritage site and deal with environmental operating conditions that varied between 4˚C and 48˚C (39˚F to 118˚F) in the summer.

The show was first run in January 2011, and was staged twice nightly, once in Hindi and again in English. Himanshu Sabharwal, whose firm, Two's A Film, guided the sound and light show creative, struggled when asked if there was any part of the show that particularly impressed him.

“Tough to say,” he said, smiling. “Every minute stirs me.”


GRANDE
BIBLIOTHÈQUE

QUARTIER DES SPECTACLES

MONTRÉAL, CANADA

THE FACTS

CUSTOMER
City of Montréal

LOCATION
Canada

PROJECT TEAM
Quartier des spectacles Partnership

City of Montréal

CONFIGURATION
Christie Roadster S+22K-J projector (14)

Christie Roadster S+20K projector (10)

Christie Roadster HD18K projector (6)

Christie Roadster S+16K (2)

Projection-mapped buildings, red-dotted sidewalk projections, custom-illuminated intersections and ambient building lighting all combine to create what's become known in Montréal as the Luminous Pathway.

Many public and private buildings in the city's Quartier des spectacles arts district are now projection-mapped in endlessly intriguing ways by local artists as part of an urban renewal initiative. Projectors of varying sizes are permanently fixed and focused on buildings, and the Quartier des spectacles Partnership project continues to add new buildings.

The Luminous Pathway was conceived to create new energy, excitement and activity in an area that's home to 80 percent of Montréal's performance halls. It started with simple projections of pulsing red dots on the sidewalks in front of cultural centers, identifying them visually as arts stops.

Now the pathway includes a variety of building facades that have been 3D-modelled and made available to artists to use as their public canvases.

"The Luminous Pathway is truly a unique projection mapping display with artists from everywhere using the Montréal buildings as their canvas to develop new ways of delivering creative content," explained Mikaël Charpin, deputy director of the Luminous Pathway. "It has really caught on, because when building owners see the projection mapping on someone's wall, they want us to then use their wall for a presentation."

"The objective is to provide artists with a toolbox they can use for projection mapping," said Ivan Klein, the Pathway's technical director, "making the Quartier des spectacles a creative lab, while enhancing buildings in a way that respects their form and function. Indeed, every image must meet certain criteria before it's considered for the display, and the videos have to express the theme of the building they're displayed on."

On the science building of the University of Québec in Montréal, for example, a Montréal Symphony Orchestra pianist's notes and instrument vibrations were displayed as projected light on the facade.

The project is supported by the City of Montréal, which stressed the importance of it being technically designed to handle the city's very distinct seasons. All the projectors are working outdoors, housed in custom, climate-controlled shelters designed by the partnership to withstand Montréal's harsh, snowy winters and sultry summers.

"These machines start and stop by themselves every night and they are monitored from home or by phone by the team," explained Klein. "It's so important that we get this constant feedback from the projectors."

The not-for-profit partnership only charges a cost-recovery fee to venues that use the available services and equipment. The goal is to draw people from across Canada and around the world to Montréal, to enjoy what the Quartier des spectacles offers.

Determining a hard return on investment on a visual arts project is difficult, but the project's backers all see the Pathway as a big success.

CHRISTMAS SHOW

CALI, COLOMBIA

THE FACTS

CUSTOMER
Mayor of Cali

LOCATION
Colombia

PROJECT TEAM
Panoramika
BIGVIDEO
STUDIO LAPOST
AUDIOLAB

CONFIGURATION
Christie Roadster S+20K projector (2)

An old train station in the north end of Cali, Colombia became home to snakes, spiders, parrots and butterflies for a Christmas show.

Called Nature Magic, the presentation used the broad main wall of the station to show the building transforming and deconstructing, at various times descending into the ocean or deep into a rainforest as larger than life creatures filled the scenes.

The presentation ran through the holiday season, showing several times each night.

50TH ANNIVERSARY OF PARIS-ROME TWINNING

PARIS, FRANCE

THE FACTS

CUSTOMER
Paris City Hall

LOCATION
France

PROJECT TEAM
ETC

CONFIGURATION
Christie Roadster
HD+30K projector (4)

Two of the world's great cities celebrated their friendship in a night of vivid images projected on a landmark.

Parisian city officials honored the 50th anniversary of its twinning with Rome by bathing the Paris City Hall in projected images of the two cities. Giant, sometimes playful images of both Rome and Paris filled the lines and curves of the old building as more than 1,000 guests - both French and Italian - looked on from a skating rink in the hall's courtyard.

The 10-minute show repeated in a loop, allowing the public to come by throughout the January evening to take in the spectacle.

PANCHTATVA - THE FIVE ELEMENTS

NEW DELHI, INDIA

THE FACTS

CUSTOMER
Delhi Tourism

LOCATION
India

PROJECT TEAM
Tricolor India
Schauspiel Pvt. Ltd.
Projection Studio

CONFIGURATION
Christie WX10K-M projector (10)
Christie Roadster S+22K-J projector (6)

Projectors have energized a struggling memorial attraction in India dedicated to a Sikh guru.

The focal point of New Delhi's Guru Tegh Bahadur Memorial is an obelisk, surrounded by standing semi-arches and monoliths representing disciples and gurus. The site was struggling with visitors counts, but that has changed now that the minimalist tribute is flooded at night with beautiful light and motion graphic visuals that reflect the five elements of nature: air, water, fire, earth and space.

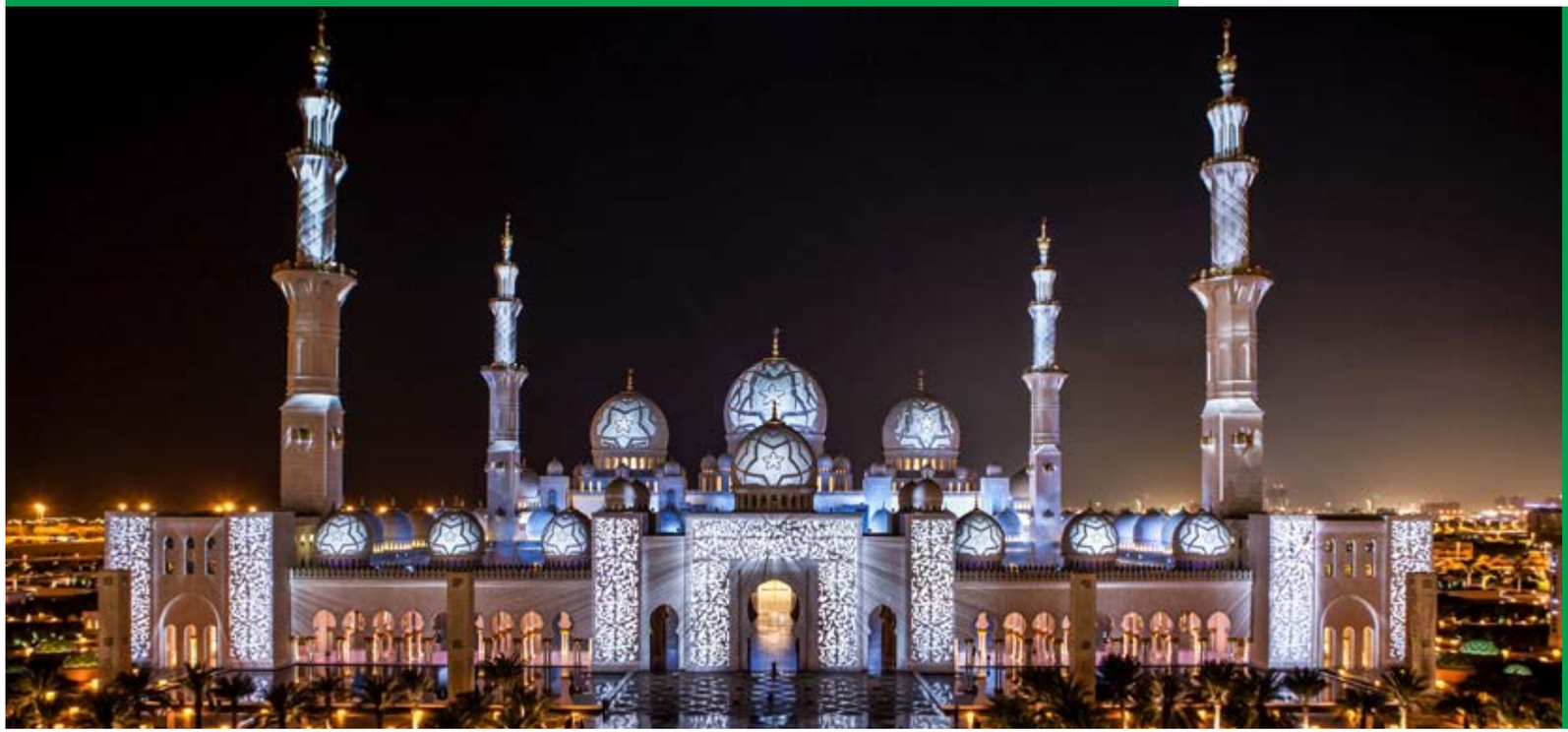
First opened in 2011, AV system integrator Tricolor India Schauspiel and artistic director Himanshu Singh Sabharwal were recruited to develop new technology ideas for the site and boost visitor numbers to the paid attraction.

"I knew that we could not tell a linear story here, or for that matter, any story," said Sabharwal. "Also, the client wanted a universal appeal targeting a larger diaspora of tourists. Then I got this brain-wave of creating a musical tribute of 'kudrat ki chadar' - literally translated as the five elements to the Guru, who was fondly called 'Hind ki Chadar' or the protective shield of Hind. This lent a fluid experience, which was the only thing possible here, perhaps."

The memorial is now the largest permanent projection mapping installation in the region.

NATIONAL DAY

ABU DHABI, UNITED ARAB EMIRATES



THE FACTS

CUSTOMER
United Arab Emirates

LOCATION
Abu Dhabi

PROJECT TEAM
Obscura Digital

CONFIGURATION
Christie Roadster S+20K projector (29)

Christie Roadster HD18K projector (20)

PLAY VIDEO

A pair of landmarks central to the national identity of the United Arab Emirates were mapped and illuminated with remarkable visuals to commemorate the country's 40th anniversary.

There were 49 projectors used to bathe with light and intricately transform the Sheikh Zayed Grand Mosque in Abu Dhabi and the historic Al Jahili Fort at Al Ain, in shows that honored the country, surrounding landscape, citizens and their central religion.

The storyline for the presentation focused on culture and history, and Sheikh Zayed's vision of a grand mosque as a place for his people, their heritage and all of humanity. The visual design used themes such as the mosque's geometry and fine architectural detail, its flora, the celestial cycles of the moon and the 99 attributes of Allah, illustrated in traditional Kufi calligraphy.

San Francisco-based Obscura Digital was commissioned to develop and execute a program to run for UAE's National Day celebrations. The huge mosque's white marble facade gave the Obscura team a blank, uniform canvas to work with, and endless inspiration in the elements and symbols found around the place of worship.

Mapping and perfectly illuminating a mass structure that includes four 107-meter (350 foot) high minarets and 12 domes took precision and exhaustive planning. Obscura laser-scanned the entire surface area of the mosque to generate 3D models - from the flat front walls to the columned arcades and domes that ranged in size from 7 to 46 meters (23 to 351 feet).

Over four dozen projectors covered the 183 x 107 meter (600 x 350 foot) surface with rich visuals.

A separate presentation was designed for the Al Jahili Fort, the theme focused on history and culture. Another five projectors lit up the fort walls and its two main towers.

The show opened with a symbolic falcon sweeping across the desert dunes, and took onlookers through a series of scenes mapped against the fort walls that celebrated Bedouin culture, early trade, the impact of irrigation on desert life, and the gorgeous night skies.

The work - notably the Mosque show - has won top international awards for the creative application of technology for event presentations.

“It was certainly a dream projection-mapping job. Incredible architecture, all white marble, completely artistic and cultural content,” recalled Obscura interactive developer and artist Mary Franck. “It was absolutely an honor to be a part of it.”

DIGITAL GARDEN

SEOUL, SOUTH KOREA

THE FACTS

CUSTOMER
Seoul Metro Government

LOCATION
South Korea

PROJECT TEAM
Miguel Chevalier

Young Jin Visual Technology

CONFIGURATION
Christie Roadster S+20K projector (2)

One of its most celebrated waypoints along Seoul's Cheonggyecheon public recreation area is a wall of fractal flowers that light up a digital garden.

Come nightfall, a 12 x 4 meter (40 x 13 foot) wall along the embankment walk - built as a respite from Seoul's hustle - lights up with provocative and playful computer-generated flowers and plants - sprouting, spreading and shrivelling as people pass by.

The award-winning virtual garden was "cultivated and grown" by Mexican artist Miguel Chevalier, who uses projectors located across the stream in a special weather-ready enclosure to illuminate the walkway wall year-round.

RESTORATION OF SAN PABLO'S CHURCH

VALLADOLID, SPAIN

THE FACTS

CUSTOMER
City of Valladolid

LOCATION
Spain

PROJECT TEAM
Xtrañas Producciones

CONFIGURATION
Christie LX1500 projector (4)
Christie LX650 projector (2)
Christie LX45 projector (2)
Christie LX120 projector (1)

A 30-minute allegoric spectacle done in light and sound wove the tale of an old northwestern Spain church rescued from centuries of decay.

Called Las Alas del Ángel (The Angel's Wings), the multimedia show was commissioned by the city council of Valladolid to celebrate the restoration of Iglesia de San Pablo de Valladolid (San Pablo's Church), one of the city's most famous monuments.

Conceived specifically for a two-night event, the 30-minute show illuminated the facades of San Pablo and the nearby Pimentel Palace. The presentation focused on what has threatened the gothic monument through the ages: fire, plants, birds and water.

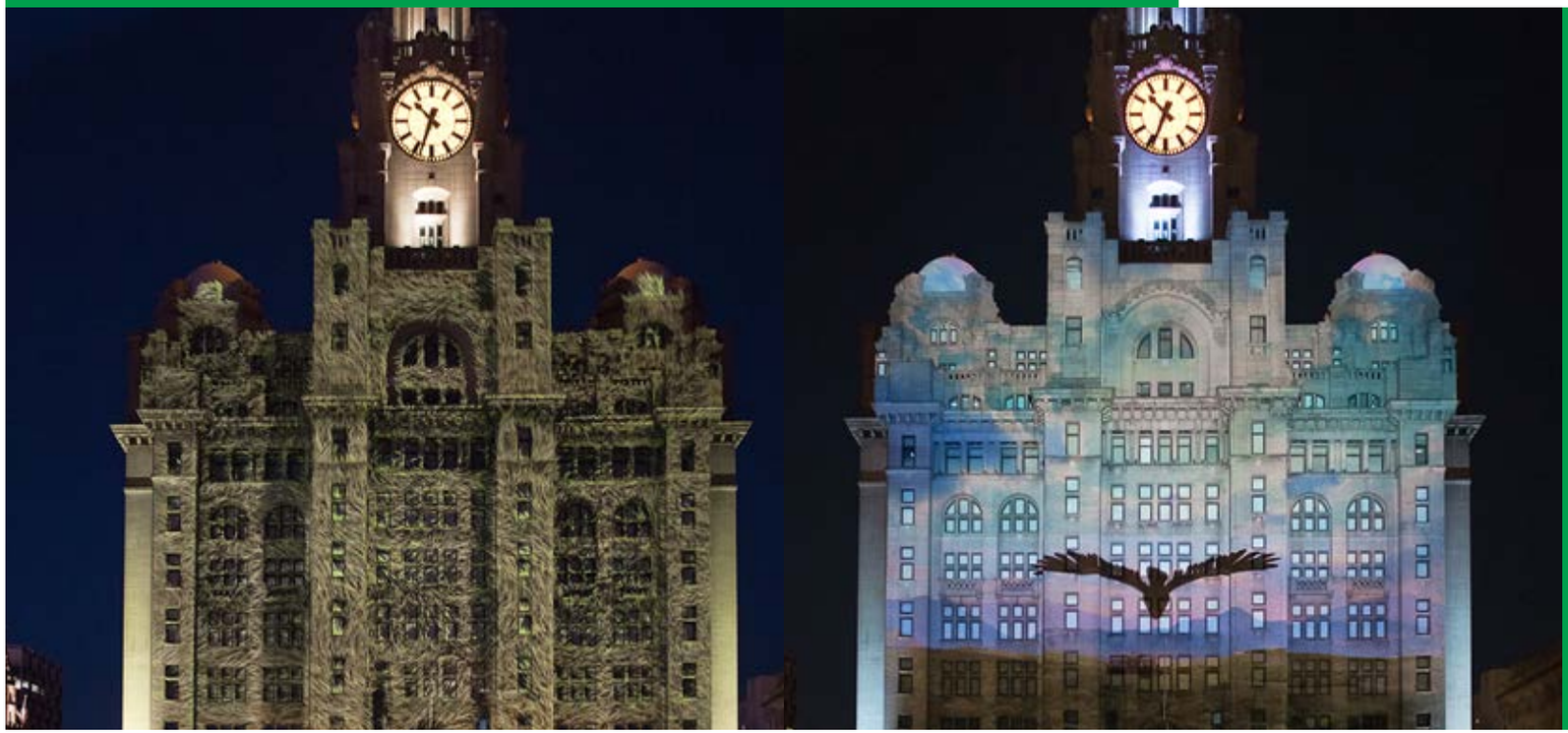
The storyline used a digital cherub to symbolize the eternal struggle against those threats, and the visuals were supplemented by sound, live actors, live music from a choir, robotic lighting, smoke machines and fireworks. For the first time in Spain, an open-air event used special effects with smells to represent each of the elements in the show.

A highlight of the show, seen by some 17,000 spectators, was a sequence that saw one of the towers of the church virtually destroyed by fire, and then restored to its original form.

Director Chema Vicente Treviño said one of the biggest challenges for his Xtrañas team was projecting on such a tall building, "but we resolved the problem using a high projection tower and a greater screening distance, which was possible thanks to the lens we used. Joining the images using two coupled projectors was also difficult, but we resolved it with plenty of patience."

REFLECTION ON THE WATERFRONT

LIVERPOOL, ENGLAND



THE FACTS

CUSTOMER
City of Liverpool

LOCATION
England

PROJECT TEAM
AV Media Group
Tomato Productions
The Macula

CONFIGURATION
Christie Solaria CP2230 projector (3)
Christie HD18K projector (2)

The Museum of Liverpool opened its doors in monumental fashion with a projection show celebrating the city's maritime history.

The waterfront museum, when it opened, was the largest newly-built national museum in Britain in more than a century, and its opening coincided with the centenary of the nearby Royal Liver Building. With both buildings sitting at the Pier Head, the City of Liverpool decided to stage an event called Reflection on the Waterfront.

In the presentation, visuals on the clock-topped Royal Liver block were a sometimes dark testament to the maritime past, washing the building in waves, while the new museum used ultra-modern graphics to hint at the city's very different future.

The massive 48 x 50 meter (158 x 164 foot) canvas of the historic Royal Liver was illuminated by a pair of projectors, while the smaller, angular and modern museum block needed three.

Liverpool's seaside elements posed the greatest challenge for the crew, even though it was mid-summer, recalled AV Media project manager Filip Klein. “Because it was on the riverbank and the winds were high, gusting up to 90 meters per second, there were three huge scaffolding towers, up to 15 meters (50 feet) high, with weatherproofing.”

The winds, however, were managed and the event was termed a huge success. Many thousands of locals crowded the Pier Head to catch the show, and also take in lantern displays and a series of free concerts.

ODE À LA VIE

BARCELONA, SPAIN

THE FACTS

CUSTOMER
Cities of Montréal & Barcelona

LOCATION
Spain

PROJECT TEAM
Moment Factory

CONFIGURATION
Christie Roadster S+20K projector (8)
Christie Roadster HD18K projector (8)

PLAY VIDEO

One of the world's most remarkable buildings became even more extraordinary, as it was illuminated in countless colors.

Barcelona's landmark Sagrada Familia basilica was illuminated for three nights as part of a special 2012 show tied to the city's La Mercè Festival.

Montréal creative studio Moment Factory was commissioned by its hometown, and the City of Barcelona, to produce a special video mapping show on a prominent facade of Antoni Gaudi's mammoth structure. The 15-minute piece, called Ode à la Vie, helped realize the late Catalan architect's dream of seeing his church bathed in brilliant colors. The creative was focused on the intricate nativity facade, transforming its shape, adding whimsical flourishes and morphing the colors.

From concept to projectors turning on took four months of planning and creative development. Audiences were estimated at 113,000.


Nous sommes tous
des enfants du 18 juin

FREE FRENCH COMMEMORATION

PARIS, FRANCE

THE FACTS

CUSTOMER
City of Paris

LOCATION
France

PROJECT TEAM
VLS
Agence Publics
Charles de Gaulle Foundation

CONFIGURATION
Christie Roadster HD+25K projector (4)
Christie Roadster HD+35K projector (4)

Archival recordings of speeches, old photos and other emotional triggers took Parisians back 70 years to a key moment in France's history - with a building's huge facade used as the story-telling medium.

France marked the 70th anniversary of General Charles de Gaulle's historic June 18, 1940 radio appeal - that urged his countrymen to resist the occupation of German troops - with a special multimedia presentation in 2010 that revisited the rise of Free French forces.

Thousands gathered to watch a spectacular projection on the north facade and esplanade of the Hôtel National des Invalides. The 40-minute presentation took a sober, reflective look through photos of the key figures and events of that period, the theme centered on the speech made by de Gaulle to his countrymen via the BBC.

The panoramic media show was a collaboration between Agence Publics, which developed the graphic and iconographic design, and historians from the Charles de Gaulle Foundation.

"The event at Les Invalides was built around three powerful concepts," recalled Arnaud de la Villèsbrunne, associate director of Agence Publics. "Passing on the memory of the historic occurrence; an event for the people of Paris; and bringing a spectacular and didactic close to an historic day."

To cover the broad facade of Les Invalides in images (an area of 150 x 20 meters or 492 x 66 feet), technical partner VLS used four projector clusters.

OLD PORT FESTIVAL

PORTLAND, USA

THE FACTS

CUSTOMER
City of Portland

LOCATION
USA

PROJECT TEAM
PaintScaping

CONFIGURATION
Christie Roadster
HD18K projector (1)

PLAY VIDEO

The familiar century-old edifice of Portland, Maine's city hall took on a very different look in June 2013, when the New England city celebrated the 40th anniversary of its Old Port Festival.

Using projection mapping executed by LA-based PaintScaping, the old building reworked its window elements, virtually erupted in flames, took on a lighthouse, and became the backdrop for a loud virtual fireworks show.

Spectators who'd never seen live projection mapping said the event reminded them of being at a theme park, or watching a Harry Potter movie. The show ran every 15 minutes from dusk, and the city's downtown district marketing team used the event as a way to drive activity to local businesses in the zone.

"It's a beautiful show and it really pays tribute to downtown Portland and Portland in general," said Rachel Irwin, marketing manager for the city's downtown district, in a broadcast interview.

CELAC-EU BUSINESS SUMMIT

SANTIAGO, CHILE

THE FACTS

CUSTOMER
CELAC-EU

LOCATION
Chile

PROJECT TEAM
Proyección de Ideas, Orbita, Pascal Chautard, PGA

CONFIGURATION
Christie LX700 projector (12)
Christie DHD800 projector (10)
Christie Roadster HD20K-J projector (4)
Christie Roadie HD+35K projector (2)
Christie MicroTiles (5)
Vista Spyder

Every two years the heads of state and government from Latin America, the Caribbean and European Union gather for a conference aimed at developing and expanding business ties between the regions.

The 2013 conference in Santiago, Chile made heavy use of projection around the event facility. The main hall had huge video mapping experiences thematically tied to different summit stages, from opening to closing. A pair of conference rooms was rimmed by 360 degree projections - one focused on the European Union's government and business leaders and the other for Latin American and Caribbean leaders.

The media team led by Proyección de Ideas produced more than an hour of 44 megapixel content and played it all back, blended with live camera feeds of speakers, during the two-day event.








Mega Events

International Projection Mapping Inspirations

YEOSU WORLD EXPO

YEOSU, SOUTH KOREA

THE FACTS

CUSTOMER
Government of South Korea

LOCATION
South Korea

PROJECT TEAM
ECA2

WET Design

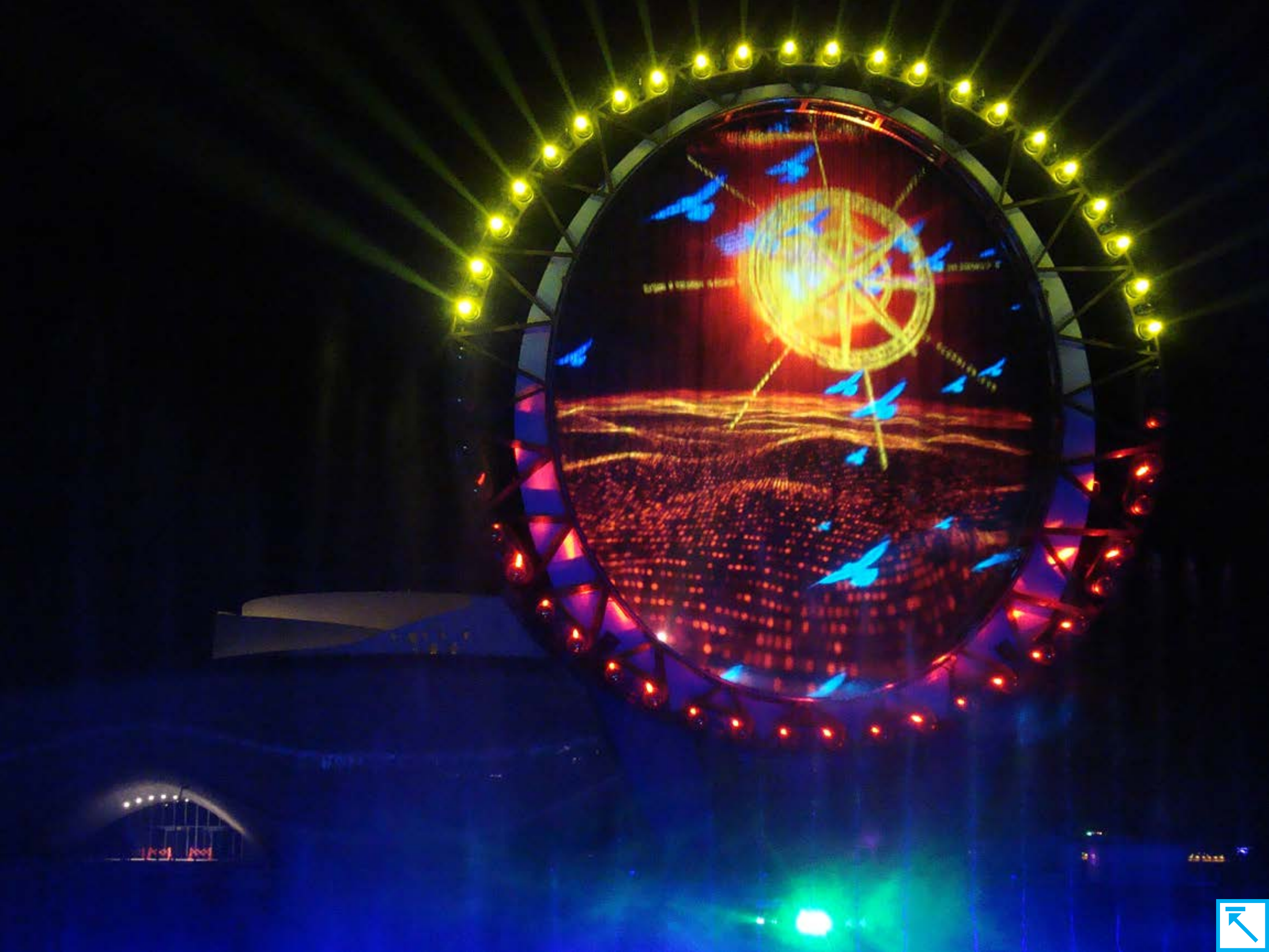
CONFIGURATION
Christie Roadster HD+35K projector (14)

Projections on a 47-meter (154 foot) high water curtain highlighted a series of big, sophisticated visual projects run through the 93-day Expo 2012 Yeosu World Expo in South Korea.

The focal point was a signature Big-O multimedia show held each night against the natural backdrop of the Yeosu Sea, designed in harmony with the Expo theme of Living Ocean and Coast.

Built around the visual of a giant letter O (for ocean), the show was an animated film about conservation issues projected on an illuminated curtain of water created by embedded jets. The Big-O was an icon of the Expo, by day a giant sculpture that has remained on the site as a landmark, and by night the thematic centerpiece of the event.

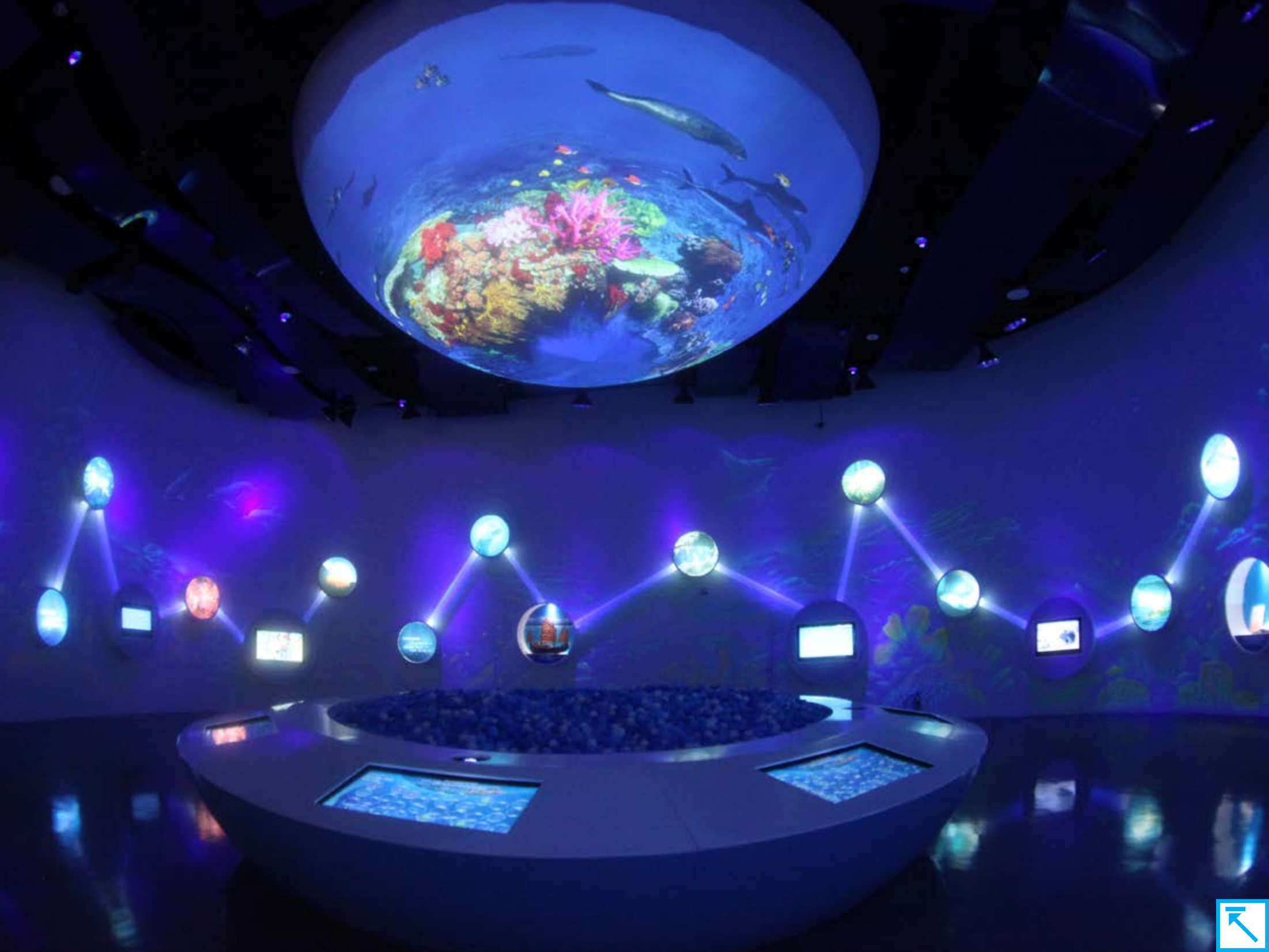
Designed and directed by the French firm ECA2, technical director Guillaume Duflot recalled how choosing the right



projection system overcame the steady challenge of getting the clarity and exact image focal points right for Big-O, even under strong winds coming off the sea. A dedicated control system synchronized hundreds of special effects, creating an immersive show that drove the narrative.

The production also featured a multimedia presentation dubbed the Fountain Show. Content was projected nightly on three sets of fountain curtains located at distances of 20, 25 and 30 meters (66, 82 & 98 feet). The closing event of Expo days also included moving water jets, mist, flames, lighting and laser works.

In all, 250 Christie projectors were used in projects at Yeosu, which attracted more than eight million people during its run.



CHINA PAVILION

YEOSU, SOUTH KOREA

THE FACTS

CUSTOMER
China Council for the Promotion of International Trade

LOCATION
South Korea

PROJECT TEAM
China International Exhibition Center Group Corporation, China Film Group

CONFIGURATION
Christie Mirage DS+10K-M projector (4)
Christie DWU670-E projector (4)
Christie CP2220 projector (2)
Christie Roadster S+22K-J projector (2)

The China Pavilion at Expo 2012 Yeosu in South Korea used projections to drive the event's marine theme, even allowing visitors to interact with sea creatures.

Curved walls showed nature scenes, a pair of 45 square meter (485 square foot) screens featured a water-themed video presentation, and an inverted dome was linked to touch screens that allowed visitors to interact with projections.

The Ocean Romance section of the pavilion highlighted China's sustainable ocean research, showing futuristic deep water navigation and visuals of the South Pole.

DENMARK PAVILION

YEOSU, SOUTH KOREA

THE FACTS

CUSTOMER
Government of Denmark

LOCATION
South Korea

PROJECT TEAM
Content Power House

CONFIGURATION
Christie DWU670-E
projector (10)

A room completely encircled by five meter (16 foot) tall screens gave visitors to the Denmark Pavilion at Expo 2012 in Yeosu, South Korea a vivid sense of life on the Danish coastline.

The circular Horizon Room was at the heart of the pavilion, telling the story of a modern Denmark, where the innovative use of wind and water is creating new, sustainable industries and jobs.

Using footage captured and edited by the Copenhagen firm Content Power House, the Horizon Room ran through a series of high resolution video sequences, including stop-motion, on a screen that covered more than 1,000 square meters (10,770 square feet). The narrative was built around a typical day in Danish life, filled with fun activities, underwater scenes, nature, tourist attractions and people. The images merged with a shiny floor in the room that simulated reflecting water and mirrored the images and visitors.

The pavilion had 800,000 visitors during its run.


الله اكبر

FIFA CONFEDERATIONS CUP

JOHANNESBURG, SOUTH AFRICA

THE FACTS

CUSTOMER
FIFA

LOCATION
South Africa

PROJECT TEAM
Gearhouse Media
VWV Management

CONFIGURATION
Christie Roadster S+16K projector (3)
Christie Roadster HD18K projector (3)
Christie Twist

A giant sphere suspended over the playing field was the focal point for the closing ceremony of the 2009 Confederations Cup in Johannesburg, South Africa.

The FIFA contest pitted the best football (soccer) teams from the different continents as a test event for South Africa's 2010 World Cup. The final was held during a cold, blustery Jo'burg winter - challenging the producers to design visuals that thrilled the live and TV audiences, but also addressed the environmental conditions.

The giant ball was the centerpiece. It took six projectors to wrap the eight meter (26 foot) sphere, made from tensile tarpaulin, in one seamless, continuous 360-degree image, suspended 16 meters (52 feet) off the playing field surface at Ellis Park Stadium. The content package was a blend of highlights, maps and flags.

To fight buffeting breezes, the technical team created custom brackets and platforms for the projectors. The inflated sphere was launched using three winches - one on the ground and two from the roof of the adjacent parkade. Another five tethers added more stability. The tethers also allowed the sphere to float off and then be tracked sideways and away from the field of play.

The final saw Brazil beating the USA on a bitterly cold evening. “Although our crew has taken a bit of a beating in terms of enduring the freezing weather, the equipment performed absolutely perfectly throughout,” recalled Gearhouse Media's Robyn D’Alessandro.

GYEONGJU WORLD CULTURE EXPO

GYEONGJU, SOUTH KOREA

THE FACTS

CUSTOMER
Government of South Korea

LOCATION
South Korea

PROJECT TEAM
Eugenetek Corporation

CONFIGURATION
Christie CP2230
projector (8)

PLAY VIDEO

The turbulent 1,000-year history of an ancient Korean dynasty was remembered in an ambitious projection show at the 2011 Gyeongju World Culture Expo in South Korea.

Projectors bathed the 17-story glass and aluminum Gyeongju Tower in images. The visuals worked with the cavernous cut-out center of the tower, which was designed to represent a revered pagoda and temple considered among the greatest treasures of an ancient dynasty that ruled much of Korea for centuries.

The Story of One Thousand Years program linked the city's historic past as the Silla dynasty's capital with the present. The highlight was a sequence showing the destruction of a temple tower in a war with Mongol invaders, with the edifice vanishing in virtual flames and then reappearing.

The 20-minute show, which ran for two months as part of the Culture Expo, was put together by cinema solutions integrator Eugenetek Corporation, which ran into some planning challenges. The 32 x 80 meter (105 x 262 foot) high glass tower's facade had to be draped in fabric so that the visuals didn't simply pass through. Scaffolding was needed to get the double-stacked projectors shooting over a tree on the site.

PAN ARAB GAMES

DOHA, QATAR

THE FACTS

CUSTOMER
Pan Arab Games Organizing Committee

LOCATION
Qatar

PROJECT TEAM
David Atkins Enterprises

ETC France

CONFIGURATION
Christie Roadster S+20K projector (44)

Christie Roadster HD18K projector (42)

The entire ground surface of Qatar's Khalifa Stadium became a giant projection screen for the opening ceremonies of the 2011 Pan Arab Games.

There were approximately 40,000 people watching as the turf and track of the stadium were covered in ever-changing visuals as part of a sequence called Journey To Light, supported by everything from dancers and musicians to falconers. The field-of-play was the largest surface to ever show projection.

Broadcast live around the world was a celebration of Arab culture, using an allegory of the coming together of people from all over the Middle East.

Organizers commissioned David Atkins Enterprises (DAE) to develop and execute the ceremonies. "In close collaboration with the Arab Games Organizing Committee, DAE created a story inspired and informed by the stories and images of pre-Islamic and Islamic history," recalled CEO David Atkins. "The ceremony was created to acknowledge the importance of these times, at a time when the very pages of Arabic history are being re-written."

The playing surface was a 136 x 72 meter (446 x 236 foot) canvas for the 86 projectors, all of it carefully mapped down to the pixel. The seating area also had 85,000 full RGB LED lights built into the railing system to make it an integrated part of the overall show, which required the technical team to both synchronize and blend the low resolution lights with the HD visuals on the field.


PUMA

AUSTRALIA PAVILION

SHANGHAI, CHINA

THE FACTS

CUSTOMER
Government of Australia

LOCATION
China

PROJECT TEAM
Wizard Projects
Think!OTS

CONFIGURATION
Christie Roadster S+20K projector (7)
Christie DS+6K-M projector (4)

PLAY VIDEO

A fully-automated theater-in-the-round at Australia's 2010 World Expo Pavilion in Shanghai, China celebrated the past, present and future of the Down Under nation.

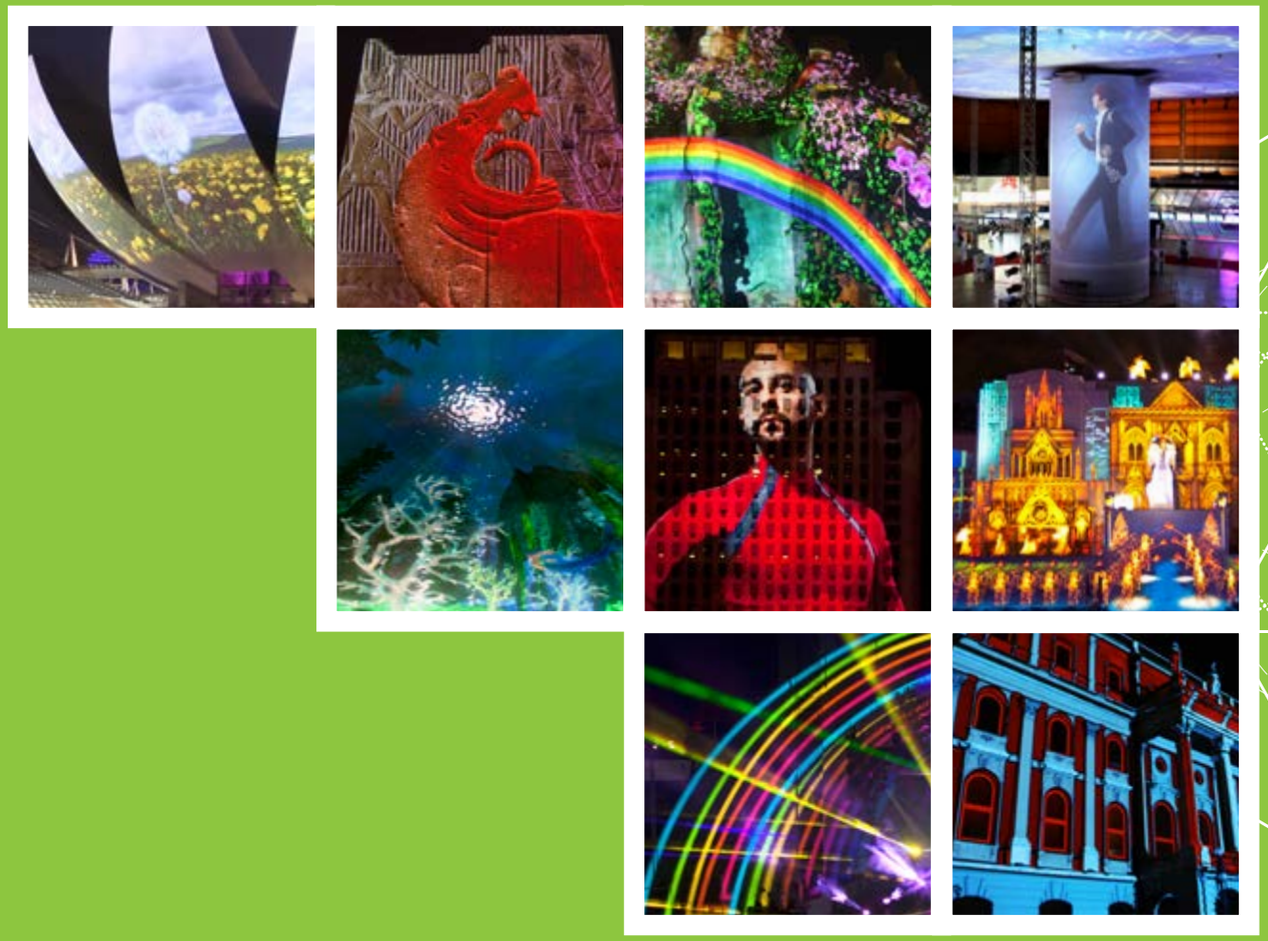
A 36-ton custom rotating rig raised and lowered revolving curved screens that were steadily transformed by dynamically blending and warping motion visuals about the sights, sounds and people of Australia.

The Better City, Better Life audio-visual show used a purpose-built circular theater that held as many as 1,000 people for each performance. The media focused on Australia's dynamic, modern cities and innovations in technology and health.

The circumference of the screens was 38 meters (125 feet) with a screen height of five meters (16 feet) when fully raised. The full screen area was mapped and tracked by cameras. "We actually knew, within 0.5 of a millimeter, where any of this was in a 3D space," recalled Paul van der Ent, managing director of Wizard Projects.

Expo visitors were led into the pavilion along a 160-meter (524 foot) glass-enclosed ramp that wrapped around and penetrated the exterior skin of the building. It took visitors by six exhibition elements as they progressed into the heart of the pavilion.

At one exhibit, four projectors illuminated the curved wall of the walkway leading to the theater that housed the main show.



Museums & Entertainment

International Projection Mapping Inspirations

MARINA BAY SANDS RESORT

SINGAPORE

THE FACTS

CUSTOMER
Las Vegas Sands Corporation

LOCATION
Singapore

PROJECT TEAM
Laservision Mega Media

CONFIGURATION
Christie Roadster
HD18K projector (7)

PLAY VIDEO

The skyline of Singapore and the waters of Marina Bay are used nightly for a stunning public show that celebrates life and family.

Water vapor takes the place of physical screens or buildings as the focal point of the water and light show, developed and run by the massive Marina Bay Sands Integrated Resort.

Water cannons, LED lighting, fireworks, lasers and an original 13-minute symphonic score are stitched together for what is the largest show of its kind in Southeast Asia. The show reinforces the position of Marina Bay Sands - with its three cascading hotel towers and extraordinary Skypark - as a primary leisure destination in the region.

Meant as a water, land and sky-based 360-degree experience, the multimedia show tells the story of life and humanity and the beauty of the human experience. Video and motion graphics trace a life from a metaphoric conception, through childhood, family and the comfort of old age.

Michael Leven, president and COO of Las Vegas Sands Corporation, which owns the resort, said he wanted the show to have a soul. “This show is designed to make us stop and take stock of our lives - to appreciate the natural beauty and wonder around us.”

“There are more challenges,” recalled Paul McCloskey, CEO and founder of show producer Laservision Mega Media, “because this was a 360-degree show around the bay. You have media happening in front of you and behind you, above you and below you, left and right. You were basically inside a three-dimensional fantasy with high-powered media enveloping you, and you became immersed inside the experience.”

The technology mix for the show includes seven projectors illuminating the water vapor screens, 15 laser systems, 30 moving search lights, spotlights, strobes, pyrotechnics and 250,000 LEDs illuminating the resort buildings.

The production took more than three years to come together between technology design and refinement and months of presentations and government approvals.

The show has now been seen by millions of Singapore residents and visitors and rated one of Asia’s top new tourist attractions.

EDFU TEMPLE

EDFU, EGYPT

THE FACTS

CUSTOMER
Casa Magica

LOCATION
Egypt

PROJECT TEAM
Horizon for Trading & Contracting

CONFIGURATION
Christie Roadster S+20K projector (4)

A 2,000-year-old ancient Egyptian temple is brought back to life in a remarkable sound and light show.

The Temple of Horus is one of the largest and best preserved structures of its kind in Egypt, dating back to 200 BC. An audio visual show launched in 2010 depicts the building of the temple, presents a day in the life of a dweller, and tells the mythological story of Isis, Osiris, Horus and Set.

The key attraction of the ancient site uses the giant columns inside the temple and the massive, relief-rich pylons of the temple gateway as the main projection surfaces. The show works with the extraordinary lines, curves and scale of the temple, as well as the reliefs on its walls ... accentuating them with painted light and growing them in scale. Images, light, music and speech blend in a spectacle that lasts 37 minutes.

The audience is equipped with multilingual headsets, with as many as 1,000 people seeing the show each night.

CANADA'S WONDERLAND

TORONTO, CANADA

THE FACTS

CUSTOMER
Cedar Fair Entertainment Company

LOCATION
Canada

PROJECT TEAM
Tantrum Productions

Westbury National Show Systems

CONFIGURATION
Christie Roadster S+20K projector (4)

Christie Twist Pro

The centerpiece of Canada's largest theme park is a 30-meter (100 foot) tall "mountain" that now gets brought to life each night using advanced projection mapping techniques.

Wonder Mountain, at Canada's Wonderland in the suburbs of Toronto, closes the park each evening with a 10-minute show that sees the man-made mountain overgrown with vivid foliage and populated by butterflies, covered in snow, made red hot by lava, crumbled and rebuilt, and occupied by a fire-breathing dragon.

Park owners Cedar Fair Entertainment Company mandated each of its properties in 2011 to develop a night-time show. So Doug McBoyle, Wonderland's technical and event services manager, worked with his team to take that specification "out of the box and beyond the literal" in developing a presentation called Starlight Spectacular.

The primary objective of the show was a customer experience that got park-goers talking.

"We wanted to create the perfect kiss goodnight, where the guests walk away feeling good about what they just saw," said McBoyle. "And I think we achieved that because the performance gives them 9½ minutes at the end of their day to regroup, see a spectacular show, and then go home having had a great day."

First turned on in 2011, the multimedia projection show is now the standard closing feature at Canada's Wonderland.

SM ART EXHIBITION

SEOUL, SOUTH KOREA

THE FACTS

CUSTOMER
SM Entertainment Corporation

LOCATION
South Korea

PROJECT TEAM
Design Silverfish

CONFIGURATION
Christie HD10K-M projector (4)
Christie Roadster S+20K projector (4)

PLAY VIDEO

A giant virtual tree with graphics and video helped South Korean pop stars engage with their loyal fans.

It was part of the 2012 SM ART Exhibition, an entertainment/IT exhibition designed as a fan experience for various “K-pop” artists associated with SM Entertainment, one of the country’s largest entertainment companies. The 10-day exhibition featured multiple media technologies aimed at getting fans closer to artists such as BoA, Tohoshinki, Super Junior, Girls’ Generation and SHINee.

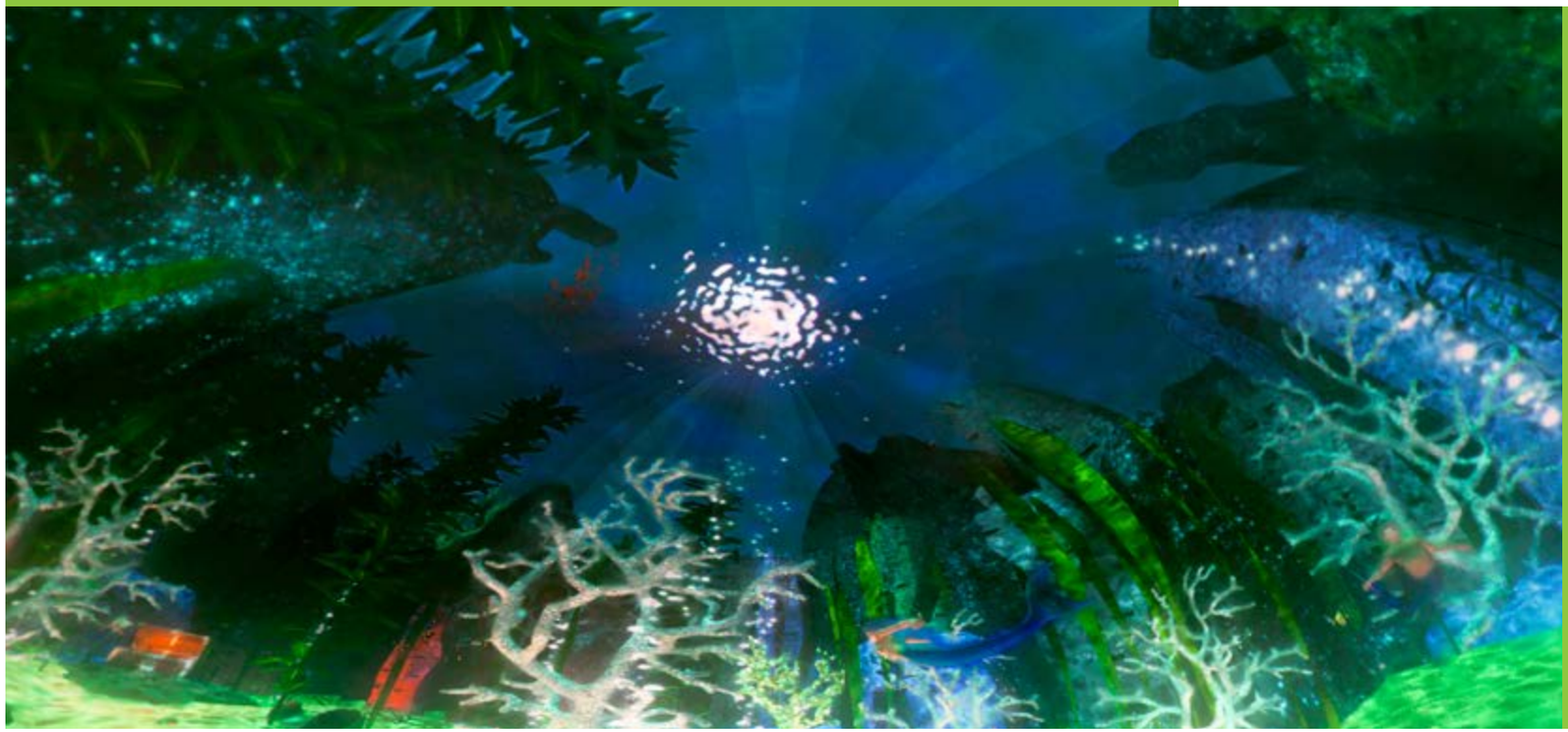
Fans were welcomed by a wide projection wall, and upon entering the exhibit hall, they immediately saw larger-than-life-images of their pop idols performing on what was called the Fantasy Tree – a 13-meter (43 foot) high cylindrical projection wall built in the middle of the hall.

Projectors also drove a photo area, a huge live concert screen and the visuals on a projection-mapped Hyundai motor vehicle, as well as its backdrop.

The SM ART show was developed and executed, including the green screen footage of the artists for the Fantasy Tree, by the South Korean firm Design Silverfish.

PLAZA COLON DOME

MADRID, SPAIN



THE FACTS

CUSTOMER
New Media

LOCATION
Spain

PROJECT TEAM
Ingevideo

CONFIGURATION
Christie Roadster
HD20K-J projector (5)

Spanish event production company New Media found a way to bring fully immersive multimedia experiences to the citizens of Madrid, by raising a striking geodesic dome in a city plaza.

With a circular 800-square-meter (8,610 square foot) surface that's four times that of an IMAX screen, the dome is being used to screen full 360-degree projections of everything from nature films to corporate product launches.

The geodesic structure has hosted screenings of National Geographic's science film Sea Monsters, helped the drug company Pfizer present a new animal vaccine and hosted a year-end mass led by the Archdiocese of Madrid.

Supported by Sony and the City Council of Madrid, the dome uses a screen made of a special material fixed at two meters from the ground and forming a perfect circle. A negative air pressure system then makes the visible structure vanish and the dome smooth and seamless. Four projectors resting on two meter (6 foot) supports fill the 20-meter-wide dome with a total of 6,000,000 pixels. Another projector at the front of the dome screens trailers on the outside surface of the structure.

"It heralds the beginning of a new era for events and audio-visual communication in Spain; and the future certainly looks promising," said Diego De Anna, New Media's CEO. "With this sophisticated technical equipment we can give the audience a truly unique experience with total immersion in images."

LIFT FESTIVAL

LONDON, ENGLAND

THE FACTS

CUSTOMER
London International Festival of Theatre

LOCATION
England

PROJECT TEAM
QED Productions

CONFIGURATION
Christie Roadster HD18K projector (20)

Massive projections on a nearby office tower gave Londoners full appreciation of the acrobatic feats performed during the arts festival.

The Brooklyn-based STREB acrobatic dance group wowed onlookers with a performance that involved scaling and playing with the spokes of the famed London Eye Ferris Wheel. To enable people to see the performance at the London International Festival of Theatre (LIFT), against the huge scale of the riverside attraction and the nighttime sky, cameras captured the daredevils and streamed their feats using projections.

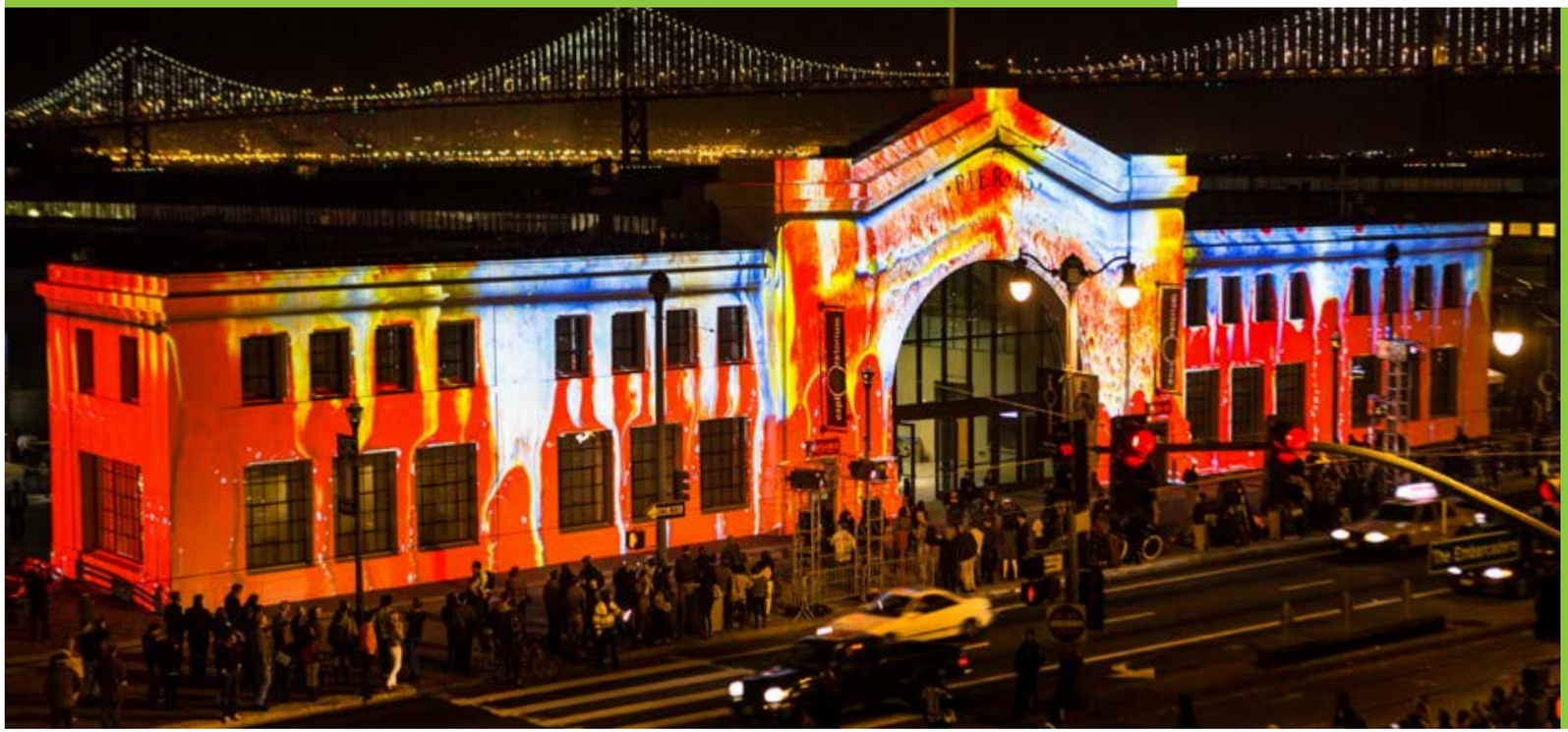
The Human Eye performance used the Shell Centre high-rise as the projection face to showcase the dancers. In a supreme test of skill and stamina, the dancers hooked up to the London Eye spokes and slid down more than 50 meters (165 feet) of cable, dangling some 150 meters (500 feet) in the air.

UK-based QED Productions ran the project, mapping the tower dimensions and using 20 projectors blended horizontally and vertically to fill the 107 meter (351 foot) facade with prepared graphics and live HD camera feeds.

Mark Ball, artistic director for LIFT, told a PBS interviewer the performances - subtitled One Extraordinary Day - were met with awe. “One Extraordinary Day captured the spirit of London 2012 and generated real enthusiasm about London, not just from those Londoners and visitors fortunate enough to see it live, but for those following the day across the globe on news broadcasts, the web and social media.”

EXPLORATORIUM

SAN FRANCISCO, USA



THE FACTS

CUSTOMER
The Exploratorium

LOCATION
USA

PROJECT TEAM
Obscura Digital

CONFIGURATION
Christie HD20K projector (8)
Christie HD18K projector (3)

PLAY VIDEO

When San Francisco's Exploratorium moved to new digs at Pier 15 on the city's historic waterfront in 2013, it made some visual noise with an eclectic show.

Coupled with original sound compositions, the evening crowds watched high-definition slow-motion video captures of such visuals as colored dye injected into a water-filled miniature mold of the facade, which was precisely projection-mapped to the wall using high-powered projectors. People in the crowd saw living microorganisms flitting around the window blocks and watched as different particles interacted and repelled each other.

The intention was to evoke a sense of wonder and awe about the nature of order in the universe.

Locally-based Obscura Digital developed the presentation, referred to as Art, Design, Nature, and Technology at Scale. To create the extraordinary visuals, the team built 10 miniature replicas of the main wall to show real-life visualizations involving fluid dynamics, microorganisms, particle interactions, living systems, crystallization and plant growth.

The event also incorporated an interactive thermal imaging wall (working with Flir) that let spectators see their heat signatures projected in real-time, at large-scale, on one side of the Pier 15 building.

UNIVERSAL STUDIOS JAPAN

OSAKA, JAPAN

THE FACTS

CUSTOMER
Universal Studios Japan

LOCATION
Japan

PROJECT TEAM
BARTKRESA design

Corporate Image Associates

CONFIGURATION
Christie Roadster
S+20K projector (22)

Christie Roadster
HD18K projector (10)

A main streetscape at Universal Studios Japan, in Osaka, was transformed into a series of bright, festive and wintry scenes for the theme park's Christmas season celebrations.

The Song of an Angel 2012 blended lighting and special effects with music and live performers on a streetscape measuring 80 x 20 meters (262 x 66 feet), using 32 projectors.

"Christmas time is a family time. We've been brought in to create stunning visuals that immerse and transport viewers on a Christmas journey," explained Bart Kresa, whose firm BARTKRESA design was commissioned to develop the production. "In the design process, we created the sketches, paintings, 3D designs and animations. We produced the whole thing working with the Universal Studios Japan Show Director on creative elements and the Universal Studios Japan Producer on technical requirements."

The show ran throughout the Christmas season and into the New Year, the production peppered with dancing and familiar Christmas music classics and finished off with angels and fireworks.

NIGHT OF MUSEUMS FESTIVAL

BUDAPEST, HUNGARY

THE FACTS

CUSTOMER
Hungarian National Gallery

LOCATION
Budapest

PROJECT TEAM
Visualpower Ltd.

CONFIGURATION
Christie Roadster S+16K projector (2)
Christie Roadster S+20K projector (2)
Vista Spyder X20

A unique art competition put digital brushes in the hands of artists who then transformed the front of Hungary's National Gallery.

As part of Budapest's annual Night of Museums Festival in June 2010, some of the country's leading visual artists were invited to map and virtually "Paint Up" the iconic gallery, located within the historic Buda Castle complex.

From 32 artists originally asked to bid, a panel of judges reduced the list to 12, who were commissioned to prepare three minutes of material to run on a projection set-up arranged and managed by event hosts and organizers Visualpower.

Artists played with the giant columns, arches and other architectural characteristics to entirely transform the old building, as a nighttime crowd of 8,000 - 10,000 gathered. It was the world's first video projection-mapping contest, and has since become an annual event, continuing to draw huge crowds.

COLDPLAY AT THE HOLLYWOOD BOWL

CALIFORNIA, USA

THE FACTS

CUSTOMER
Coldplay

LOCATION
USA

PROJECT TEAM
BARTKRESA design

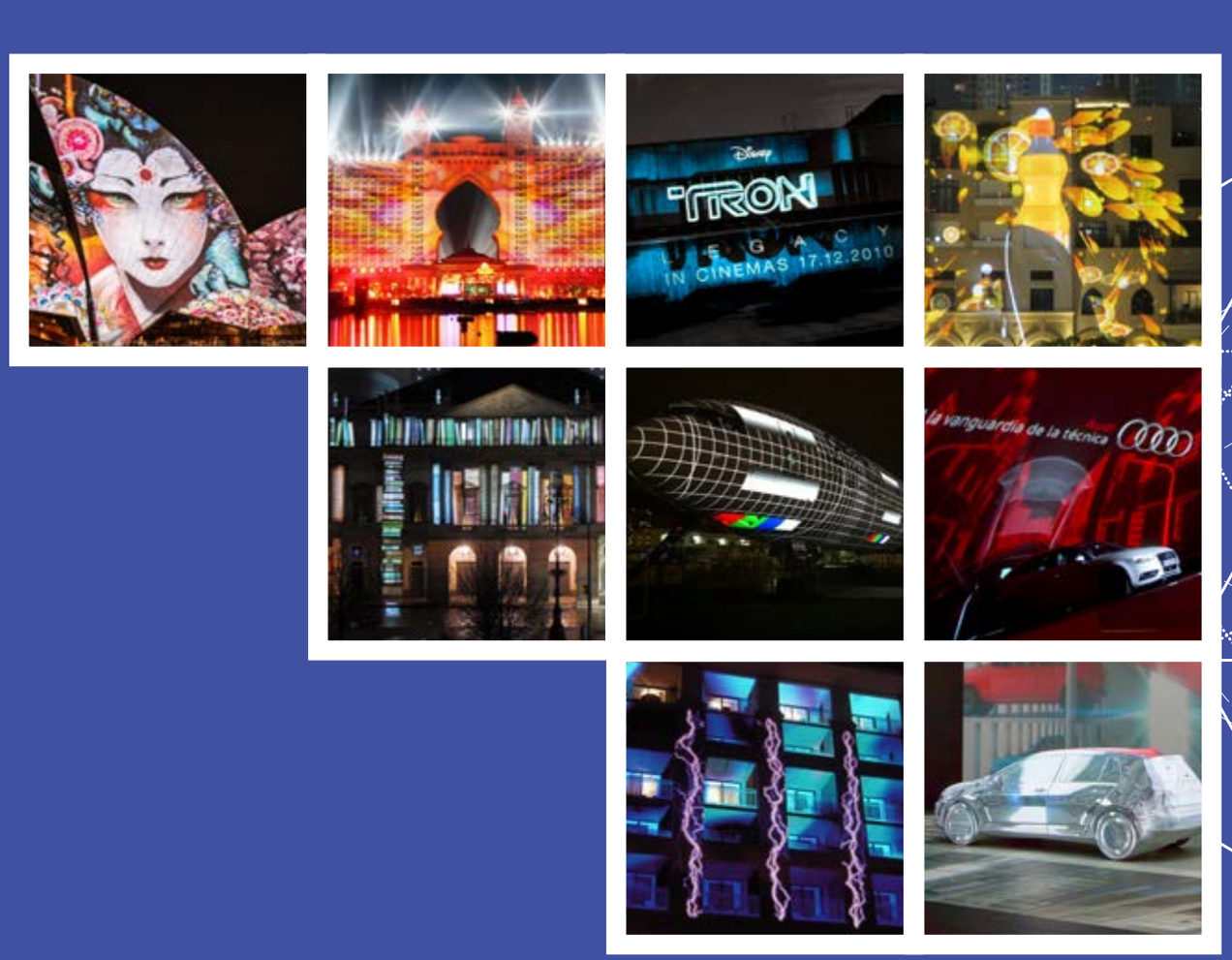
CONFIGURATION
Christie Roadster
HD+35K projector (6)

Stage lighting for rock concerts was re-imagined when the iconic Hollywood Bowl was mapped and lit up with sequenced projections for a three-night stand by Coldplay.

BARTKRESA design worked the bright color splashes of the UK band's Mylo Xyloto World Tour motif into the multimedia design, using six projectors to cover the full perimeter and depths of the famed Los Angeles concert site.

The arc of the dome pulsated and the interior filled with ever-changing lights and shapes that synced with the rest of the stage lighting design for the show.

Producer Bart Kresa recalled getting a call from the band's manager, who doubles as its art director. Five minutes after a first meeting, Kresa had a song list targeted for projections.



Promotional & Branded

International Projection Mapping Inspirations

YOUTUBE SYMPHONY ORCHESTRA

SYDNEY, AUSTRALIA

THE FACTS

CUSTOMER
Google/YouTube

LOCATION
Australia

PROJECT TEAM
Obscura Digital

CONFIGURATION
Christie Roadster
HD18K projector (15)

Christie Roadster
S+20K projector (8)

PLAY VIDEO

The white sails of the Sydney Opera House took on stunning visuals during a breathtaking landmark concert.

The YouTube Symphony Orchestra, a collection of classical musicians from around the world brought together through internet video auditions, performed together for the first time as stunning coordinated visuals projected both on Sydney's famed concert hall sails and again inside.

"If we achieve what we are trying to do, we will be creating musically expressive architecture," explained Travis Threlkel, founder and CEO of Obscura Digital, the San Francisco company commissioned to design and execute the visual event.

Speaking just before the performance, Threlkel said the projection plan would enable audiences to "experience the Opera House in a new light, by using optical illusions that make it appear to be moving and accentuating itself based on what is taking place with the live performance inside the concert hall, essentially allowing the building to become a living, breathing artistic representation of the music."

It was a monumental challenge, with Obscura's team of creatives, technologists and strategists conceptualizing and designing an interactive visual performance tied to the music and visible to audiences from many angles.

The interior of the concert hall was painted with immersive art projections that responded to the beat and pace of the music. A projector array set up across the harbor waters, a half-mile away, beamed live camera feeds, stylized art and live digital painting components on to the western sails of the facility.

Obscura's creative team used trompe-l'oeil perspective techniques to create optical illusions that made the artwork appear to be three-dimensional, and brought on Andrew Jones, a pioneer of live digital painting, to produce material using a pen tablet and software.

The creative team used the time periods of the music list, the geometry of the building and the colors of the land of Australia as the primary sources of inspiration for the art. They created a spectrum of custom pieces with two layers of graphics, including live video streams of the symphony that were stylized with pre-rendered, hand-drawn illustrations, 3D animations and the live digital painting.

The two-hour show required custom interfaces, controls and software systems to react to the nuances of the music guided by conductor Michael Tilson Thomas.

Obscura used 14 projectors with long-range optics to project the images on the sails and the set-up required six servers to achieve high-quality resolution imagery on the facade. Video capture cards grabbed camera feeds from inside the hall for re-projection onto the sails. For inside, the ceilings and walls were painted with immersive visuals using another seven projectors.

With no access to CAD drawings, Obscura technicians and artists had to build their own 3D mesh of the hall. They took millimeter-accurate laser scans of the interior concert hall and had an aerial site survey done by helicopter as a guide to create their version of the building's one-of-a-kind geometry. Obscura used a small geodesic dome in its lab to pre-visualize the interior experience.

Despite all the preparation and technical mastery, not everything could be controlled. On the night of the concert, it rained. But the event was still hailed as a triumph, with "amazing" a commonly applied term.

A writer from the UK's Times newspaper summed it up this way:

"The most delightfully incongruous alliance of the arts and the internet yet to emerge in the 21st century."

SKY TREE
TOKYO, JAPAN

THE FACTS

CUSTOMER
NHK Television

LOCATION
Japan

PROJECT TEAM
Christie Japan
NHK Enterprises
WOW
Sigma A&V

CONFIGURATION
Christie Roadster HD+35K projector (27)

The full face of a Tokyo skyscraper was lit up to celebrate the completion of the world's tallest self-supporting steel tower, the Tokyo Sky Tree.

Japanese broadcaster NHK, which built the radio and broadcast tower with six partner firms, framed the spring event around a TV documentary called "See Everything That Makes Tokyo Sky Tree Special!"

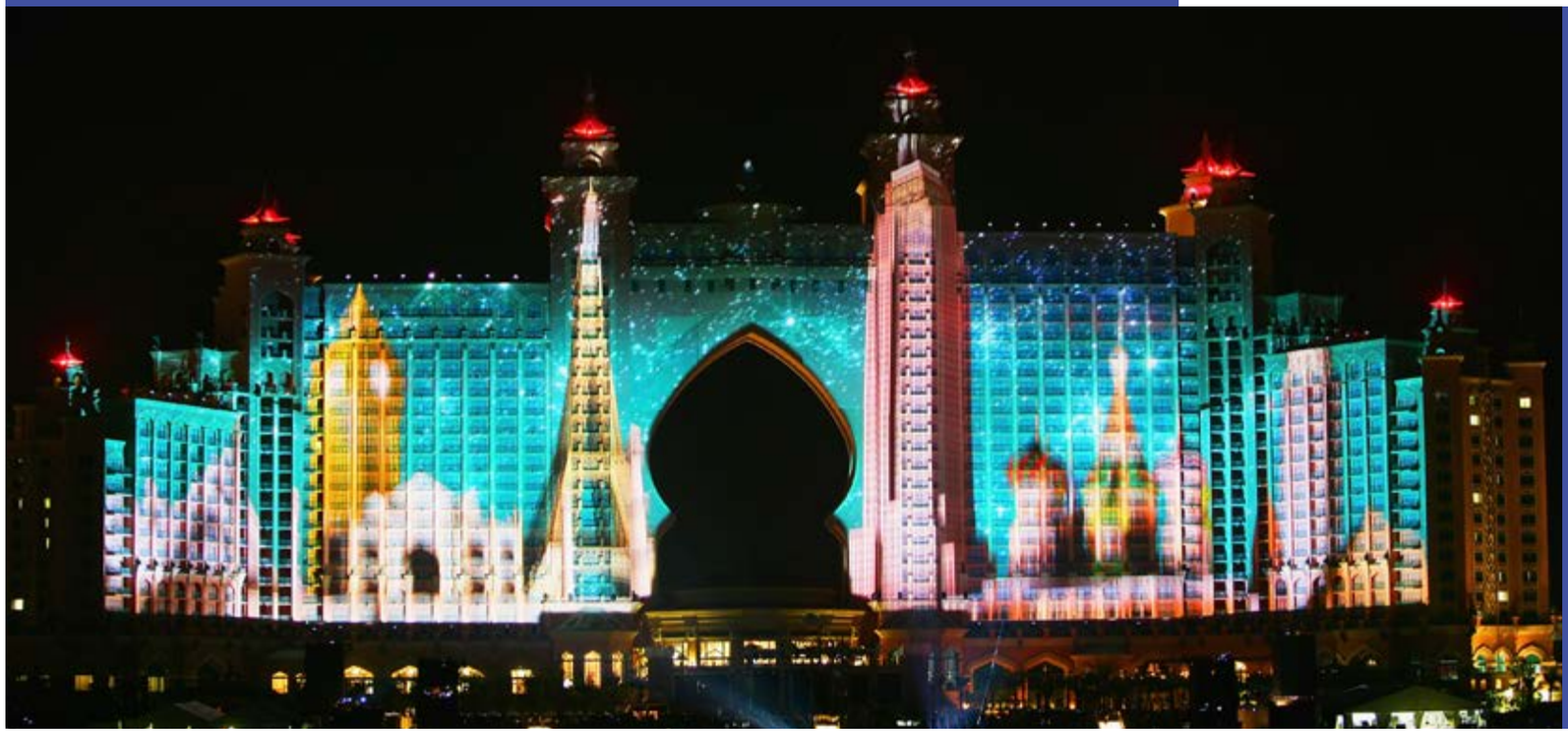
More than two-dozen projectors were needed to envelop a 4,500 square-meter (48,440 square foot) face of the East Tower with a series of motion graphics and visuals created by NHK. The projector array was set up on the roof of the nearby Tokyo Sky Town shopping mall, projecting across a 130-meter (426 foot) gap in the heart of the mega-city.

"Projection mapping allows large numbers of people to share the excitement of seeing an image projection that, although far larger in scale than conventional uses, requires no screen setup and takedown, and does not interfere with the building or other object on which it is projected," said Mamoru Hanzawa, general manager, Christie Digital Systems Japan.

The event was run just down the block from Tokyo Sky Tree, which was topped off in 2012 at 634 meters (2,080 feet), dwarfing the old 333-meter (1093 foot) Tokyo Tower used for many years by Japanese broadcasters.

ATLANTIS, THE PALM RESORT OPENING

DUBAI, UNITED ARAB EMIRATES



THE FACTS

CUSTOMER
Kerzner International

LOCATION
UAE

PROJECT TEAM
VLS Paris, Simon Ransom
Creddible Productions
Marie-Jean Gauthe

CONFIGURATION
Christie Roadie HD+30K/HD25K (21)
Christie Roadster S+20K projector (6)
Christie Roadster S+16K projector (4)
Christie Twist

The opening of the Atlantis luxury resort on Dubai's man-made Palm Jumeirah Island resulted in the largest HD video projection ever seen on a standing surface.

Visuals stretched fully across the 220 x 95 meter (720 x 310 foot) face of the Atlantis Royal Towers - the $20 million multimedia presentation telling guests the imagined story of the lost city of Atlantis.

The show was a 17-minute immersive feature called The Birth of an Icon, driven by a story of how a goddess looked at icons around the world, searching for a place to put Atlantis, before ending up at The Palm. The show began with a live performance by pop star Kylie Minogue and followed by pyrotechnics.

The solution required scale rarely seen for a projection event. The "screen" of the hotel face was divided across 11 separate zones, fed by 11 media servers. To fight light absorption, pink-colored window masks made of perforated, one-way film were installed on projector-facing windows.

"The evening was an unbelievable success," recalled technical director Simon Ransom, " and the press coverage superseded expectations."


Disney
TRON
LEGACY
IN CINEMAS 17.12.2010

DISNEY'S TRON LEGACY

LONDON, ENGLAND

THE FACTS

CUSTOMER
Flat-e Collective

LOCATION
England

PROJECT TEAM
QED Productions

CONFIGURATION
Christie Roadster
HD18K projector (6)

The stark design of London's Southbank complex proved the ideal virtual canvas to drive interest in the UK premiere of the futuristic Disney film Tron Legacy.

A custom nine-minute promotional sequence about the film - a follow-up to the iconic early '80s film - was run for 10 days ahead of the film premiere - a series of projectors transforming Southbank's "brutalist" design.

The UK-based technical team from QED Productions quickly ran into a pair of core challenges: Southbank's design and the weather.

Southbank presented three staggered projection surfaces with depths of field and visual sizes that required tweaks in projector positioning and alignment.

A bigger challenge came from dealing with a wind-battered projection position atop the nearby Queen Elizabeth Hall and a set-up and operating run that coincided with the coldest weather London had seen in a century. In testing, the projectors were run for several hours to allow the glass in the lenses to stabilize prior to fine realignment. During the run, the projection tower had to be fully enclosed and the team ran heaters overnight to prevent a complete freeze-over.

The promotion ran for 10 consecutive evenings and was visible from as far away as the north side of the Thames.


SOUK AL BAHAR

FANTA - SOUK AL BAHAR

DUBAI, UNITED ARAB EMIRATES

THE FACTS

CUSTOMER
Fanta

LOCATION
UAE

PROJECT TEAM
Eclipse Staging Services
Tomato Production
The Macula
Memac Ogilvy Dubai

CONFIGURATION
Christie Roadster
HD18K projector (4)

Dubai's Souk Al Bahar shopping and entertainment complex took on the look of an old-school arcade game in a jaw-dropping promotion for the soft drink brand Fanta.

Pixel-mapped and projected light framed the "architecturally broken" structure with '80s arcade-style characters that madly chased each other around the Arabesque facade as a highly visible promotion for the Fanta Chase online campaign.

The Prague-based technical team from Tomato Production went on site a month ahead of the 2011 event to virtually draw the building and test projections using the same projectors and equipment layout to ensure the set-up would deliver their idea. Using cameras and working through the night to pixel-map the building, Tomato settled on a plan that involved projecting from a café on the first floor of the nearby Dubai Mall.

The show ran eight times over two nights, immediately before the mall's famed water fountain shows.

JAGUAR BRAND CAMPAIGN

MOSCOW, RUSSIA

THE FACTS

CUSTOMER
Jaguar

LOCATION
Russia

PROJECT TEAM
ETC Russia
Minshare Russia
SunLight Outdoor
Roman Litvinov

CONFIGURATION
Christie Roadster
S+20K projector (12)

The full front of a grand hotel in the historic heart of Moscow was used to amplify the Jaguar auto brand for Russian consumers.

The Hotel Moskva on Manezhnaya Square was pixel-mapped and used for two nights as the massive canvas for a 13-minute video sequence that varied from mind-bending special effects on the hotel to massive product footage of luxury Jaguars rolling on the open road.

"The level of the brand name, speaking for itself, and the very place chosen for the campaign – all those factors required a high level of responsibility," recalled Andrey Efarov, the project's technical director. "Of course, we did face some difficulties. One of them was the complex architecture with a difference in depth of the building's face of up to 15 meters (50 feet). Another factor was the large number of windows on the central part of the facade. There was no way they could all be covered so as to create a single surface for the projection."

Despite that, the project pulled together and had the desired impact. "We have the right to say that the project fully reflected the Jaguar brand – commitment to technical innovations and engineering perfection," concluded Natalia Valieva, general director of project partner Sunlight Outdoor.

TOKYO RAILWAY STATION

TOKYO, JAPAN

THE FACTS

CUSTOMER
Tokyo Railway Station

LOCATION
Japan

PROJECT TEAM
East Japan Marketing & Communications

NHK Enterprises

CONFIGURATION
Christie Roadster HD20K-J projector (16)

Christie Roadster S+22K-J projector (4)

When a main railway station in Tokyo was restored to its 1914 splendor, the re-opening was celebrated by painting the entire block in playful projected visuals.

Using the theme “A Journey Beyond Space and Time,” visual artists were recruited to design motion graphics that helped tell the century-old story of the Tokyo Station Marunouchi Building, using the 120 by 30 meter high facade as the screen.

Though the station has a turbulent history - damage by earthquakes and fire-bombs at the end of WW2 - the show focused instead on audio-visual fun, warping the station’s shape, re-configuring its structure and making it part of a steam-punk mechanical rendition of I’ve Been Working on the Railroad.

Shown over two nights, it was the largest scale projection display ever presented in Japan.

LA SCALA OPERA HOUSE

MILAN, ITALY

THE FACTS

CUSTOMER
Scala De Milano

LOCATION
Italy

PROJECT TEAM
Gianni Guerrini

Mario Nanni

CONFIGURATION
Christie Roadster HD18K projector (2)

Christie Roadster S+16K projector (2)

Christie Roadster LX1500 projector (1)

The famed Scala de Milano opera house staged a lighting spectacle for the holiday season.

For more than a month in late 2009, a nightly show called The Light of Music used precisely-mapped projections to entertain and intrigue theater-goers and passersby with a series of striking visuals.

A red velvet curtain clothed the opera house in one scene. In another, the horizontal lines of the grand building became bookshelves.

"For me, La Scala is a shrine of knowledge and the arts," recalled show designer Mario Nanni, a lighting specialist, "so I decided to also use books as symbolic treasure chests for every art, with letters - the initials of cinema, dance, literature, music, painting and sculpture - rising up from them slowly, as if evaporating and stopping at the top of the facade, lighting the marble torch on the cornice."

Nanni also played with light and shadows, with bright light spilling out of the windows in one scene, and in others, views of "light people" walking under the portico and a passing barge bringing marble to build Milan's cathedral.

The full HD presentation - 24 minutes long - ran continuously each evening through the holiday season.

ORBIS-OMEGA EVENT

SINGAPORE

THE FACTS

CUSTOMER
The Swatch Group
S.E.A. Pte. Ltd. - OMEGA

LOCATION
Singapore

PROJECT TEAM
Hexogon Solution Pte. Ltd.

CONFIGURATION
Christie Roadster HD18K projector (6)
Vista Spyder X20

PLAY VIDEO

The Omega timepiece brand created an unforgettable press event supporting the charity ORBIS by illuminating a giant airplane.

The non-profit's flying eye hospital jet was parked at a Singapore airbase and transformed by projected light by Singapore-based Hexogon Solution. Projectors re-cast the DC-10, owned and flown by ORBIS, with futuristic computer graphics that related the vision and efforts of the organization. The show was commissioned by OMEGA.

The specially designed and converted jet is the world's only airborne ophthalmic training facility — bringing guidance on eye disease treatment and surgery to communities throughout the world.

AUDI A3

MADRID, SPAIN

THE FACTS

CUSTOMER
Audi

LOCATION
Spain

PROJECT TEAM
New Media

CONFIGURATION
Christie Roadster
HD20K-J projector (6)
Christie HD14K-M projector (3)
Christie LX1500 projector (1)
Christie MicroTiles (27)
Christie Twist

A pop-up geodesic dome, immersive 360° projections and a revolving hydraulic stage gave Spanish car-lovers a stunning first look at a new Audi vehicle.

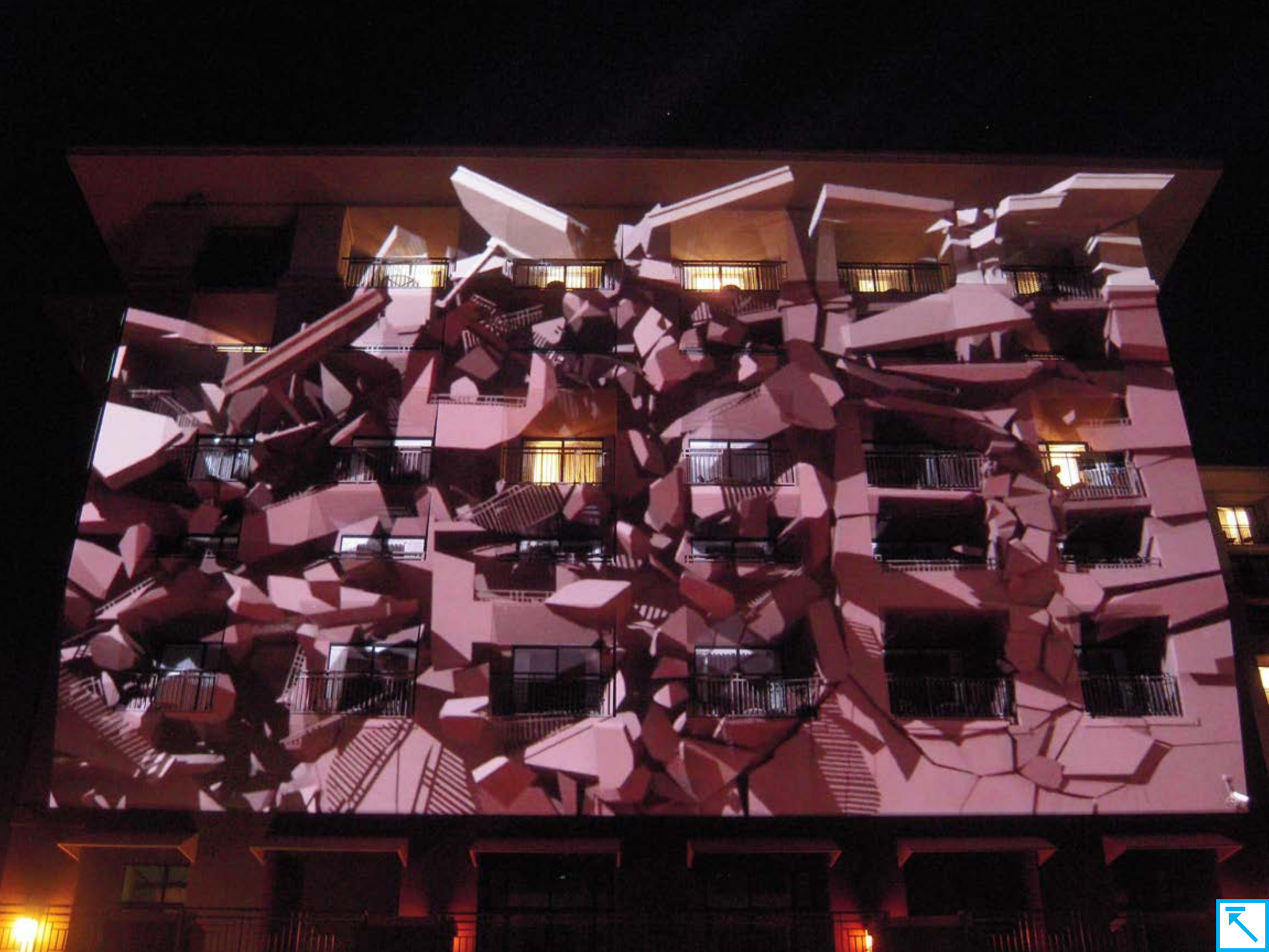
The Audi A3 Experience was set up in projector-filled domes in public plazas in Madrid and then Barcelona in 2013, inviting people into the temporary pavilions for the market launch of the new Audi A3 Sportback.

The A3 Experience multimedia show opened in full darkness with an evolving, purposefully intriguing set of sequences. Slowly, the outline of the new Sportback appeared, and then the actual car - with the intent of showing the transformation from virtual to real.

The car lights went on and projections created the sensation the A3 was zooming through a tunnel and onto the virtual streets of the host city, using 360° streetscapes filmed in Madrid and Barcelona. The revolving stage shifted the car as street directions changed, amplifying the visual sense that the car really was on the move.

“The audiences at the event were bowled over by the quality and originality of the show,” said Pepe Soler-Roig, Audi’s sponsor & events manager.

The show ran for eight minutes and was screened some 20 times each day. Between Madrid and Barcelona, an estimated 25,000 people took in the Audi A3 Experience.



WESTIN HOTELS & RESORTS

ARIZONA, USA

THE FACTS

CUSTOMER
Westin Kierland Resort & Spa

LOCATION
USA

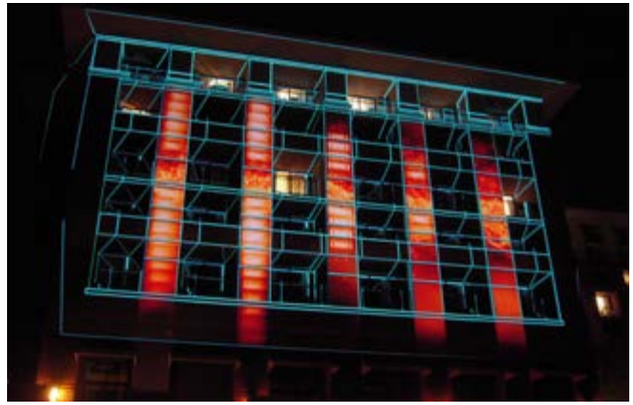
PROJECT TEAM
PaintScaping

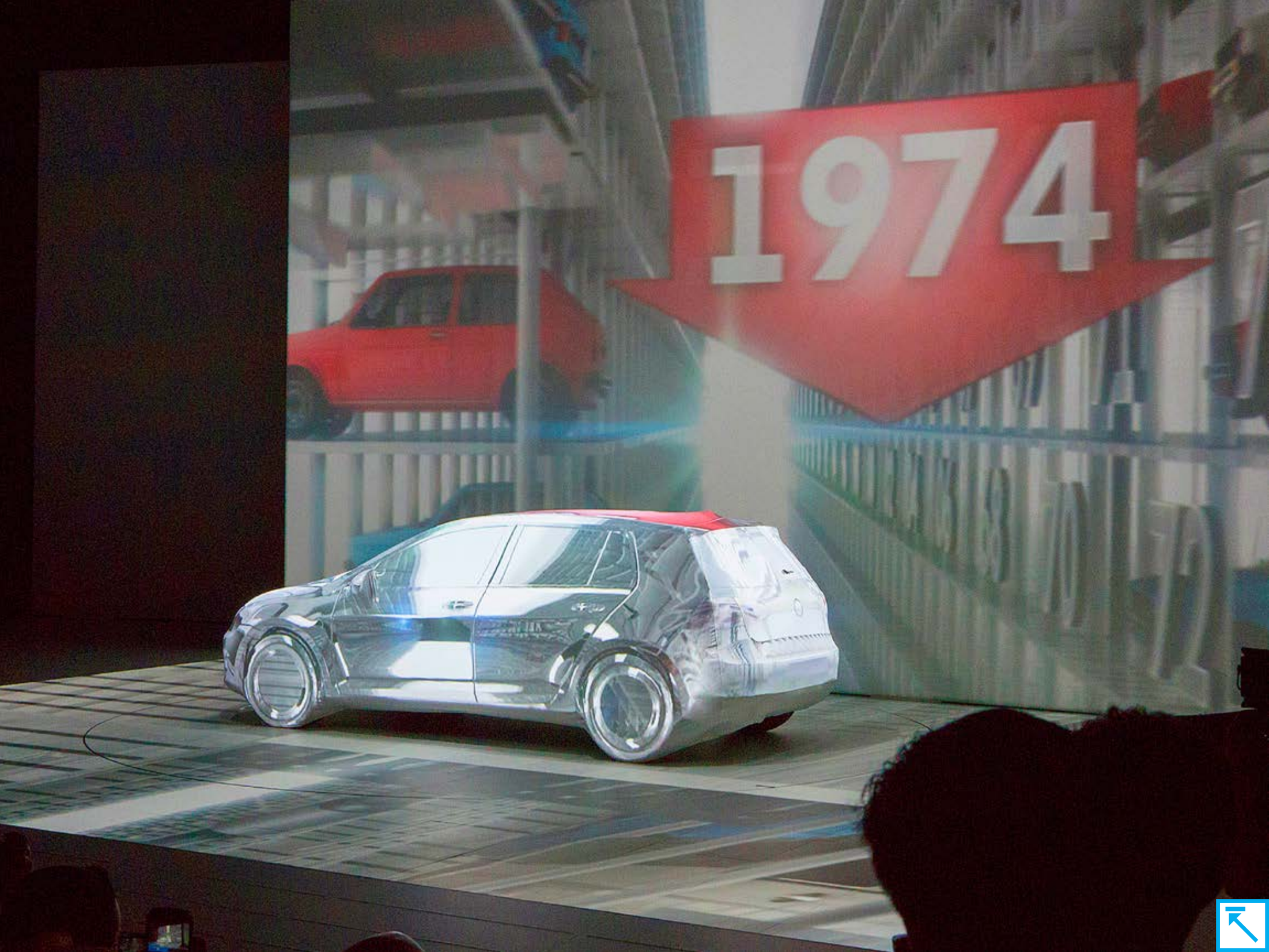
CONFIGURATION
Christie Roadster
HD18K projector (1)

Projection mapping has become a regular attraction at the world-class Westin Kierland golf resort in Scottsdale, Arizona.

PaintScaping - contracted to develop and execute a series of shows - mapped the resort property's Northern Sky Wall, playing with the vertical lines and the inset ceilings of the guest room balconies.

The building crumbled and shifted, shot giant bolts of electricity down its columns, changed its colors and structure, and gave the rooms and face a hip nightclub look as the resort's guests watched.




1974

VW GOLF LAUNCH

NEW YORK CITY, USA

THE FACTS

CUSTOMER
Volkswagen

LOCATION
USA

PROJECT TEAM
George P. Johnson
Spinifex Group
Siam Productions
WorldStage Inc.

CONFIGURATION
Christie Roadster
HD20K-J projector (4)
Christie HD14K-M projector (8)

PLAY VIDEO

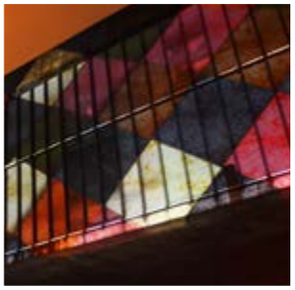
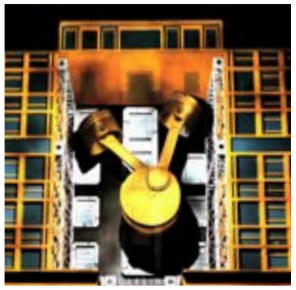
Volkswagen wowed auto journalists at the 2013 New York International Auto Show with a dazzling “time machine” video display that used the latest VW Golf as the projection surface.

The press event traced the history of the car series from its 1974 launch to the new 2015 model, projecting on a car wrapped in white spandex and parked on a turntable in front of a large screen. Visuals showed the Golf’s evolution from a pencil-sketched idea to production model and then ran through a series of playful projections. The Golf was outlined in neon, made part of a video game and bathed in disco lighting and futuristic fractals.

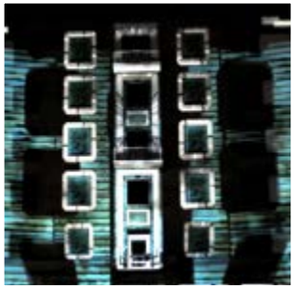
When the presentation finished and went dark, a crew slipped in and removed the spandex. When the lights turned on, auto journalists got their first look at the 2015 model.

Though the car, floor and backing wall presented a relatively small projection footprint, 12 units were still needed to provide full, accurate visual coverage. The amount of time available on-premise for set-up at the show was minimal, so the technical and creative teams built a full-scale mock-up in Pontiac, Michigan to test the content, projection angles and rigging positions ahead of the event.

VW’s presentation was hailed by many as the best press launch of the prestigious show.



Retail & Fashion

International Projection Mapping Inspirations

BRAZILIAN ART & FASHION

SÃO PAULO, BRAZIL

THE FACTS

CUSTOMER
Museum of Modern Art

LOCATION
Brazil

PROJECT TEAM
Visualfarm

CONFIGURATION
Christie Roadie HD+30K projector (3)

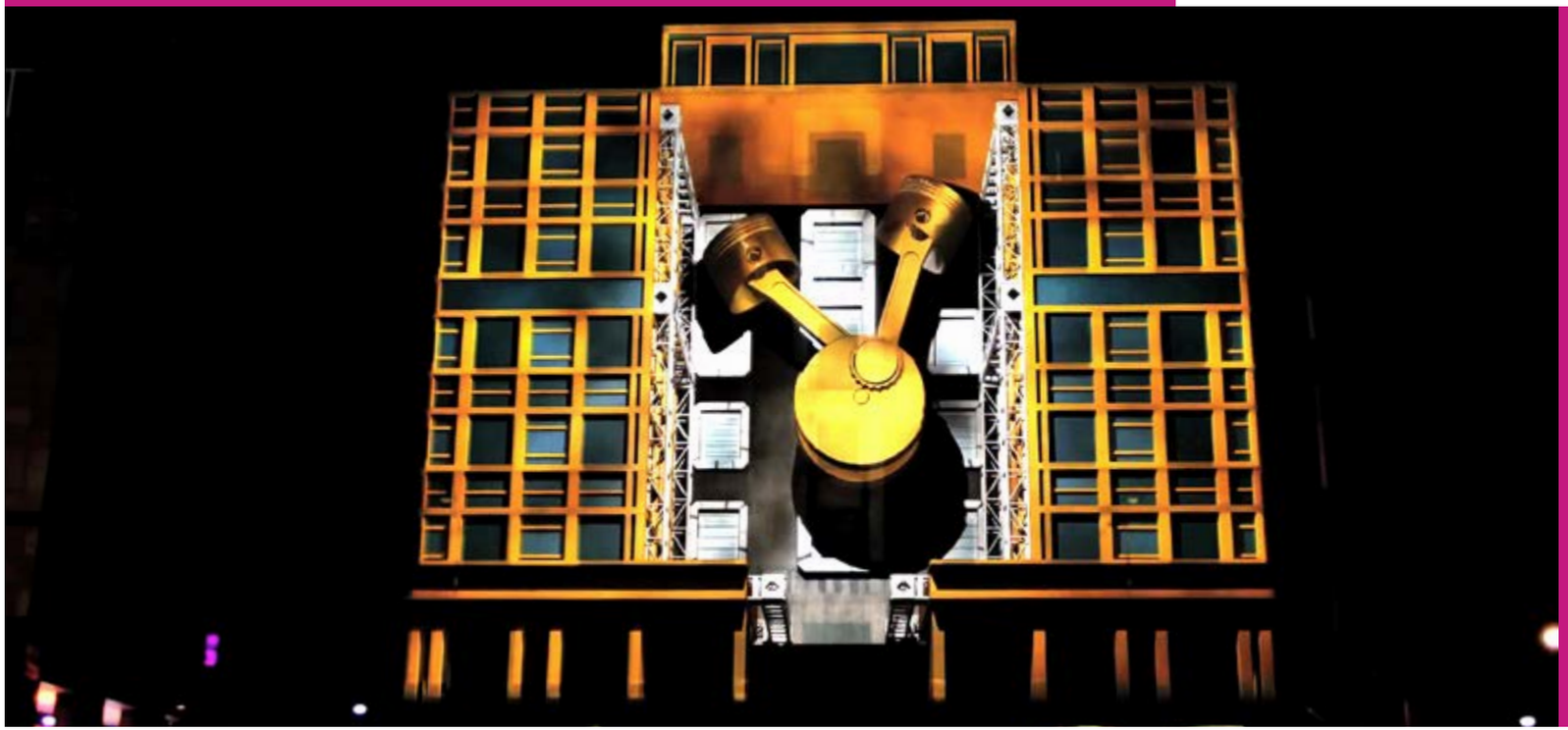
The long, stacked sweeps of narrow windows along São Paulo's Avenida Paulista were used to play with and transform the public view of that city's Museum of Modern Art for a 2012 promotion.

The creative team at Brazil's Visualfarm used projectors along the full face of the elevated modernist block as part of an event celebrating fashion and art in that country.

The mapped presentation played with the windows as though they were louvers, and ran through sequences relating the artistic movements that have influenced Brazilian art and culture through the previous century. Aimed at the street, the presentation generated buzz and media coverage for the exhibition.

HUGO BOSS & MCLAREN

MILAN, ITALY



THE FACTS

CUSTOMER
Hugo Boss

LOCATION
Italy

PROJECT TEAM
Say What
Angelsign Studios
Roberto Fazio
Be Invisible Now

CONFIGURATION
Christie Mirage
HD18 projector (4)

PLAY VIDEO

The visual and audio energy of Formula 1 racing roared into the center of Milan to celebrate a Hugo Boss store opening.

The fashion brand celebrated its 30-year partnership with the McLaren F1 team by running a spectacular projection mapping project in the historic Piazza San Babila.

A building at one end of the city square was the canvas for a steadily transforming motion graphics and audio spectacle about McLaren's racing technology and Hugo Boss, which tied the event to the re-opening of a renovated store. F1 champion Jenson Button and 800 spectators took in visuals that ranged from the inner workings of a high-performance engine to a full McLaren car crashing through the building's virtual wall.

Technical partner Michael Sterbizzi said the team only had two days in the busy city square to set up and test.

“The only difficulty was the high level of ambient light in the place. But thanks to the high brightness projectors of Christie, the screen was a success.”

HOLT RENFREW

TORONTO, CANADA

THE FACTS

CUSTOMER
Holt Renfrew

LOCATION
Canada

PROJECT TEAM
Rose and Thistle Media
Dynamix ProAV

CONFIGURATION
Christie HD20K-J
projector (3)

PLAY VIDEO

The vast sweep of blank tiles on the facade of Canadian apparel retailer Holt Renfrew's flagship store proved an ideal medium for celebrating the chain's 175 years in business.

A nine-minute 4K resolution video presentation was developed to run on the store's 50 meter (165 foot) wide bulkhead on Toronto's Bloor Street West. Rose and Thistle Media mapped the dimensions of its more than 700 tiles, and developed creative that celebrated the luxury retailer's past and future, in motion and archival images.

The tiles rippled, models danced in virtual windows, image mosaics filled the space and video steadily reinforced the famed brand. The show drew big nighttime crowds and later won digital signage awards for the creative.


VAN CLEEF & ARPELS
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VAN CLEEF & ARPELS

PARIS, FRANCE

THE FACTS

CUSTOMER
Van Cleef & Arpels

LOCATION
France

PROJECT TEAM
Aslize
Scenographism
ETC France

CONFIGURATION
Christie Roadie 25K projector (2)

French jeweller Van Cleef & Arpels added a fairy-tale touch to its celebration of 100 years in business.

Throughout a red carpet event for the company's premium clients, fairies zipped past the Parisian building's old sandstone columns, stars twinkled, butterflies fluttered and beautiful virtual flowers grew from the stunning Place Vendôme address.

The client brief to event producer Aslize required a magical show that could be appreciated by arriving guests and also enjoyed by the public walking and driving through the plaza. “Projection was the obvious solution,” recalled Aslize technical director Dan Fernandez. “It looks stunning and has a massive impact.”

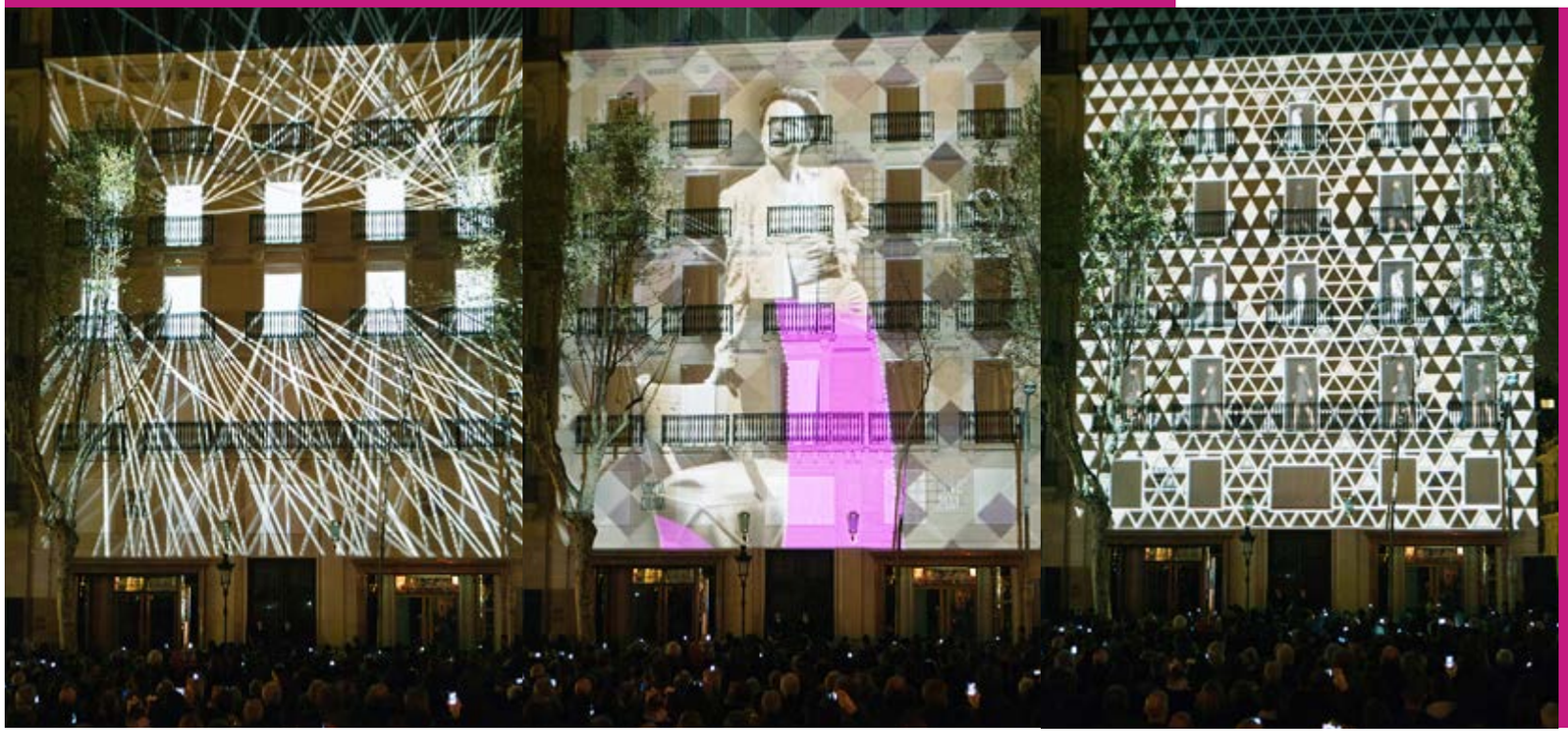
It also meant the team could safely transform the heritage-listed building with light, images and animations, without physically touching it.

The brief from Van Cleef was also clear about creative tone. Image designer Fabien Martineau created an animated show storyboard to meet a tough aesthetic brief, which had to be related to the re-launch and what was happening inside the showroom. “The nature of the project was very specific,” recalled Martineau. “They wanted very subtle, elegant, understated and beautiful projections, with lots of detail.”

Martineau spent a month compiling source material for what became a looping three-minute presentation. He drew from the Van Cleef product catalog and history, as well as from designs and physical elements inside the flagship store.

SANTA EULALIA

BARCELONA, SPAIN



THE FACTS

CUSTOMER
Santa Eulalia

LOCATION
Spain

PROJECT TEAM
Mahala Comunicación
OnionLab
BAF General de Catalunya

CONFIGURATION
Christie Roadster
S+20K projector (2)

One of Barcelona's most revered fashion boutiques was lit up and playfully brought to life in an event that stopped traffic.

To celebrate the opening of Santa Eulalia's new location on Paseo de Gracia - one of Barcelona's most exclusive shopping streets - the storefront was mapped and illuminated. Ten minutes of creative played with the structure and features of the refurbished building, and cycled through visuals that gave an overview of the store and brand, going all the way back to its 1840s roots and outlining the future.

"From the outset, we all agreed that we wanted something unique and ground-breaking that would make a big media and social impact, not only in Barcelona but also worldwide. But we also pursued a collaborative event that was open to and involved public participation," explained María Beneyto, production manager at Mahala Comunicación, which organized the event.

Traffic was stopped for the event and 6,000 people watched the presentation live, creating city-wide buzz and driving online traffic to also watch the video.

"This is the very first time an event of this kind was organized in Barcelona and the experience was a resounding success," said Beneyto. "Both Santa Eulalia and the audience for the mapping projection were really impressed with the screenings and effects created on the building."

THE AMERICANA AT BRAND

GLENDALE, USA

THE FACTS

CUSTOMER
The Americana at Brand

LOCATION
USA

PROJECT TEAM
PaintScaping

CONFIGURATION
Christie Roadster HD18K projector (1)

PLAY VIDEO

Shoppers at The Americana at Brand retail and dining complex in Los Angeles got a rare look at a virtual winter wonderland.

One of the larger walls on the property was mapped and subjected to twice nightly light shows throughout the holiday season. Shoppers saw elves steadily adorning the building with icicles and holiday trimmings. Snow fell, toy soldiers came to life and Santa and his reindeer flew by. A giant neon-green tree rose up and filled much of the edifice.

The show was organized and executed by PaintScaping, driving the visuals off a single projector, protected in a tent against rains that came with uncharacteristic frequency that year.


FRAGILE

Projection mapping primer

Great projection mapping projects are the successful combination of powerful ideas and compelling structures, the right technologies, experienced, skilled people and creative work that make audiences stare in wonder.

Getting started requires an understanding of the stakeholders, technologies and operating demands, as well as how to think beyond a structure or object as a screen, and develop a big idea and plan that has a lasting impact.

Defining the key players

There are many players who are involved in conceptualizing, creating and appreciating stunning projection mapping displays. The following are some of the groups that come together for a typical installation, but this may vary depending on the project.

Clients: They initiate the request for a projection mapping installation and define the core requirements for the project. They can include anyone from consumer brands, museums and government to nightclub and theme park operators.

Stagers: The specialist companies that focus heavily on the event business, usually renting the projection and related hardware needed to “stage” events, and providing the assortment of skills and experience needed to design, manage and execute projection mapping spectacles.

Content Developers: While many staging companies have in-house creative capabilities, production studios focus specifically on the output of the projection systems. They conceive and produce the video and motion graphics that transform objects and structures.

Systems Integrators: Professional AV and IT systems companies have the necessary experience and broad understanding of all the requirements - from optimal technology choices to light and noise restrictions - needed to execute successful projects.

Audience: No amount of investment in technology or creative matters unless it has the desired effect - from pure wonder to calculated brand awareness - on the viewing audience.

Projection mapping display components

Scaling, warping & blending systems

Production and playback systems organize and choreograph motion graphics, video, stills, sound and live camera feeds across a broad canvas illuminated by multiple projectors and sources.

Often, one visual is too large to be driven by one projector, so edge blending and related tools stitch multiple displays together to create one image with no perceptible seams. In other cases, technology does the work to create a mosaic of visuals. This scaling, warping and blending is achieved with software or with hardware management and switching devices supported by software that can layer, mix, define, shape and blend sources.

Playback devices

Any PC or video source can send a display signal to a projector or management and control device but several companies have developed PC-based playback systems that are specifically tuned to the high-performance demands of projection mapping projects. These devices are capable of sending out resource-intensive, uncompressed video and doing real-time video processing. Some incorporate the show controls of scaling and blending systems.

Software

Pure-play software companies focused on demanding projection work development tools make projects easier to set up and optimize for the viewing audience. Many companies offer tools that manage soft-edge blending and image warping and make what can be a long, painstaking process of aligning projections and stacking projectors relatively fast and easy. There are also software applications designed to make real-time projection - for users such as live performance veejays and live theater designers - both flexible and simple to use.

Displays

Many display manufacturers offer consumer and office-grade projectors, but very few of those companies have the engineering, experience, installed footprint and support to drive super-bright visuals for mapped surfaces of any size.

The same technology foundation that drives the most advanced digital cinemas around the globe is used for a variety of powerful commercial projectors applied to mapping. Projector choices are driven primarily by the amount of lighting power needed by the project.

Vision systems

A handful of companies have developed solutions that take much of the complexity out of managing and unifying multiple displays. These systems can blend the outputs of multiple projectors - even commodity, non-professional projectors - and deliver them as unified, malleable displays.

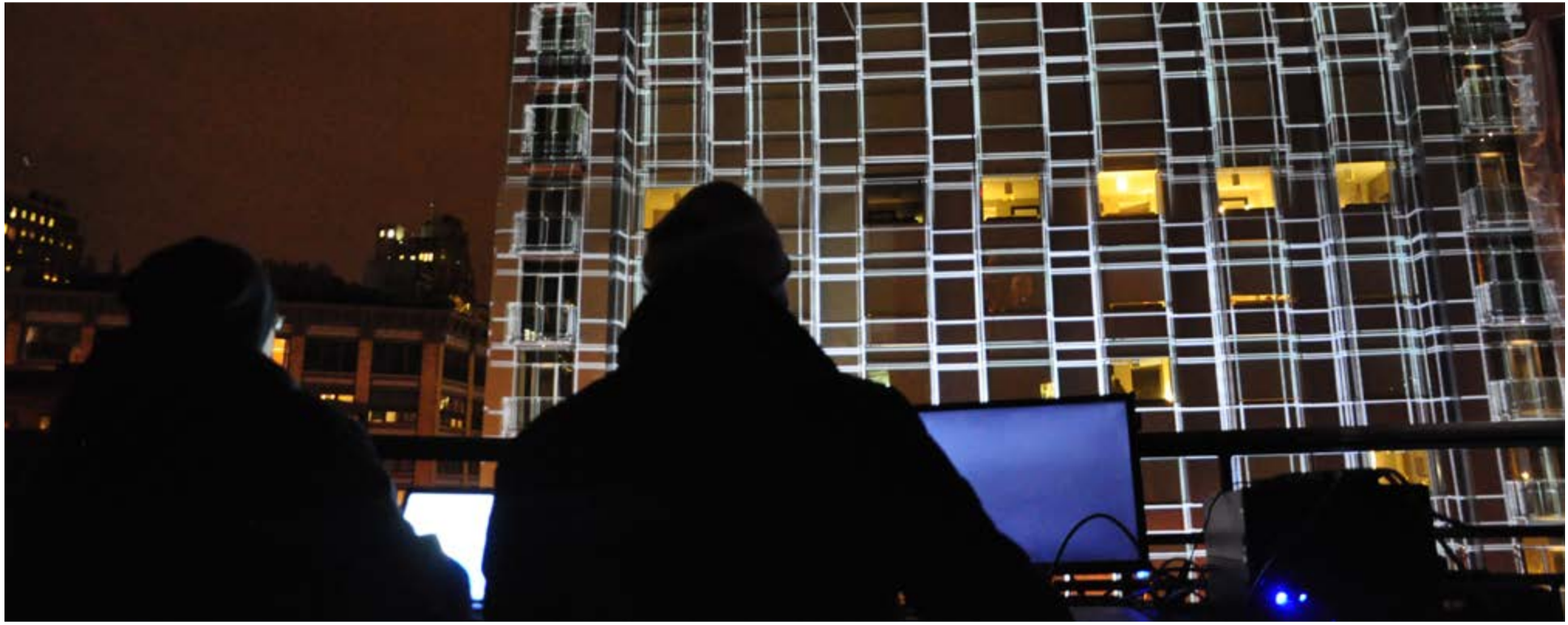
Enclosures

Specialty companies design and fabricate enclosures for sensitive projection systems that offer protection from the damaging effects of heat, cold and condensation - both for temporary and permanent installations.

Additional sensory features

Audio and olfactory are also important considerations to support and enhance the projection mapping event, creating a multi-sensory experience.

Christie also offers hardware and software solutions that accomplish expert scaling, warping, blending and content management — easy to integrate, use and maintain.



Putting a project together

Objectives

The best technical and creative work invariably traces back to a well-considered and fully-defined set of communications objectives. The client should be clearly able to express an idea and a desired outcome.

That outcome can be generating excitement and viral buzz about the public launch of a new consumer product or brand. But it can as easily be an effort to help make an audience aware of a milestone - like a centennial - and reflect that in visuals that make people both appreciate and understand the significance.

It can be a monumental statement or used to help create or complement an environment – like ambient visuals for a party. In those cases, the visuals are intended as accents that energize the space and set a tone but are not intended as focal points.

Audience

Many questions need to be asked and explored about the audience for a projection mapping project. These include:

- ☑ How large is the crowd? Are they seated or standing?
- ☑ How far back will they be?
- ☑ How wide is the viewing zone and will those at the sides see the visuals properly?
- ☑ Does the performance include audio and if so, what's the audio delivery technology?
- ☑ Is this a scheduled performance that people come to watch with a hard start and finish or is it intended as continuous ambient material? Or something else?
- ☑ Do the content plans and objectives make sense for the composition of the expected audience and the tone of the event? (For example: Is what's planned appropriate?)
- ☑ Are there any aspirations to make the event interactive with audience participation through gestures, sound or other means?

Characteristics

What are the characteristics of the structure or object that will be mapped and how will its contours, shades and physical properties affect the ability to deliver a compelling visual spectacle?

Traditional projection works with flat, planar surfaces that offer uniformity and a surface optimized for visuals. Projection mapping is almost invariably applied to surfaces that are not flat or uniform, or in some cases, even solid. Projections have been done successfully on vapor screens created by water jets.

Ancient castles, cathedrals and massive, complicated and modern structures present endless variations in surfaces, color and dimension. A castle will have different types and shades of stone, as well as crenels, merlons, slits, hoardings, rounded towers and curtain walls that somehow have to be unified for a cohesive visual presentation.

If the surfaces are outside, the color may change when it rains and make a light surface dark and the projection muted.

Ultra-modern structures, like the sails of Sydney's iconic opera house or cylindrical curves of New York's Guggenheim Museum, present a uniform color palette, but are anything but flat, requiring precision scaling, warping and blending.

Even the tall, rectangular modern office towers in city centers around the world present challenges. They're usually flat and uniform, but the glass of the office windows – or the full tower facade – can't reflect light. Projections pass through unless the glass gets a layer of reflective film or scrim.

Finally, the sheer scale of the targeted surface will dictate how many projectors, and what kind of lighting power, will be needed.

Site conditions

Technology and creativity can overcome the characteristics of most structures and objects targeted for projection mapping projects, but a thorough site inspection at the start of any project is essential.

Both the technical and creative leads need to inspect the site and the environmental and physical conditions that can affect the presentation and technical operations.

Those considerations include:

- ☑ The amount of ambient, surrounding light
- ☑ Obstructions on the projection path, such as trees, streetlights and power poles
- ☑ For live performances, the movement of people potentially in the projection path
- ☑ The distance, location and height of projector positions, which informs decisions on the brightness and number of projectors needed, as well as the lenses and media devices
- ☑ Power availability
- ☑ Weather conditions, not just temperatures and moisture, but wind as well
- ☑ Rooftop access or line of sight window access

Local approvals

Projects in public spaces will almost invariably be subject to the rules and regulations of local governments, and those can vary considerably even within the same metropolitan area.

Bylaws affecting advertising, lighting, noise, temporary structures, public gatherings, traffic and parking may all affect not only the scale of a project, but also whether it will even be allowed. It may take multiple approvals – because of jurisdictional rules and coverage – to get approval for one event.

Involving someone on the project team familiar with the local government and its regulations is often critical to executing a project, particularly on the planned timeline.

Timelines

Every project is unique, but more time for planning, development and execution tends to have direct ties to excellence.

Projection mapping projects have been pulled off in as short a period as one week, but industry experts prefer to have much more time to fully deliver on objectives, as well as control costs and minimize chaos. The most ambitious projects can take a year or longer from the idea stage to the event launch. Some have taken many years in planning and approvals.

Integrators and staging companies can often respond on relatively short notice, but what truly takes time is the creative. Minutes of motion graphics and video can require weeks or months of work to take through the idea stage, storyboard concepts, drafts, revisions, rendering and testing.

In rare cases, creative is available that readily translates to the targeted projection surface. But projection mapping done

Timeline

SIX MONTHS OUT
- Initial project partner meetings and selection
- Concept development

FIVE MONTHS OUT
- Initial site visits
- Project and creative proposals
- Project cost quotes
- Partner selection & commission

FOUR MONTHS OUT
- Formal site survey
- Start local government submissions & approvals
- Creative & technical partners selected and engaged
- Surface mapped/scanned & photographed; virtual model created, then brought into design software

THREE MONTHS OUT
- First proofs of content available to review
- Creative revisions and additions

Project team

Typical projection mapping projects include these key roles, along with the teams and individuals who support them:

Producer – The overall project lead – usually someone who bridges both creative and technical skills.

Projection designer – The person who is experienced both with the design and the media.

Technical director – The person in charge of the technical scoping and execution of the project.

Creative director and design team – Charged with driving the creative process.

Project manager – While the producer handles the project at a macro level, a project manager is critical to mind and guide the 100s or 1,000s of details.

Lobbyist – The person charged with gaining approvals for use of logos in public spaces or projection on buildings from cities, municipalities, etc.

Installation team – Very different and distinct skills are needed to get the structures, cabling, connectivity and other elements in place at the event site, and then do the precision work necessary to optimize the presentation.

well is much more than finding a massive surface to run broadcast or online creative. The best projects use structures as so much more than screens.

Local approvals can also stretch timelines because of paperwork, process and even public hearings.

Budget

Brighter projectors and software are steadily reducing costs on projects by illuminating a broader surface with fewer projectors and either automating or greatly simplifying many of the planning and set-up tasks – like alignment – that historically have required many man-hours.

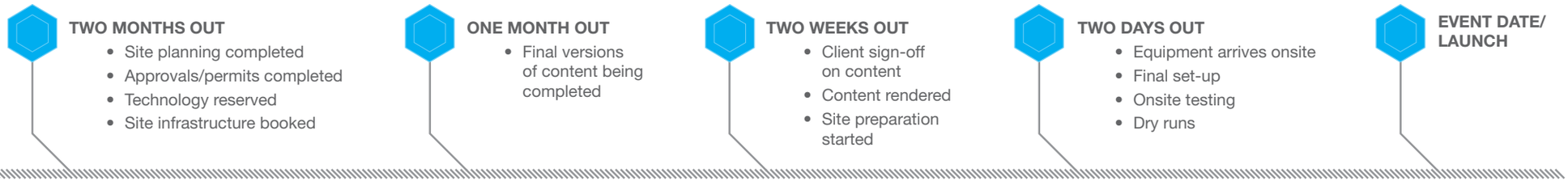
But some things – such as creative costs – can't easily be resolved through technology.

The good news is the producers of most projects, unless they are designed to be permanent, can limit capital costs by renting the projectors, related technology, structures and other gear required to execute an event.

Once a site survey is done, an experienced producer will have the knowledge and tools to estimate how many projectors will be needed and what supporting infrastructure is required on site. The producer, creative director and client need to then collaborate and reach decisions on the breadth and complexity of the creative, which will help arrive at an estimate on those costs.

Because of the complexity of projection mapping projects, and since no two projects are alike, each installation requires careful budgeting so that costs can be contained while achieving a spectacular show. Depending on the requirements, an installation may also require as much coordination and equipment as a major public concert in an urban area.

However, experience is showing tangible returns in ways such as earned media from both mainstream and social media. The buzz from big events has direct monetary value. The organizer of a massive projection event in Moscow for Russia's Alfa-Bank suggested, for example, the overall costs were in line with a month-long national TV and outdoor ad campaign, but probably much more effective in media terms.



Timeline

The big idea

The true wonder of projection mapping comes from the effect of the illusion, where the audience cannot really piece together what is going on.

A structure they thought was familiar is transforming in front of them – in crazy, visually wonderful ways – and they can't quite figure out how.

"It's magic," says projection mapping expert Bart Kresa, "when the audience doesn't see this as being done with projection … when the audience doesn't really know how it happens."

Kresa has used projectors to shape-shift everything from a Chiang Kai-shek Memorial in Taipei, Taiwan to a Warner Brothers backlot with overpowering color and organic motion visuals.

In its highest forms, projection mapping is art on a massive scale – the transformation of a familiar object or structure in a way that makes people stare in pure wonder.

"One of the things we are always trying to do," explained Obscura Digital co-founder Travis Threlkel in a presentation, "is inspire people and capture the audience's imagination … get people thinking and dreaming."

Obscura has celebrated the beauty of Islam on the marble walls and towering minarets of an Abu Dhabi mosque and turned the seaside facade of a San Francisco science center into a living lab.

Storytelling power

From telling the story of a city on a wide stretch of riverside grain silos to bringing an ancient Egyptian temple back to life, projection mapping has enormous storytelling power, and offers an equally huge creative outlet to digital artists.

"The cool thing about having pixels everywhere in these massive megapixel canvases is the potential - potential realized on physical real estate, with the necessary resolution, to convey an exhibitor's theme in any way imaginable," says Roy Anthony, a senior solutions architect at Christie Digital Systems.

But it's not always about grand scale. Among the projects guided by Anthony was an augmented reality demo that enabled car shoppers to change the look and color of a car using a touch screen with precision projections on a 3D-printed scale model of an Audi R8.

Coming up with and then executing the big idea for a projection mapping project requires a blend of vision, ingenuity, technical knowledge and considerable experience. More and more tools are coming along that make execution easier, but being technically able to do something doesn't mean the output will be great.

Starting with a concept

That big idea first needs a concept and visual narrative built around it. On ancient or landmark edifices that storyline may come relatively easy, as the visuals are often tied to the history of the structure and its surroundings.

In other cases, big surfaces tell entirely different stories tied to an event or brand, working with the surface primarily for its visual interest and sheer scale.

Fundamentally, projects need a purpose and goals. "We always begin with our objectives," says Threlkel. "'What are we trying to do?' … and then we work backward from there."

The biggest challenge is the structure – be it a building, famous landmark or even an object, like the dish of a giant radio telescope used to mark the 50th anniversary of the space age. What are the limiting characteristics of the shapes, dimension and base colors?

Production teams have different styles and workflows to tackle these challenges. Some will work around the most visually demanding elements, avoiding them or building them into the narrative. Big, vibrant colors and intriguing motion visuals can draw the eye from problematic surfaces, or simply overpower them with colored light.

Using tools & experience

Other producers apply tools and experience to incorporate challenging shapes and textures into a presentation. To architecturally map the Sydney Opera House for the landmark YouTube Symphony Orchestra performance, Obscura used millimeter accurate laser scans of the interior concert hall and an aerial site survey – the data collected from a helicopter.

The sheer scale of a projection event can itself be part of the big idea, using dozens of projectors to fully, cohesively illuminate a big structure. But the experts say "big" can't be the only characteristic.

"I like to do a project in such a way that it looks very organic," says Kresa. "We bring it in as art. We create a fantasy world and put people in a dream state. We try to make it impossible to comprehend what's going on before their eyes."


Boundless
Projection mapping

The Christie difference

Christie is universally recognized as one of the true leaders and innovators in the fields of projection displays and visualization solutions - and the reasons are both obvious and hidden.

It's evident the moment Christie technology is powered up and audiences see the quality of visuals. For more than 80 years, Christie has been creating, manufacturing and servicing the world's best and most preferred cinema projectors, and that technology foundation also drives the projectors used for projection mapping.

Christie is known, as well, for designing and delivering the most advanced, functional and intuitive simulation display solutions on the market. The company also makes rear-screen display systems that produce massive, seamless visual canvases for everything from public utility and first-responder control rooms to large, often uniquely configured display walls in museums, galleries and luxury retailers.

Much of what sets Christie apart in the projection and visualization sectors starts behind the scenes in the labs. The percentage of engineers on Christie staff is higher than industry standards and the great technology that will optimize projections five years from now is already being developed and refined by the R&D teams.

Fast-forward thinking

"Some of the technology that's being used in the industry now is what we developed seven to 10 years ago, but it is relevant in the market today," says George Tsintzouras, senior director, new business initiatives at Christie. "Our R&D team is already fast-forwarding and working on technology that will hit the marketplace many years from now."

> "We chose Christie projectors because they are reliable, robust and versatile. They delivered the best performance, as well as being really intuitive to handle."
>
> *Diego De Anna, CEO, New Media.*

For example, says Tsintzouras, a huge body of knowledge, experience and technologies that Christie has developed through the years for things such as immersive visualizations for flight simulators, is now being used to create ultra-wide, perfectly blended projections. This will ultimately find its way to the marketplace, introducing more efficiencies and capabilities.

To streamline product development and drive innovation, Christie has invested heavily in equipment for rapid prototyping and environmental testing, such as thermal chambers, sound chambers and motion/vibration tables that test the boundaries of products under all conditions.

Experience, a great technology foundation, bright minds and corporate culture all lead to products that the top companies working in projection mapping want to use. The experts talk about the power and dependability of Christie products, their ease of use and the critical support end-users and partners get as a matter of routine. Christie gets directly involved to make the most of major events and installations.

Rich, diverse solution set

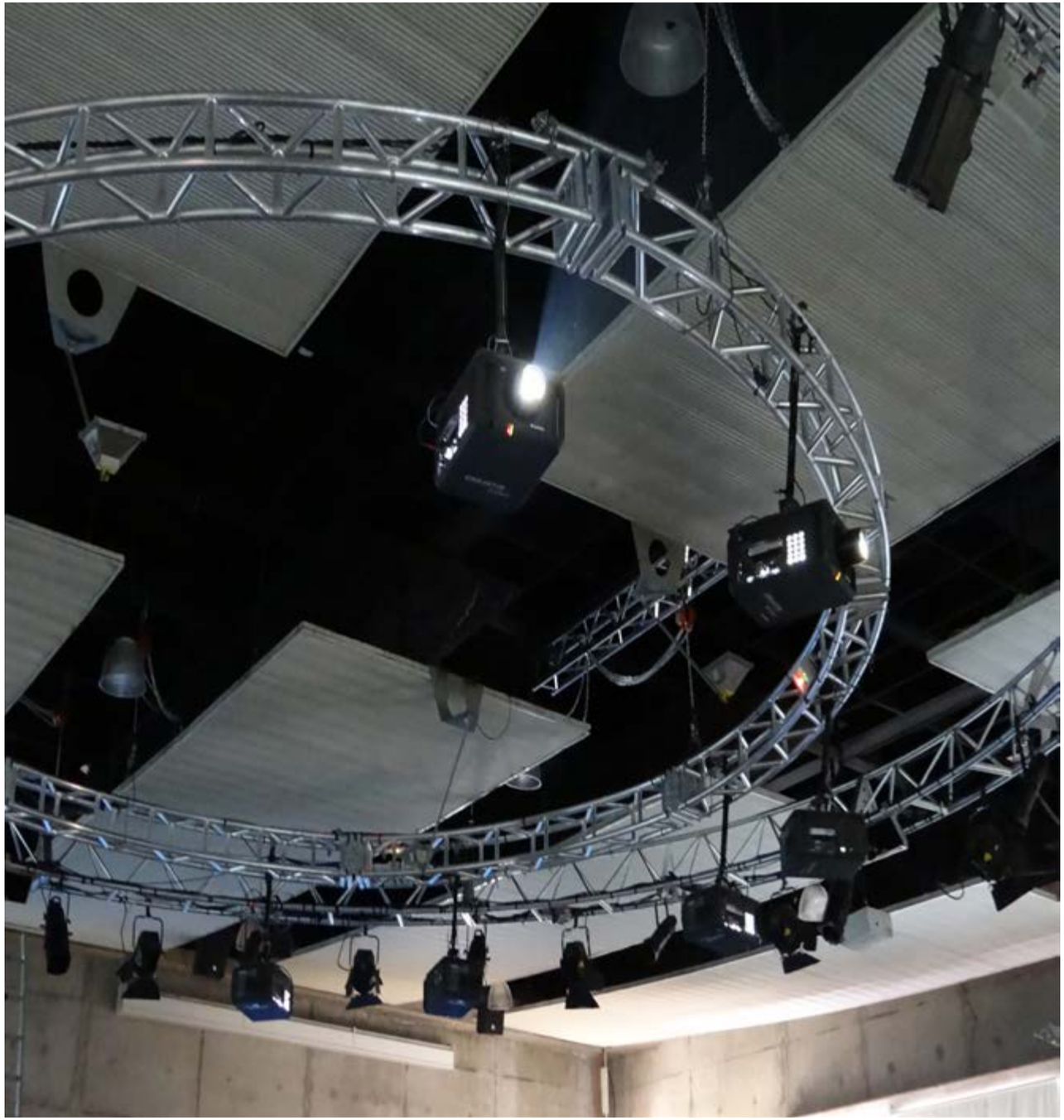
Christie's 3-chip DLP projectors are used globally for projection mapping, with experts able to fine-tune projects using a wide choice of resolutions and brightness levels available in the product line-up.

These DLP projectors use light more efficiently, offering consistent, reliable performance and uniform brightness across a projection canvas.

Christie developed its own software, called Christie Twist, to help technical and creative teams deliver to even the most challenging surfaces. Twist lets end-users expertly edge-blend curved images seamlessly, on all four sides, for multiple projectors. Users can precisely control several edge-blended images and warp the displays to conform to almost any projection surface – whether flat, curved or spherical.

A software-driven, camera-based system called Christie AutoStack automatically and accurately aligns and blends projected visuals. Working with various screen sizes, aspect ratios, and using screen points for quick geometric calibration, arrays of projectors can be stacked and precision-aligned to amplify the brightness of projections in a matter of minutes. Done manually, it could take hours.

> "Christie projectors are, first and foremost, extremely powerful and they can operate under difficult conditions that can be far from ideal. And they still remain completely reliable."
>
> *Patrice Bouqueniaux, product manager, ETC*



Reliable & versatile

Experts from around the globe have a long list of reasons for why they use Christie solutions, though the common thread is quality.

“We chose Christie projectors because they are reliable, robust and versatile,” says Diego De Anna, CEO of the Spanish firm New Media. “Of the equipment available on the market they delivered the best performance, as well as being really intuitive to handle.”

Christie’s projection toolset enabled the British firm QED Productions to execute a massive display on the side of a London skyscraper with no opportunity for pre-event testing or margin for error. “With 10 projectors to double up, once again the power of the Christie network control and Christie Twist software proved invaluable to the success of the projection line-up, enabling everything to be setup in just one night,” recalled QED director Paul Wigfield of the 2012 production, involving acrobats scaling the giant London Eye Ferris Wheel.

ETC France has been in the middle of some of the most ambitious projection mapping projects to date, including an Alfa Bank celebration in Moscow that used 81 projectors and generated 1.8 million lumens of projected light. “It’s important to note that Christie projectors are, first and foremost, extremely powerful, and that they can operate under difficult conditions that can be far from ideal. And they still remain completely reliable,” says ETC project manager Patrice Bouqueniaux. “And confidence is crucial!”

Another French firm, Audio-Technique, relies on Christie projectors to maintain a competitive edge. “The range of projectors that we have gives us reliability and the power to handle major events,” explains company director Krim Ouraghe.

Christie’s technology has allowed Singapore-based Hexogon Solution to produce massive, very sophisticated projection events. “Technologies such as Christie Twist,” says Hexogon director Adrian Goh, “have overcome big challenges with minimal fuss. Over the years, we’ve been a faithful Christie user as we’re comfortable and familiar with the Christie technology and product features.”

Looking ahead

The transformations have barely started. What's been seen to date is really just a hint of what's to come, driven by a variety of factors and influences.

First, projection is going to be democratized

"It's now a capability enjoyed by a few," explains Paul Salvini, Christie's chief technology officer, "but over time it's becoming easier, so that this technology and this medium can be available to any artist who wants to tell a story in an interesting way."

Already, software tools can remove hours of fine-tuning and alignment work and largely automate those tasks. The experience and skills needed to blend and warp visuals on curved and irregular surfaces are also being increasingly managed by software. It means visual artists once intimidated or overwhelmed by the complexity of projection projects will find them steadily easier to pull off. More artists working in the craft drives new ideas and approaches, and brilliant results.

"I see that technology is rapidly improving," says Adrian Goh, of Singapore's Hexogon Solution. "I think in the next few years, projector lumens will be getting higher, so that not as many projectors will be required for large-scale projection. Video mapping will be more and more common and affordable as technology advances."

Events will become installations - permanent parts of the landscape

"We fundamentally believe this technology will not just be a rented, short-term, momentary experience," says George Tsintzouras, senior director, new business initiatives at Christie. "It will be permanent ... where buildings will not only be architected in such a way to incorporate visuals, but they will be architected synergistically with the displays that are going to be producing these visuals."

Future building design, he says, will see architects not only creating a vision of its overall look, but how a building can come alive and be transformed at night.

Evolving technologies mean more projected light, longer operating lives and greater durability - making the business case for permanently fixing projector positions and making projection projects largely a creative exercise.

"Projection is a great way to fully transform a structure or space," adds Roy Anthony, a Christie senior solutions architect, "without having to actually build anything."

Along with permanence, there will be mobility

Lighter, ruggedized projection systems and software that takes the time and complexity out of set-ups will mean equipment can be repositioned with relative ease within defined areas. Projection teams will also be able to just roll up, run a show, and then roll off. Customized cube trucks already exist that can pull into a site and be opened from a side to reveal banks of powerful, stacked projectors capable of visually covering a vast outdoor canvas. A lot of the prep work, temporary structures and labor costs will go away because of these mobile, consolidated set-ups.

Shows will be increasingly interactive, reactive and immersive

Already, specialty software allows live performers like deejays and veejays to adjust and change visuals on the fly and sync them with the music. Increasingly, sensors looking for motion or listening for sound can influence presentations and the marriage of data and media will only accelerate the ties between the visuals and what's going on with the audience and the venue.

For example, San Francisco's Obscura Digital used thermal imaging technology to detect and project the heat signatures of science center visitors, in real-time and at large scale, on a sidewall of the facility.

Control and mixing software and servers allow skilled operators to mash up multiple feeds, devices and data to create whatever output fits the event or environment. Technology allows vast and towering sweeps of content that are synchronized, blended, overlaid and output on the fly, even automatically.

Scale will go both ways

One of the terms sometimes used to describe the art form is monumental mapping - the idea of projections on a grand scale. There will always be BIG, and an endless quest for the next event to be even bigger in its visual canvas, projector numbers and brightness.

But scale will also be about small. Stunning projections have been done on high-fashion shoes and the petals of orchids. Projection "geeks" even joke about toying with projection at the microscopic level.

We've already seen motor vehicles wrapped in white fabric and then used as the projection medium. That was taken several steps further when Christie engineers developed a full demo of a 3D-printed, one-fifth scale model of an Audi R8 that could have its color, wheel covers and even headlamps virtually changed using a series of projectors, and a tablet as the controller.

We've also seen dresses on live performers transformed in pattern and colors using projection, as well as the stages, runways and surrounding structures of performance venues, as with projection artist Bart Kresa's groundbreaking work with Coldplay at the Hollywood Bowl.

> Instead of simply watching a show, audiences will be part of the show and experience.

Taken down another level, Christie's medical division has developed VeinViewer Vision, which uses near-infrared light to detect vein patterns under the skin and project them precisely onto the patient's skin surface, in real time.

Mapped projection will not be just about entertainment

As with medical imaging, projection technology offers the opportunity to transform business, retail and public environments.

The combination of sensors, real-time data and precision projection opens the possibility to augmented reality visualizations of everything from urban planning and energy exploration to live virtual views of things like massive forest fires or military operations. Instead of maps, projection and data can provide a real-time view that shows the dimension and drives both understanding and decision-making.

Cinematic experiences will find their way into retail and museum environments. Powerful projectors can overcome ambient light, and a combination of software, creative and clever design can build motion visuals and ambient graphics into spaces in ways that are not possible with more conventional displays. Already, mannequins in retail stores have been mapped and projected on to show a series of different outfits.

Just about anything is possible

Projection removes the barriers to most creative plans. When the sun sets or lights go down, virtually any surface, of any size, can take projections. Screens have been generated from water vapor. Swimming pools have been converted to projection mediums by filling them with thousands of floating ping-pong balls. Glass windows and walls have been covered to take the light.

Lens technology overcomes great distances – Sydney's Opera House sails were illuminated from across the broad harbor for a YouTube Symphony concert.

The elements have been conquered – with long-term projects running in everything from the summer heat of Abu Dhabi, to the wind-blown South Korean shoreline, to snowy, cold urban Montréal in winter.

Conclusion

The opportunity for transformations is as massive as the scale of the world's landmarks, and as brilliant as the minds being applied to both the technology and creative.

Christie partners

Our partners from around the world are ready to help you market ideas and products, entertain large groups and convey messages with moving art that can't be contained to a traditional canvas or digital screen. Connect with projection mapping artists and production companies around the world to bring your story and ideas to life using projection mapping.

ADLC Audiovisuais and Custodio Cardoso Pereira
www.adlc-av.com

Audio-Technique
www.audio-technique.com

AV Media
www.avmedia.cz

BAF General de Catalunya
www.baf.cat

BARTKRESA design
bartkresa.com

Big Video
www.bigvideo.tv

Creative Media Texhniques (CMT)
www.cmtevents.co.uk

Digital Network
digitalnetwork.it

ECA2
www.eca2.com

Eclipse
www.eclipse.ae

The Electric Canvas
www.theelectriccanvas.com.au

ETC France
www.etclondonparis.com

ETC Russia
www.etc-russia.ru

Eugenetek Corporation
www.eugenetek.com.my

Ex Machina
lacaserne.net/index2.php

Gearhouse South Africa
www.gearhouse.co.za

Gianni Guerrini
www.visualtechnology.it

Hexogon Solution Pte. Ltd
www.hexogonsol.com

Christie partners

Horizon for Trading & Contracting
www.elofoq.com

Ingevideo
www.ingevideo.com

Laservision
www.laservision.com.au

Materials & Methods
www.materials-methods.com

Moment Factory
www.momentfactory.com

NHK Enterprises, Sigma A&V and Rental Corporation, WOW
www.nhk-ep.co.jp/en

Obscura Digital
obscuradigital.com

PaintScaping
paintscaping.com

Proyección de Ideas
www.pi.cl

QED Productions
www.qed-productions.com

Rose and Thistle Media Inc.
roseandthistlegroup.com

Silverfish Space + Media
www.silverfish.co.kr

Tantrum Productions, Westbury National Show Systems (Westbury)
throwatantrum.tv

www.westbury.com

TapestryAV
tapestryav.net

Tricolor India Schauspiel Pvt. Ltd.
www.tricolorindia.com

Visualfarm
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If we can conceive it, we can achieve it.

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