COLORKINETICS

Control Matters

Control means freedom

a signify brand

Control Means Freedom

To Create, Amaze, Attract, Interact, and More

Controlling light used to be simple. It was on or off.

Then came dimming, which raised or lowered the intensity of light. The invention of LED luminaires added another dimension, color—and new capabilities, such as the digitalization of lighting, including the ability to zone dimming and control the spectral content of color-changing light.

The capabilities kept advancing and evolving, from single color to dynamic color, streaming video to interactive color effects. These breakthroughs were driven by technological advances—many from Color Kinetics—and the creative aspirations of the lighting community.

Now lighting designers have a remarkable array of tools at their fingertips for creating and controlling extremely sophisticated lighting implementations, with light points ranging from hundreds to thousands or hundreds of thousands. When creating content, designers can control the quality of color and transitions in lighting effects, enable interaction, and much more—all via tools that Color Kinetics offers. Our intuitive tools enable designers to create attractive, compelling content, from lighting a simple monument to interactive media façades to lighting large-scale event venues, such as sports arenas.

Almost anything is possible with your imagination—and Color Kinetics.

When lighting iconic towers, bridges, and historical sites, designers can create special effects that change with the weather, celebrate holidays, and capture the mood of a crowd

They can create interactive lighting installations that attract crowds of people eager to be part of the beauty, creativity, and fun. These are just some of the amazing, memorable experiences that leverage the power of light—and rely on the ability to control it.

Photography: Adam Latham

Get the Level of Control that You Need

There are many degrees of control, from a static color scene and dynamic color effects to streaming video.

So, how much or little control do you actually need?

It depends on the desired effect that you want to achieve.

- **Dim the lights in an office**
- **Control the lights in a retail environment to make products look their best**
- **Shift a restaurant from white light by day to color-changing light at night**
- **Change the color of buildings, monuments, and bridges to celebrate key holidays with dynamic color effects**
- **Create colorful lighting that responds to the action at a sports arena**
- **Display streaming video on the exterior of an event venue**
- **Create interactive color effects that delight and empower viewers**

Achieving the right level of control often requires a combination of elements, particularly for more complex installations. So while luminaires are the components of a lighting installation that tend to get the most attention, there are many other components in the control ecosystem that can help you achieve the level of control you need, and to ensure the color quality and uniformity of light.

Photography: Matheo Lernher

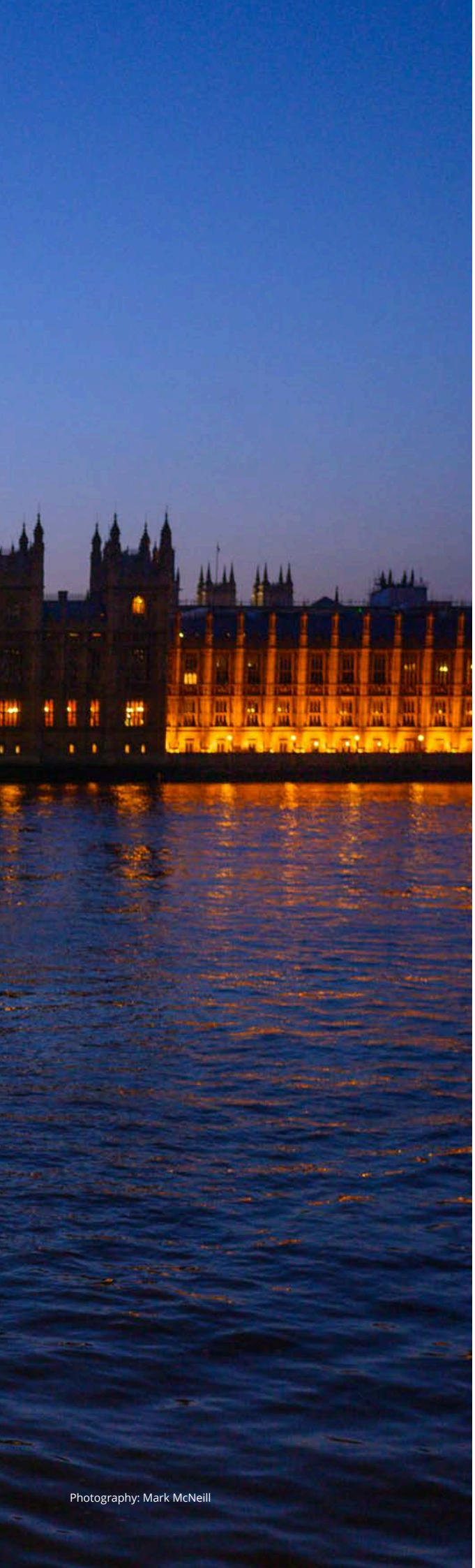
Exploring the Ecosphere of Control

It's easy to equate **control** with a **controller**—the device that plays such a central role in controlling luminaires.

But there's a lot more to the control story.

At Color Kinetics, we think of control holistically, as full-featured, integrated control systems. We optimize each of the elements of the entire system so that they interact seamlessly and deliver exactly the results that lighting professionals want including exceptional color quality and uniformity of light. After all, we can deliver all of these elements as a complete solution, one that benefits from deep expertise and unequalled experience in each area.

Let's take a closer look at each of the various components, from software to hardware, that make up the control ecosystem.



Photography: Mark McNeill

Authoring Software
Your lighting solution's imagination and memory

Authoring software gives creative professionals and lighting designers the tools they need to create and manage light shows. These tools include fully customizable effects, multi-track editing, timeline layering, transitions, and more. Authoring software allows shows to be stored and automated for seamless playback.

Products: ColorPlay 3, Show Designer

Controllers *The brain that controls your lighting solution*

At a basic level, controllers decide which lights go on when, at a selected intensity and color. They bring the luminaire to life. Controllers range from simple wall-mounted controllers with pre-programmed shows to powerful show storage and playback devices that can be in constant communication with tens of thousands of LED luminaires, year after year.

Products: Light System Manager, iPlayer 3

Control Interfaces *The means to activate light shows*

Enable users to trigger pre-programmed shows stored on the main controller, raising ease of use while blending in more seamlessly with the surrounding design.

Products: Antumbra Ethernet Keypad

Exploring the Ecosphere of Control

Luminaires
The bright and beautiful culmination of control

The final, most visible element of a lighting solution, luminaires, are smarter and more capable than ever. There are luminaires for indirect view applications and luminaires designed specifically for direct-view applications. Technological advances in color consistency, uniformity, and more add to the capabilities of a luminaire and make it much more than a collection of LEDs. As these capabilities increase, seamless integration between a controller and the luminaires it controls becomes all the more important.

Products: Blast Powercore, FlexElite, ReachElite, and many more.

Remote Monitoring and Management
Control from afar

The Internet of Things lets us take control further—literally. Now you can control a lighting solution from your iPhone or other device—making changes to an installation, triggering new shows, gathering data on system operation, launching more engaging and memorable content, and much more. Remote management sets you free to monitor and control a lighting solution more completely and conveniently.

Products Interact Landmark

Power/Data Supplies
The lifeblood of control

Integrated power and data supplies deliver these vital streams to luminaires, illuminating them (power) and informing them what to do (data)—conveying the commands from the controller accurately. As lighting solutions become more sophisticated and large-scale, power/data supplies become critical to reliability and quality. We have power/data solutions to ensure we deliver the right kind of power and data combined on a single cable to the luminaire. They can vary depending on where they'll be used (indoor/outdoor), how large the installation is, and the network protocol (e.g., Ethernet).

Products: Data Enabler Pro

Networks

The nervous system that conveys control

The network (or communication) protocol—DMX or KiNET—serves as the neural network that lets all components of a control system communicate seamlessly. The right network depends on the scale and sophistication of your lighting installation. In general, DMX is appropriate for smaller installations, or for light shows that use large groups of luminaires operating in unison. Ethernet can support larger, more intricate color-changing light shows and video displays. Our scalable, powerful KiNET network protocol enables even more sophistication and control—all while adhering to Ethernet, DMX, and other industry standards for easy integration. Communication protocols can have a major effect on performance. For example, KiNET minimizes flicker, enabling installations to be captured via video without distracting flicker.

To support the specific needs of an installation, networks rely on switches, injectors, splitters, boosters, and other network control devices.

Products: KiNET Multi-Protocol Converter

How to Choose the Right Network

Choosing the right network for your project depends on these main criteria:

Scale of the Lighting System

Do you have a few hundred light points, a few thousand light points, or a few hundred thousand light points? The scale of your project helps determine whether you should build a DMX-based system that uses the DMX Protocol/ RDM Protocol (appropriate for a few hundred light points), or an Ethernet-based system that uses KiNET (right for a few hundred to a few hundred thousand light points).

Interoperability

Do you have luminaires from other manufacturers? Do you need to use controllers from other manufacturers? Do you have to use accessories/ keypads? These factors can lead you to choose a shared, compatible network.

The Future

Do you foresee maintenance/ reconfiguration during the lifetime of the project? If so, KiNET (Ethernet-based) provides this capability. Or you will require DMX-based system with RDM capabilities.

While these three criteria serve as a general guide, **Color Kinetics system experts are available** to help you determine what network is best suited for your project.

Don’t Forget the Human Element

There are more elements to a lighting solution, of course—including the creative humans who use all of these tools to easily create impressive installations that push the boundaries of what’s possible.

And to assist them, Color Kinetics provides an ecosystem of global CSIs, system experts, and R&D professionals investing in building control systems and content to make it all happen.

The potential of lighting is almost limitless, thanks to technological advances in all areas of lighting, imaginative lighting professionals, dedicated partnerships—and a high degree of control.

Photography: Tim van der Kuip

How to Choose the Right Controller

Matching the right control solution to your project requires a clear vision of the kind of content you'll be using—and what effect you desire. In general, choosing the right controller for your project depends on three main factors:

- **Scale of the Lighting System.** Does your design include hundreds, thousands, or hundreds of thousands of light points? Knowing the scale helps determine whether you should build a DMX-based system (100s of light points), or a KiNET-based (Ethernet) system, which can scale up to hundreds of thousands of light points.
- **Scale of the Pre-Programmed Content.** Do you want to have the ability to run a single show (iColorPlayer), a few shows (ColorDial Pro), or hundreds of shows (iPlayer 3, Light System Manager)?
- **Scale of the Integration or Interactivity.** It's important to gauge how simple or complex integration will be—as well as the desired level of interactivity.

Do you want to have local integration using I/O modules?
Solution: iPlayer 3

Do you want to have local integration with keypads and mobile apps?
Solution: Light System Manager

Do you want to have remote triggering capabilities over the internet?
Solution: Light System Manager with Interact Landmark

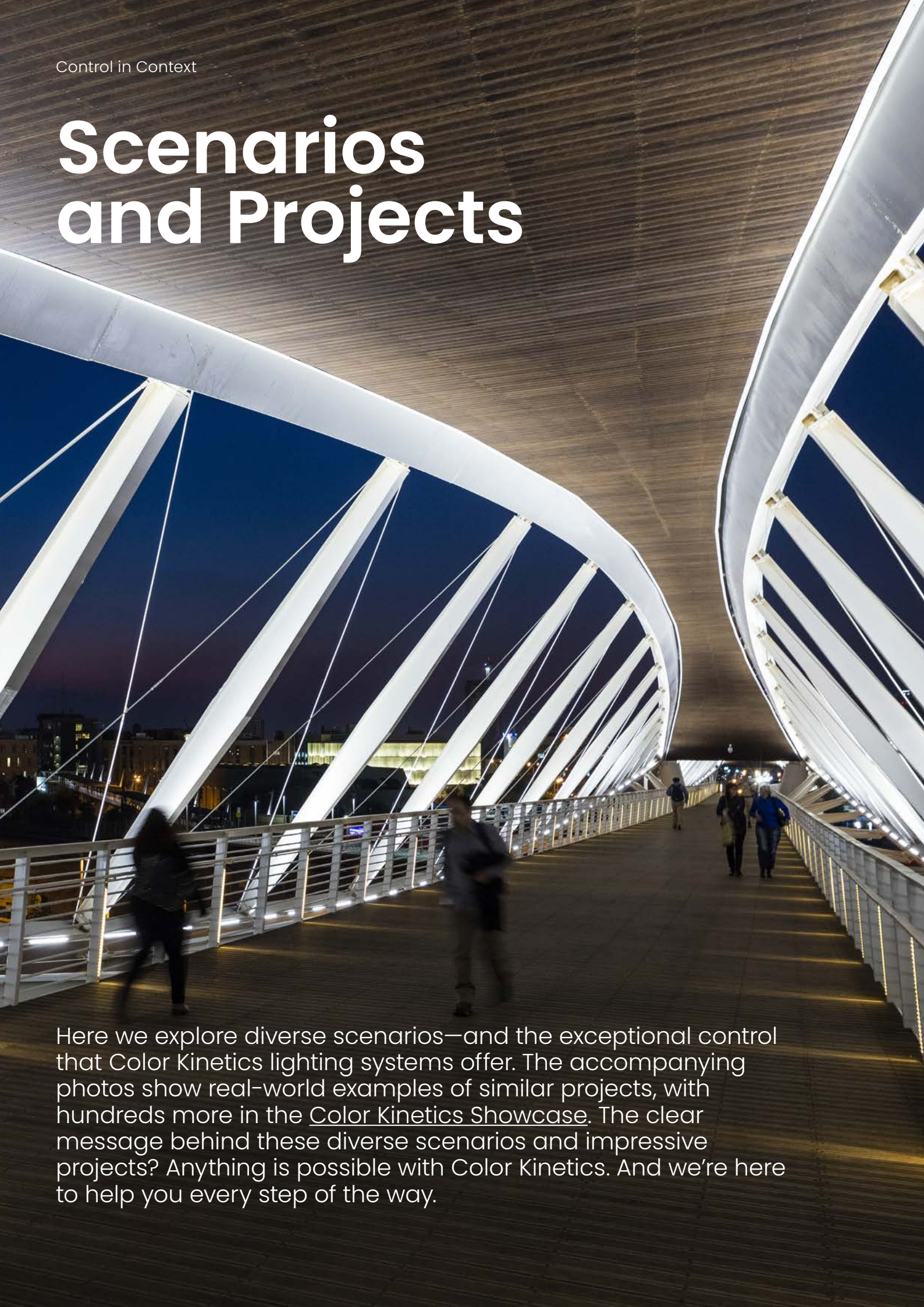
Do you want the ability to build mobile applications using API integration?
Solution: Light System Manager with Interact Landmark and Interact API

Download the **Color Kinetics Product Guide** for an overview of all controller options.

While these three criteria serve as a general guide, **Color Kinetics system experts are available** to help you determine what controller is best suited for your project.

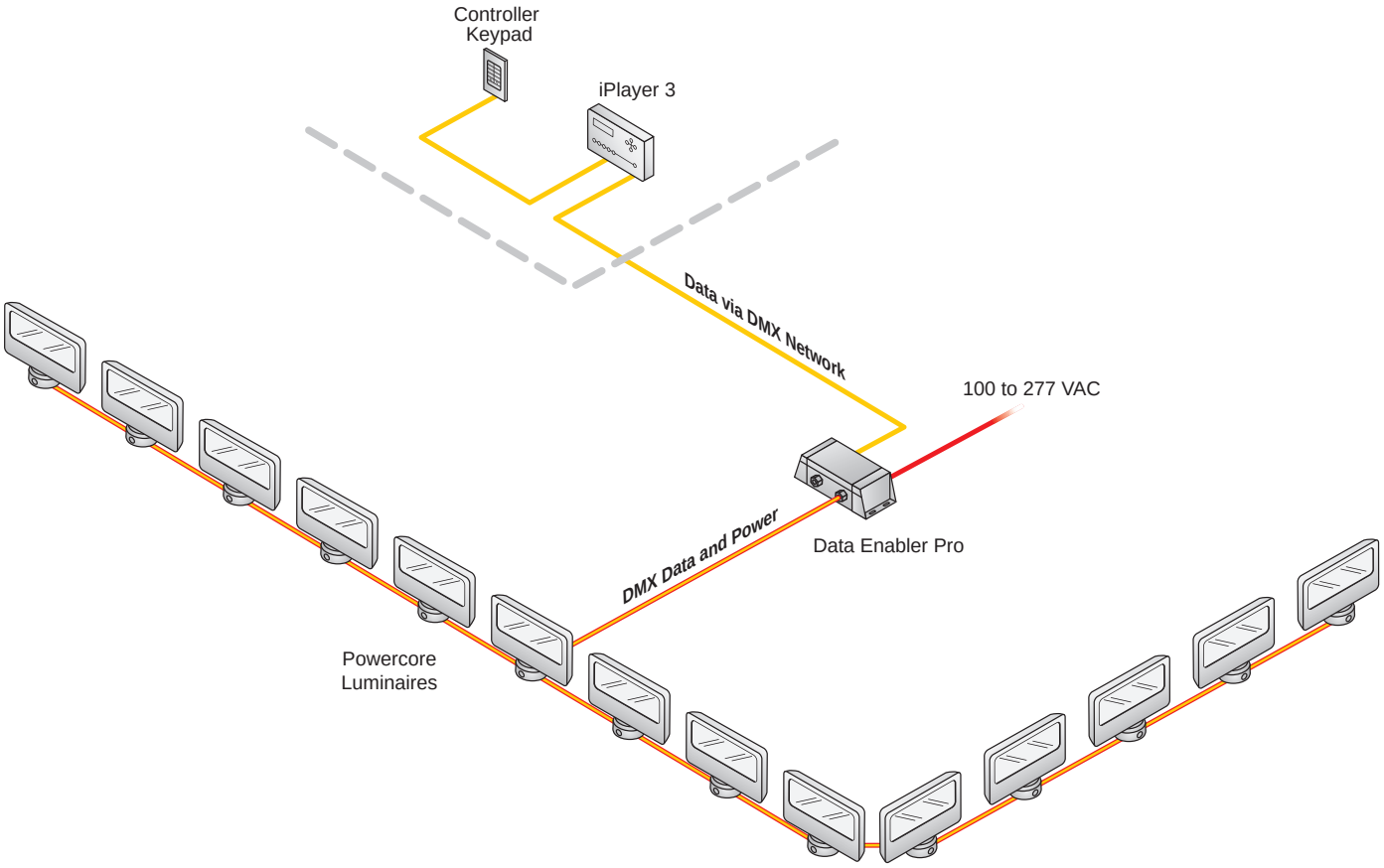
Photography: Venti Views

Scenarios and Projects



Here we explore diverse scenarios—and the exceptional control that Color Kinetics lighting systems offer. The accompanying photos show real-world examples of similar projects, with hundreds more in the Color Kinetics Showcase. The clear message behind these diverse scenarios and impressive projects? Anything is possible with Color Kinetics. And we're here to help you every step of the way.

Go It Alone: A standalone DMX network




Barry Island, Barry, Wales, United Kingdom


Tyne Bridge, Newcastle, United Kingdom


Rochdale Cenotaph, Greater Manchester, England

The Details: A standalone DMX network uses a DMX network to connect iPlayer 3 to Data Enabler Pro and to Color Kinetics Blast IntelliHue Powercore luminaires, triggered with a Controller Keypad.

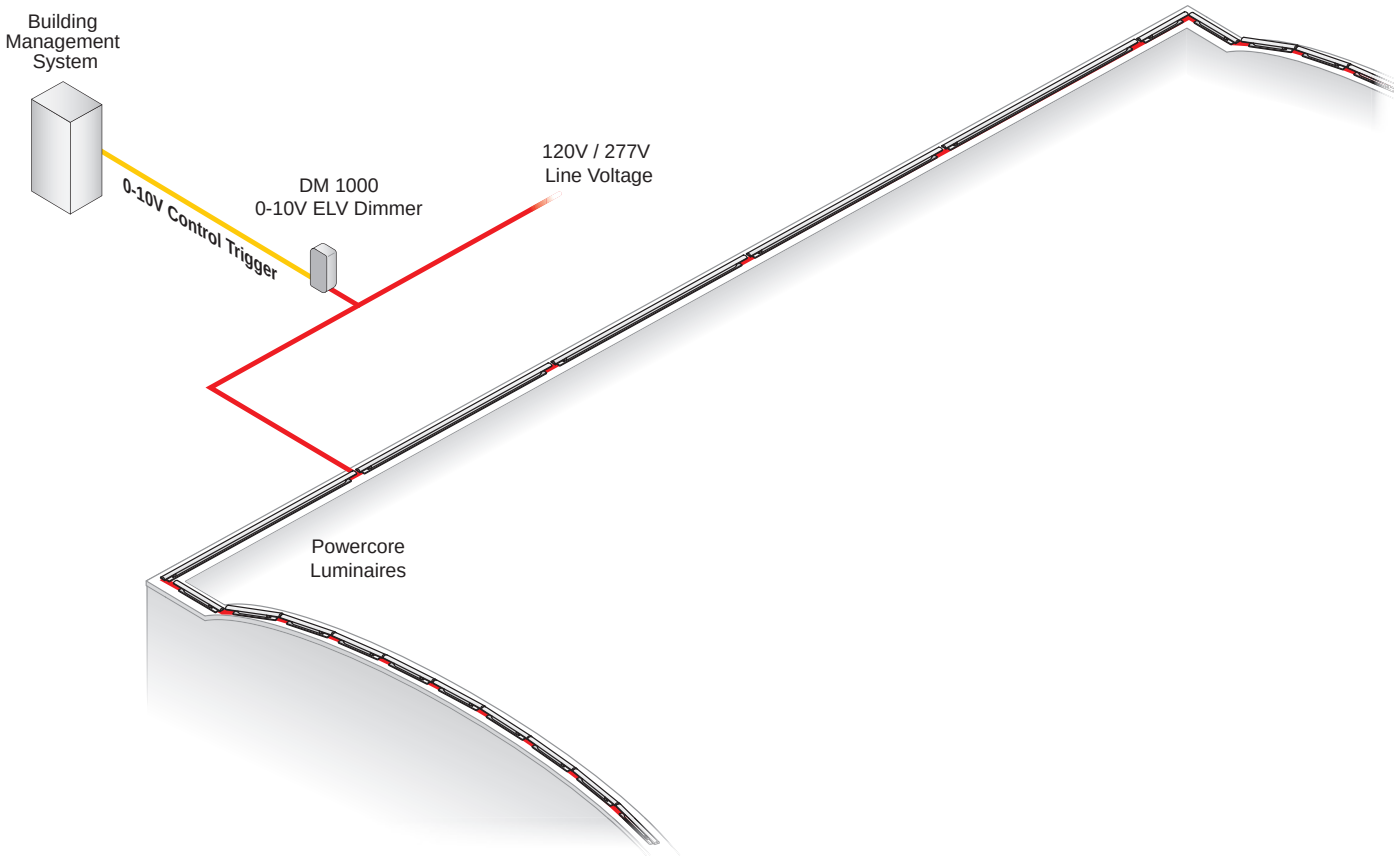
The Scenario: Here a single iPlayer 3 DMX controller controls Color Kinetics Blast IntelliHue Powercore luminaires that display eight color-changing light shows. Each IntelliHue luminaire produces high-quality white light, subtle pastels, and fully saturated colors—while all luminaires work together to display dazzling light shows.

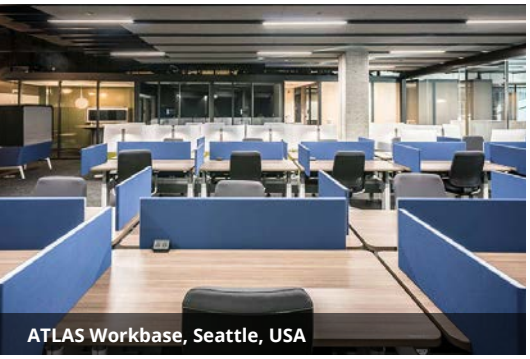
iPlayer 3 (located in a secure location) sends light shows and triggering functions to the luminaires. A lighting designer can connect to the iPlayer 3 with their laptop to download new light shows.

Eight light shows run continuously according to the schedule managed by the controller. However, users can override the sequence by manually selecting light shows with wall-mounted Controller Keypads. Users can also manually adjust the brightness of the luminaires or turn them on and off.

Photo credits: Barry Island - LITE Architectural, Tyne Bridge and Rochdale Cenotaph - LITE Ltd.

Goodbye Flickering: DMX network integrated with external dimming




ATLAS Workbase, Seattle, USA


Bullring Shopping Center, Birmingham, UK


Cranbrook Art Museum, Michigan, USA

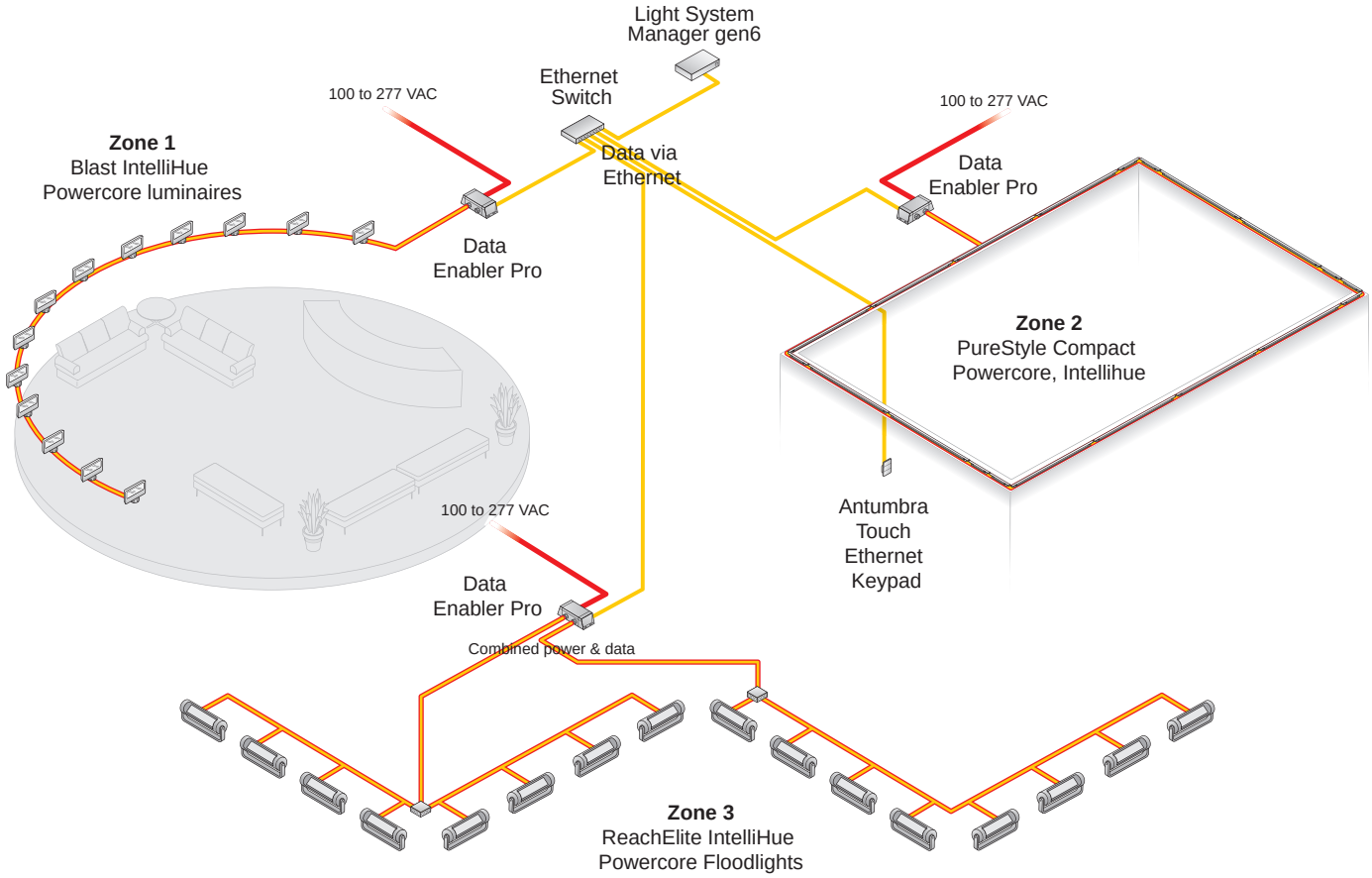
The Details: A DM-1000 0-10 V ELV dimmer provides 0-10V dimming for Color Kinetics eW Cove Powercore luminaires.

The Scenario: In this common scenario, users achieve system-level energy savings by integrating Color Kinetics eW Cove Powercore white-light luminaires with virtually any industry-standard 0-10 V dimming control.

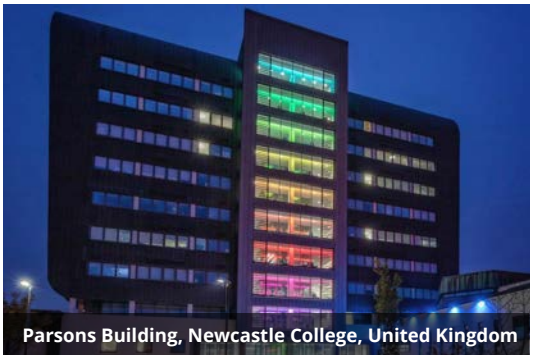
Via the dimming control, a building management system (BMS) can send triggers to the easily configurable DM-1000, providing flicker-free dimming of these line-voltage luminaires.

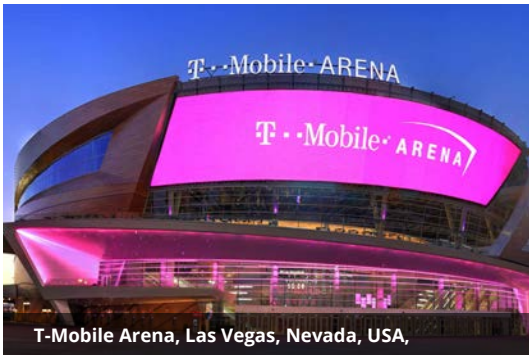
Photo credits: ATLAS Workbase - ATLAS Workbase, Bullring Shopping Centre - Bullring Shopping Centre, Cranbrook Art Museum - James Haefner.

In the Zone: Multiple zone control system in one location




Phoenix Children's Hospital, Phoenix, Arizona, USA


Parsons Building, Newcastle College, United Kingdom



T-Mobile Arena, Las Vegas, Nevada, USA,

The Details: Light System Manager gen6 (LSM gen6), via Ethernet connects to 3 separate networks consisting of Data Enabler Pro to various luminaires, which are triggered by Antumbra Touch Ethernet Keypads.

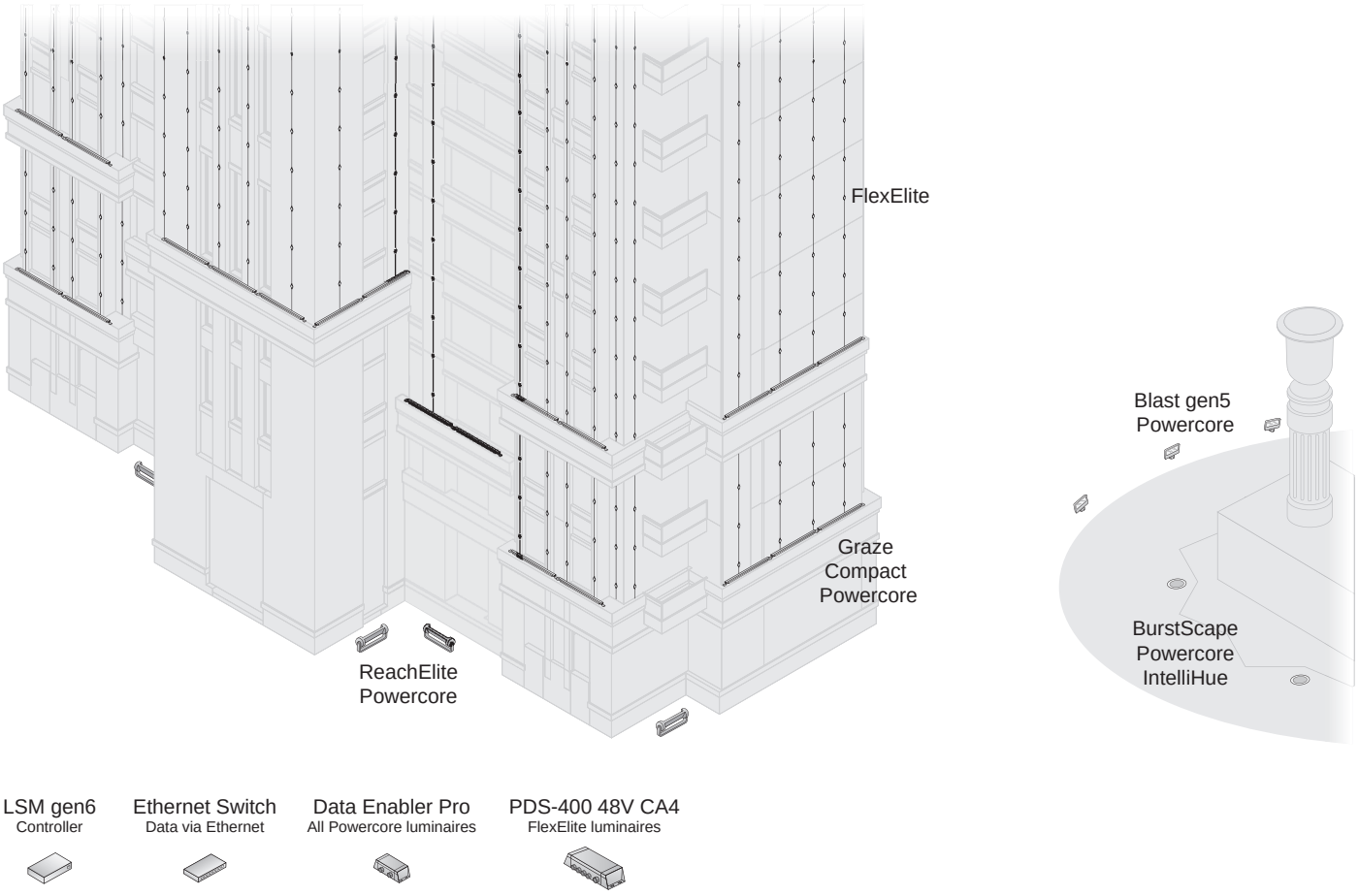
The Scenario: Here a single LSM gen6 controls a multi-zone Ethernet-based lighting system consisting of two interior zones and one exterior zone.

- **Zone 1** contains Color Kinetics Blast IntelliHue luminaires displaying dynamic color-changing effects in the lobby.
- **Zone 2** contains a run of Color Kinetics PureStyle Compact Powercore, Intellihue luminaires in a large conference room cove, triggered by Antumbra Ethernet Touch Keypads.
- **Zone 3** controls the exterior lighting, where Color Kinetics ReachElite Powercore luminaires uplight the façade of the office building with washes of intense, saturated color. This color wash effect, triggered by a timeline managed by the LSM gen6, runs daily from sunset to sunrise.

In addition to longer run lengths, Ethernet allows robust communication with each luminaire and device in the installation—and enables streamlined integration with a wide range of triggering devices.

Phoenix Children's Hospital - Blake Marvin / HKS Inc., Parsons Building at Newcastle College - Park Electrical, T-Mobile Arena, Las Vegas - Philips Lighting/Ryan Linton.

Unified Control: Multiple installations controlled with one system




Denver Tech Center, Denver, Colorado, USA


Howrah Bridge, Kolkata, West Bengal, India


Dudley Town Centre, Dudley, UK

The Details: Light System Manager gen6 (LSM gen6) connects via Ethernet to Color Kinetics luminaires in adjacent locations with numerous zones—and thousands of line-voltage and low-voltage luminaires—remotely with Interact Landmark.

The Scenario: Here a building façade and an adjacent sculpture both feature multiple zones that display unique light shows running dusk to dawn. On the hour, hundreds of color-changing line-voltage Color Kinetics luminaires—including Blast gen5 Powercore spotlights, ReachElite floodlights, linear Graze Compact Powercore, In-grade BurstScape, and thousands of 24V FlexElite luminaires—create an attention-getting, carefully coordinated light show.

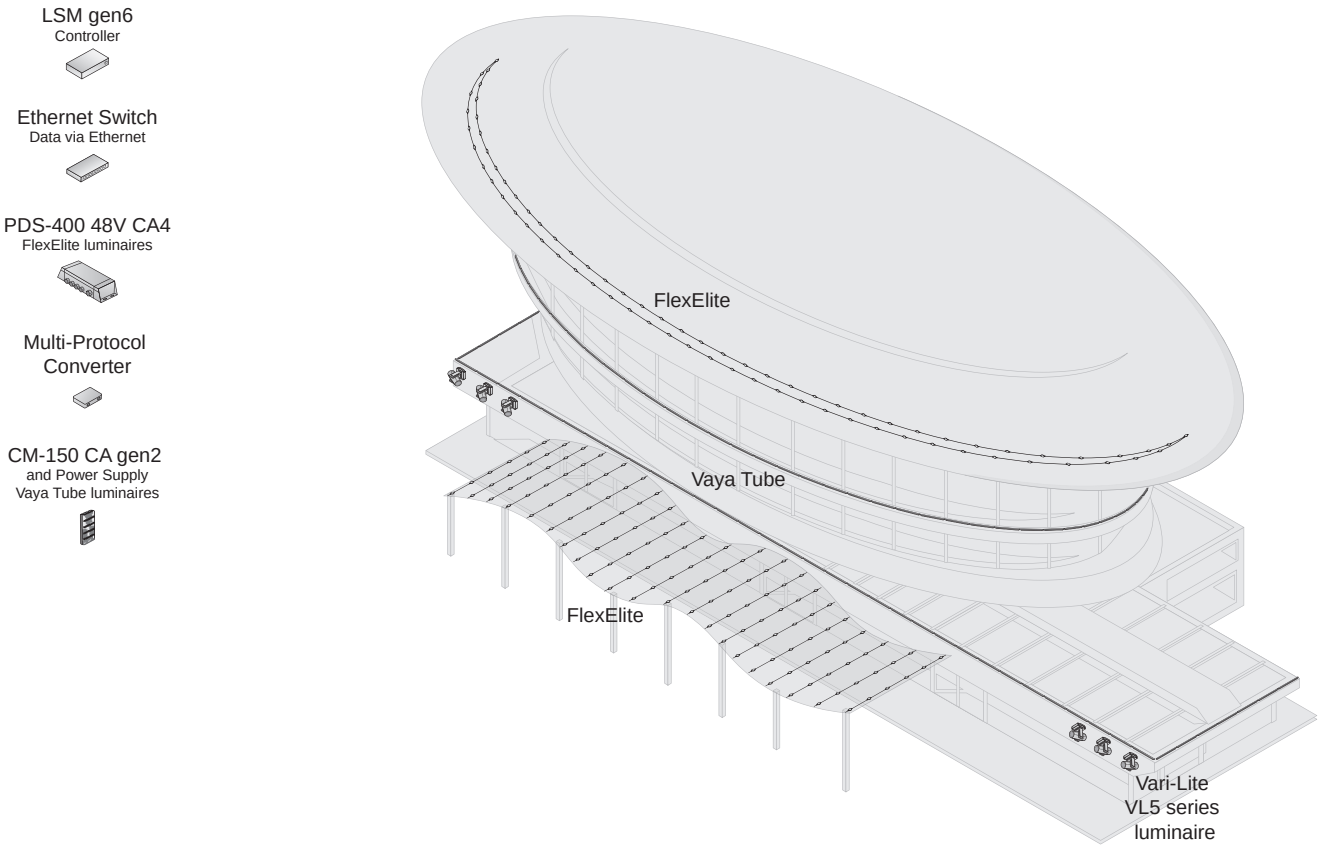
Pre-scheduled hourly displays are perfect for events or holidays, such as lighting the installations in pink for Breast Cancer Awareness, or in blue, white, and red for Bastille Day.

The integrated authoring and mapping tools in LSM gen6 dramatically simplify light shows authoring and scheduling. Interact Landmark allows you to remotely monitor, manage, and maintain an installation site from anywhere in the world, using a secure web connection.

In addition to longer run lengths, Ethernet allows robust communication with each luminaire and device in the installation—and enables streamlined integration with a wide range of triggering devices.

Photo credits: Denver Tech Center - Visual Interest, Howrah Bridge - Kolkata Port Trust, Dudley Town Centre - LITE Ltd.

One System, Diverse Luminaires: Unified control of Color Kinetics, Vaya, and 3rd-party luminaires



Novotel Danang Premier Han River, Vietnam


UCLA Health Training Center, California, USA


Spire lighting, 101 Collins Street, Melbourne, Australia

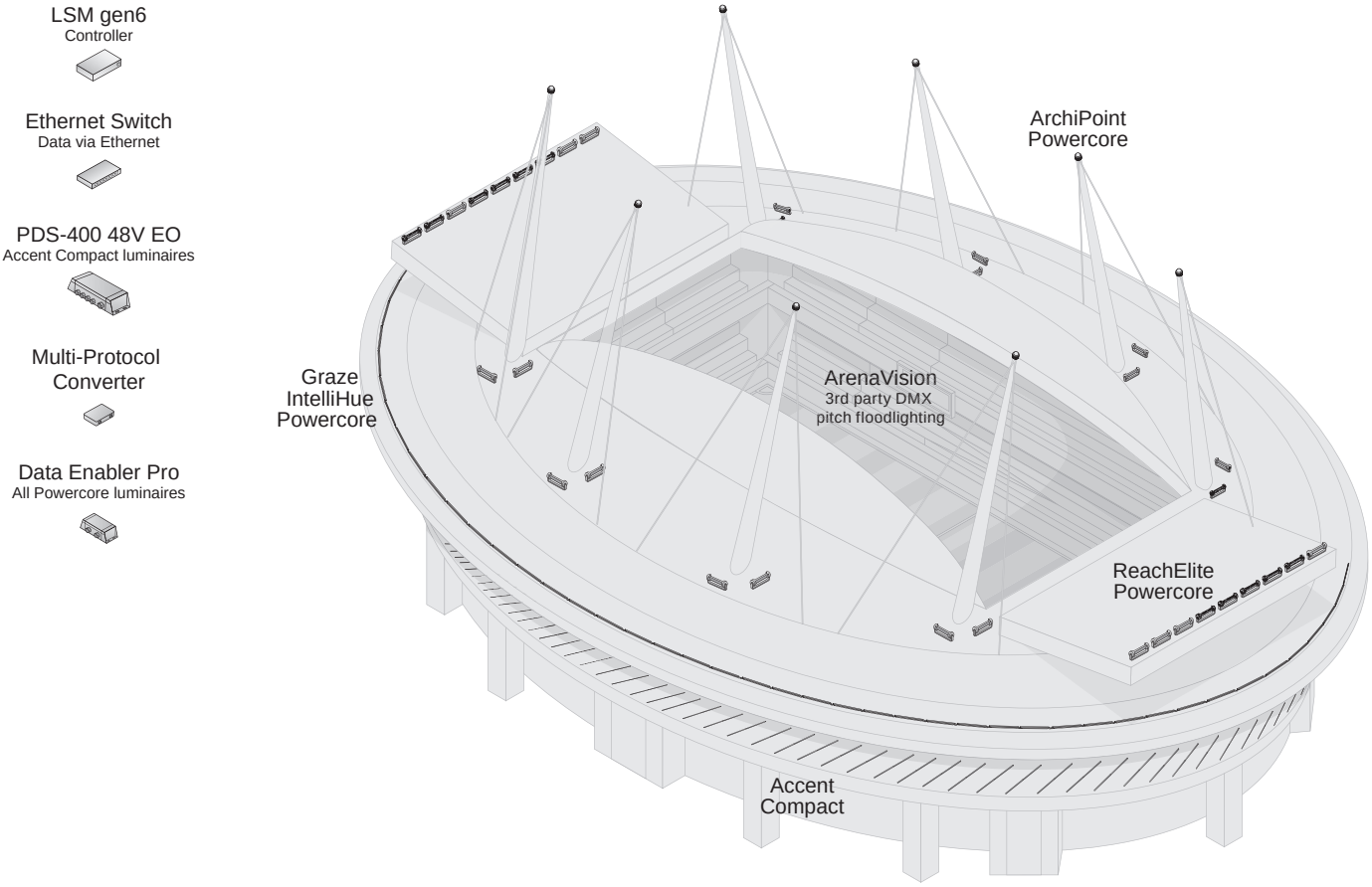
The Details: Light System Manager gen6 (LSM gen6) connects via Ethernet to Color Kinetics low-voltage FlexElite luminaires powered by PDS-400 48V CA4, and Vaya Tube luminaires through CM-150 CA gen2—and 3rd-party RDM luminaires via Multi-Protocol Converter.

The Scenario: Here a multi-story building delights visitors with a large, immersive one-of-a-kind entrance lit with LED luminaires from Color Kinetics, Vaya, and 3rd-party theatrical luminaires. Through an Ethernet-based lighting system, LSM gen6 provides colorful pre-programmed light shows to Color Kinetics FlexElite luminaires, Vaya Tube luminaires via a CM-150 CA gen2, and Vari-Lite VL5 series luminaires integrated with Multi-Protocol Converter (1 DMX universe), or Luminex Luminode.

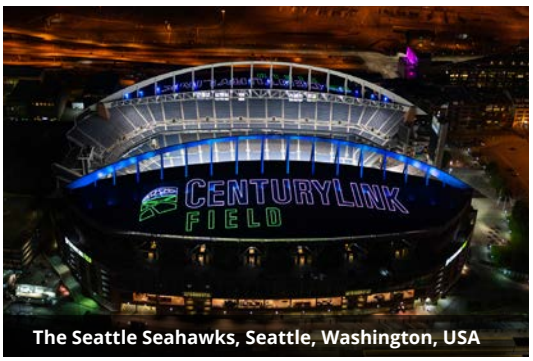
The direct view and theatrical luminaires work seamlessly together, transforming the entryway into dramatic light art, including a nightly sunset display which morphs into hourly dynamic shows. Pre-programmed light shows are interspersed to mark seasons, festivals and events. But special occasion light shows are easily uploaded to the LSM gen6, providing timely updates without ever having to go on-site.

Novotel Danang Premier Han River - Signify, UCLA Health Training Center - Forman & Associates, Spire lighting, 101 Collins Street - Bluebottle, Illustration - macrovector

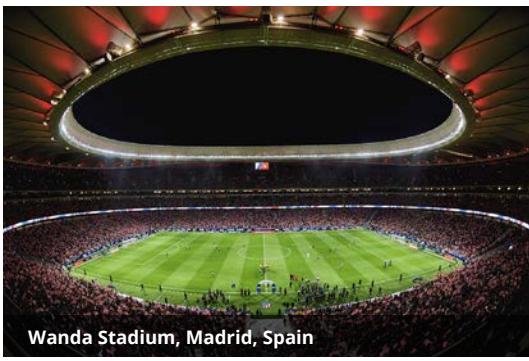
Seamless Integration: Combining Color Kinetics with DMX lighting




Perth Optus Stadium, Perth, Australia



The Seattle Seahawks, Seattle, Washington, USA


Wanda Stadium, Madrid, Spain

The Details: Light System Manager gen6 (LSM gen6) via Ethernet control to CK Accent Compact via PDS-400 48V EO and a variety of Powercore luminaires, integrates with 3rd party DMX pitch floodlighting such as ArenaVision via Multi-Protocol Converter and into a building management system (BMS).

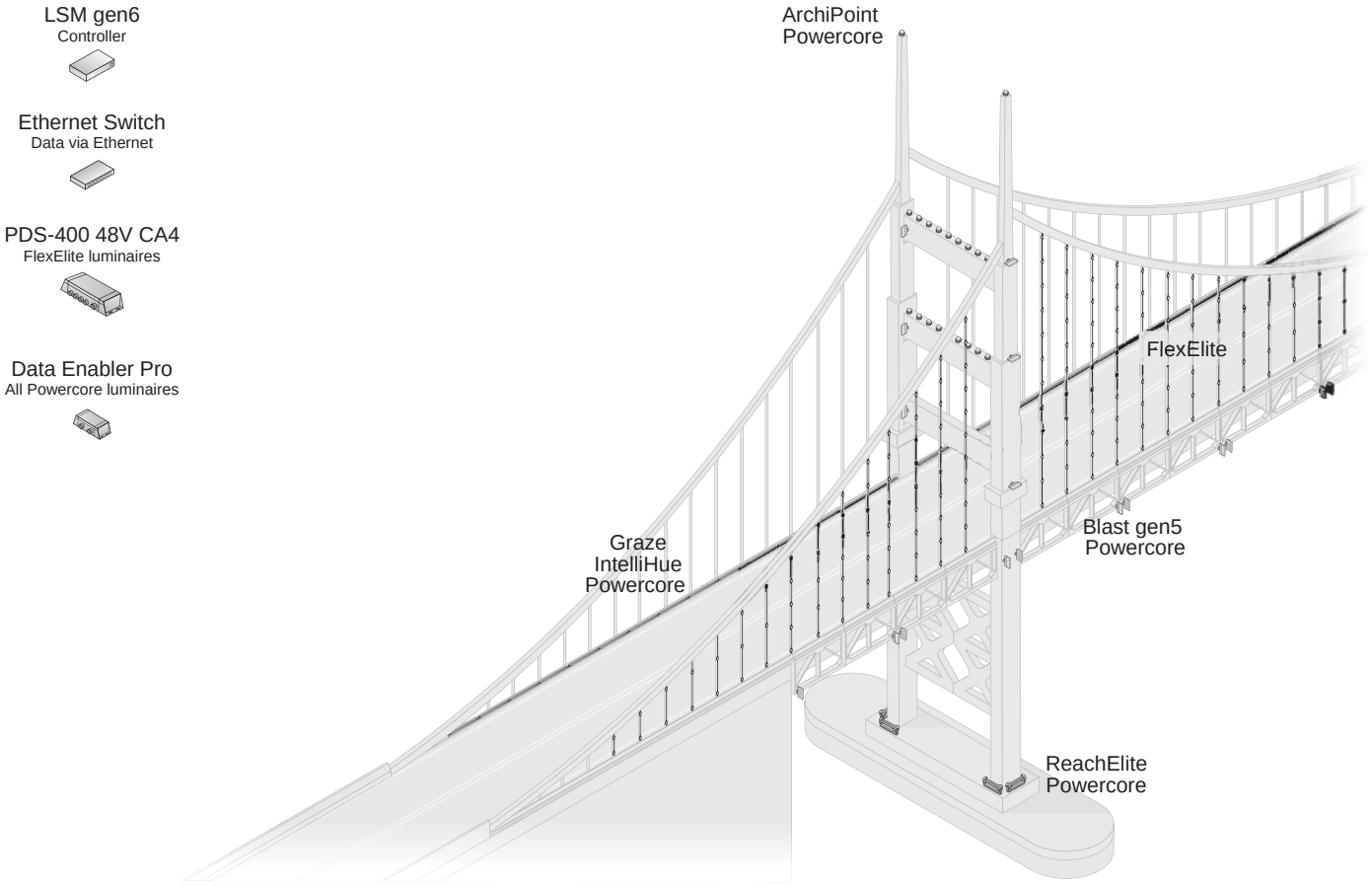
The Scenario: A Color Kinetics lighting system—featuring linear direct-view Accent Compact, Graze IntelliHue Powercore grazing luminaires, ArchiPoint, and ReachElite Powercore floodlights—brings visual interest and drama to a stadium's roof and façade. These fully controllable LED luminaires create a stunning visual display, lighting the entire stadium in team colors, adding to the fan experience.

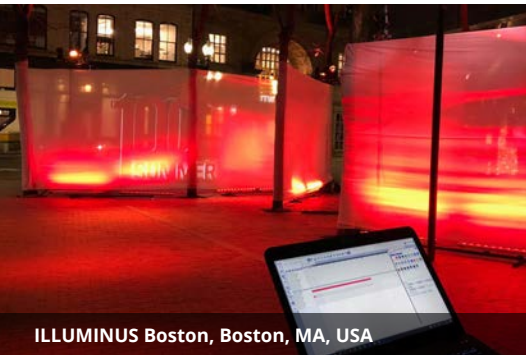
This multi-zone Ethernet-based lighting system is controlled by a single LSM gen6, which sends light shows to thousands of luminaires. The LSM gen6 also integrates with DMX devices, such as ArenaVision pitch floodlights connected with a Multi Protocol Converter or Luminex Luminode.

The LSM gen6 provides HTTP REST APIs that can be used to integrate with the stadiums building management system (BMS)—providing system level control, ensuring safety, and meeting strict, complex energy codes.

Photo credits: Perth Optus Stadium, and The Seattle Seahawks at CenturyLink Field - Signify, Wanda Stadium - Signify/Atletico Madrid, Illustration - macrovector

Make Things Happen: An interactive, IoT-enabled system




ILLUMINUS Boston, Boston, MA, USA


Mosaic Public Art Installation, Ft. Lauderdale, FL


Daniel Hoan Memorial Bridge, Wisconsin, USA

The Details: Light System Manager gen6 (LSM gen6) connects via Ethernet to Color Kinetics Blast spotlights and linear direct view Accent MX Powercore luminaires on a large highly-visible structure (bridge, stadium, etc). Interact Landmark provides simple management of professionally designed light shows.

The Scenario: A 1.2 kilometer (3/4 mile) long bridge lights up the city skyline with Color Kinetics Blast, FlexElite, and Graze Powercore luminaires. Seen by thousands every day the dark and foreboding structure is now a symbol of civic pride and community engagement with colorful light shows that play nightly, encouraging public engagement, boosting tourism, and enhancing the local economy.

The dynamic connected lighting solution is controlled by LSM gen6, which delivers a patchwork of colors slowly morphing over time, synchronized to music.

Easily update content with Interact Landmark which allows you to remotely monitor, manage, and maintain an installation site from anywhere in the world, using a secure web connection.

What had been an impersonal, utilitarian structure is now an unmistakable landmark viewed by thousands as it illuminates the night sky.

ILLUMINUS Boston - James Anderson, Mosaic Public Art Installation - Electroland LLC, Daniel Hoan Memorial Bridge - MKE Drones and Kristine Hinrichs, Illustration - macrovector

Experience and Expertise in All Areas of Control

At Color Kinetics, we're committed to delivering sophisticated LED lighting controls systems that meet the evolving needs of our customers.

We deliver integrated systems.
We complement our exceptional portfolio of LED luminaires with a full family of controllers, power/data supplies, and all of the other elements that our customers need.

Why this matters: You get a complete (and fully integrated) system—not a set of components that have to be pieced together into a system. Our approach also enables us to provide you with unique benefits like 2 SDCM on whites, CCTs on IntelliHue fixtures, and the ability to select a 3000K >80 CRI white point with high lumens remotely through IoT enabled systems.

We're experts in controlling LED lighting systems.
Our expertise and innovation in control is unequaled in the lighting industry. For example, we were one of the first companies to enable RGB-color-changing light—and arguably the first to tap of potential of IoT when we helped light the Empire State Building in 2011.

Why this matters: As experts and innovators, we can offer you real-world advice, clear answers, and all the support you need to make your vision a reality.

Integration is in our DNA.
We integrate the key components of a complete LED lighting system seamlessly—so you don't have to. In addition to our global community of value-added partners, we provide broad access to our lighting system experts, including system integrators, who have unequaled experience to help you get the best possible results.

Why this matters: Meticulous integration means no guesswork—just high quality and year-after-year reliability.

We're committed to industry standards and interoperability.
In short, we play well with others—an important quality that gives you the freedom to choose the solution that works best for your needs.

Why this matters: With Color Kinetics, You can use 3rd party sensors and controllers to create an interactive lighting experience.

We're committed to technological innovation at all levels.
From color consistency, quality of light, and uniformity, our technologies take on the challenges of LED lighting solutions and solve them.

Why this matters: When you choose Color Kinetics, you benefit from our significant investment in advanced, enabling technologies that raise color and light quality—as well as system-level reliability—to new heights.

Our experts have broad and deep experience in lighting systems.
Our lighting system experts and global network of partners know how to get excellent results with diverse implementations.

Why this matters: Access to our responsive experts and value-added partners can help answer questions and achieve the specific effect or result that you want to achieve with your project.

We have a history of innovation—but our focus is on the future.
We pioneered early LED lighting solutions. But we continue to focus on developing next-generation luminaires and all the enabling technologies and components that ensure the best possible results. We integrate real-world insights from our customers into our solutions, ensuring that they meet the evolving needs of the marketplace.

Why this matters: We're a dedicated, long-term partner that you can turn to for innovation, expertise, and support—now and far in the future.

We're dedicated to sustainability and energy-efficient solutions.
Our investment in research and development lets us develop complete lighting solutions that not only look great, but also use less energy and last longer.

Why this matters: Energy efficiency and sustainability aren't an option anymore—they're critical to our future.

Ready to find out more?

There's more to say about controlling light—and the broad portfolio of Color Kinetics solutions that help make it happen.

> Explore our controllers and luminaires

> Get inspired by seeing the potential that control offers

> Tell us about your next project

What matters in professional lighting?

Our series of guides explores key topics in professional lighting—color science, light, quality, optics, and more.

It's part of our commitment to passing on our deep technical knowledge and decades of expertise to help you achieve your vision.

Color Science

Color science serves as an underlying technical foundation for the entire lighting industry. It establishes a consistent way of thinking about light—how it is created, controlled, and delivered in real-world implementations. A core understanding of the science of color is critical to lighting professionals, who must be able to specify the right light—color, technology, luminaire, and more—clearly and accurately.

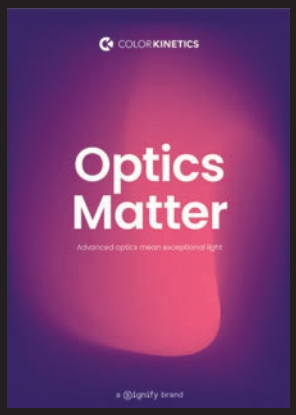
Light Matters

Traditional methods of evaluating light focused on lumen output, which was defined by the output capabilities of a light source, such as an incandescent lamp. The advent of LED lighting changed all that, since lumens were no longer the best measurement of a luminaire's capabilities. We explore some of the new ways lighting can be evaluated in the age of LEDs.

Quality Matters

What does quality mean to you? The answer depends on what you do within the lighting industry. Quality has different meanings for building and site owners/managers, lighting designers, and installers.

We delve into the needs of each of these groups as we take a holistic approach to quality, one that begins and ends with the customer.



Optics Matter

It's safe to say that few lighting designers, building owners/managers, or other lighting professionals have ever seen the optical system housed inside an LED luminaire. But the optical system, or optics, play a vital, but often hidden role in performance, efficiency, and more. The right optics within a luminaire make a big difference in the final results—for both interior and exterior applications.

Control Matters

Controlling light used to be simple. It was on or off.

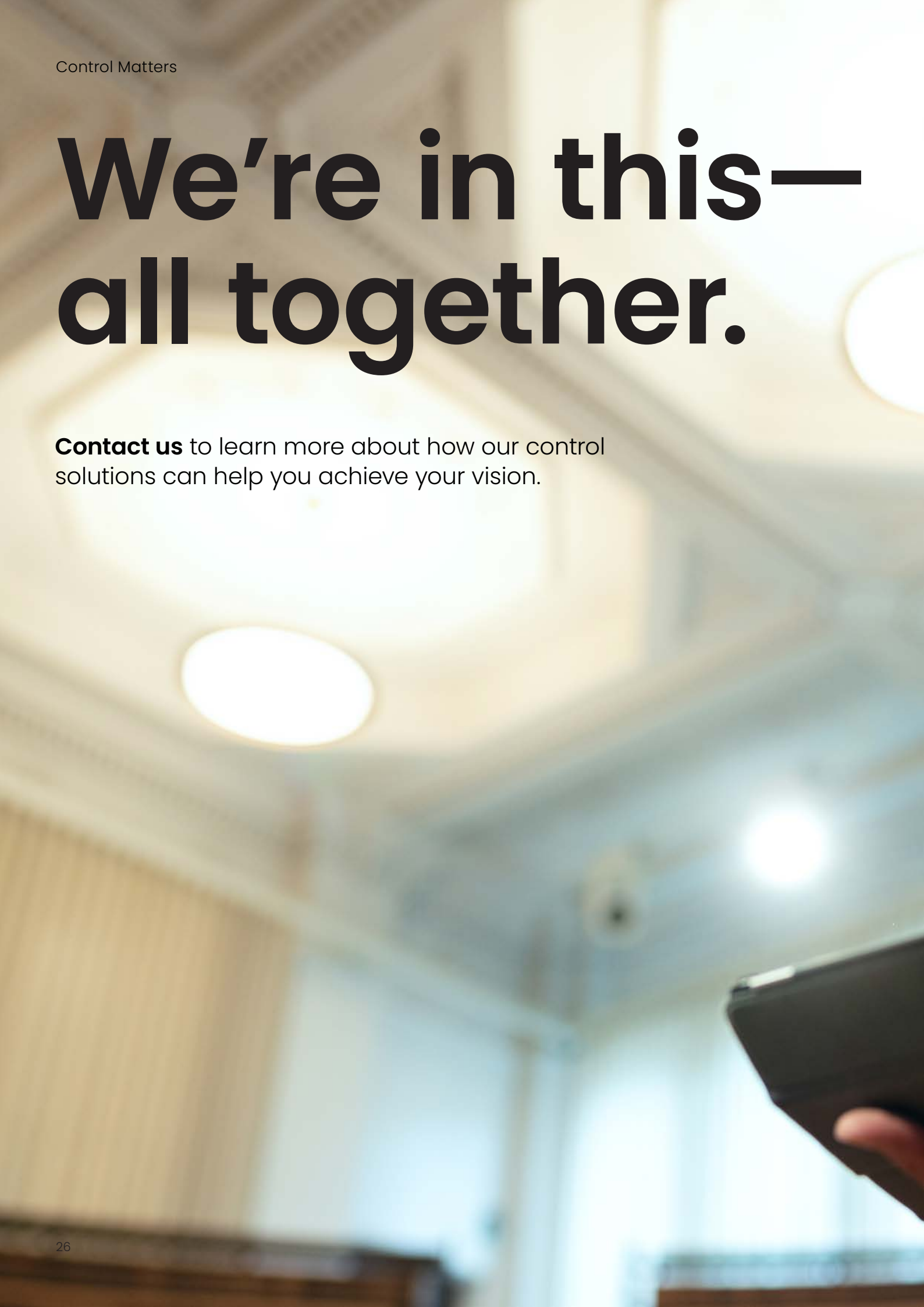
Then came dimming, which raised or lowered the intensity of light. The invention of LED luminaires added another dimension, color—and new capabilities, such as the digitalization of lighting, including the ability to zone dimming and control the spectral content of color-changing light.

Sustainability Matters

By raising efficiency to new heights, our solutions help our customers do more with less energy. And since we design our solutions for long, useful lives, they create less waste. So, our customers get great results, year after year. All with less impact on the planet.

We're in this—all together.

Contact us to learn more about how our control solutions can help you achieve your vision.



Photography: ThisisEngineering

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