

**PSFK** presents

sponsored by Philips Lighting

The Future Of

Light

# Introduction >

Light's importance in daily life cannot be overstated. As a tool it has the ability to do everything from creating the perfect ambience in an interior space to telling engaging stories that draw audiences in. It can promote feelings of well-being, build vibrant communities or set the stage for a grand reveal, yet it is often only noticed in its absence. However, as advanced technologies improve lighting efficiencies, cost, accessibility and control, this perception is changing.

With these new tools, designers, artists and manufacturers are exploring the powerful ways lighting can be deployed to alter the way people view their surroundings, create immersive experiences and respond on-demand to influence alertness and mood. With a focus on how light can support livelihood, improve safety and bring people together, these same creators are designing new solutions that are customizable, sustainable and scalable. Within the context of urban environments, these innovative uses of light are influencing everything from the ebb and flow of city life to the visual exchange of information and identity.

In the following pages, PSFK has summarized 12 trends that offer a framework for understanding light at the intersection of technology, community and sustainability. To help understand their larger significance these trends have been grouped into four themes: Luminous Relationships, Illuminated Expression, Enlightened Communication, and Light For Life, which point to the novel ways lighting can be used to create experiences, tell stories, convey information and promote wellness.

PSFK has described each of these trends and identified best-in-class examples that illustrate how these innovations are manifesting within the marketplace. In addition, each trend is further supported by expert quotes and relevant data. PSFK hopes that the trends in this report will help readers as they look to develop compelling lighting experiences for their marketing, retail, hospitality, healthcare and entertainment clients.

Version 1.1



presents the Future Of Light

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The Future Of Light report was funded with the kind sponsorship of Philips Lighting

# Process >

The Future Of Light is an independent report created by the analysts at PSFK Labs—a division of the company that produces the daily ideas publication PSFK.com. PSFK Labs is a think-tank that offers robust inspiration at the intersection of creativity and innovation. The researchers who worked on this report have also been part of PSFK Labs teams working with the leading brands including Apple, BMW, InterContinental Hotels and Target.

For the Future Of Light, PSFK Labs employed a systematic methodology in the social sciences that takes a bottom-up, data-driven approach to generating assertions about larger ideas, trends and movements based on research collected around a directional brief. To support the research, we spoke to a number of global experts to help us explore and understand the trends and themes.

# Research Brief >

## Mood & Ambiance

- Using color, intensity, movement and design to create atmospheres and environments that convey specific feelings to an audience.

## Branding & Storytelling

- Developing entertaining experiences that help immerse audiences inside a compelling narrative.

## Utility & Information

- Overlaying information onto the physical environment to improve the overall experience and navigation of a space.

# Key Takeaways >

## State of Impermanence

Through the use of color, brightness, shadow and line, light has the ability to alter spaces in exciting ways, all without leaving a permanent mark. This level of flexibility offers solutions for designers as they temporarily re-imagine interior environments and entire city landscapes, mapping everything from directional cues to other hyper-relevant information where and when it is needed.

## Rebuild + Resurrect

Light has the power to reinvigorate parts of a neighborhood or city by calling attention to forgotten, vacant or underutilized buildings and environments. By bringing these areas out of the darkness, people are drawn back in, promoting feelings of safety and community and creating new opportunities to imbue new meaning into cityscapes.

## Intuitive Creativity

With greater connectivity, programmability and accessibility, modern lighting solutions are now integral aspects of any creative's toolkit. Either on its own or when paired with different forms of media, music or movement, light can be used to build compelling stories and immersive experiences for audiences of any size.

## Positive Impact

Whether impacting health and wellness or creating economic opportunity, light can enable positive outcomes for individuals and entire communities. At its core, light makes it possible to achieve a degree of balance and prosperity as innovators leverage advances in technology for embedding the healing qualities of light into the backdrop of our everyday experience.

## Halo Effect

As a communication medium light signals openness and a willingness to connect, helping bridge the gap between two parties and establish a jumping off point for communal experiences. Whether in a face-to-face context or over great distances, light brings people together, inviting them to share meaningful conversation, information and stories.



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# Future Of Light



**Illuminated  
Expression**



**Enlightened  
Communication**



**Luminous  
Relationships**



**Light  
For Life**

# Executive Summary



## LUMINOUS RELATIONSHIPS

1. Responsive Environments
2. Welcoming Light
3. Remotely Connected



## ILLUMINATED EXPRESSION

4. City Branding
5. Sound Syncing
6. Light Painting



## ENLIGHTENED COMMUNICATION

7. Bound By Light
8. Speed of Light
9. Guiding Light



## LIGHT FOR LIFE

10. Light Therapy
11. Mood Lighting
12. Sustaining Light



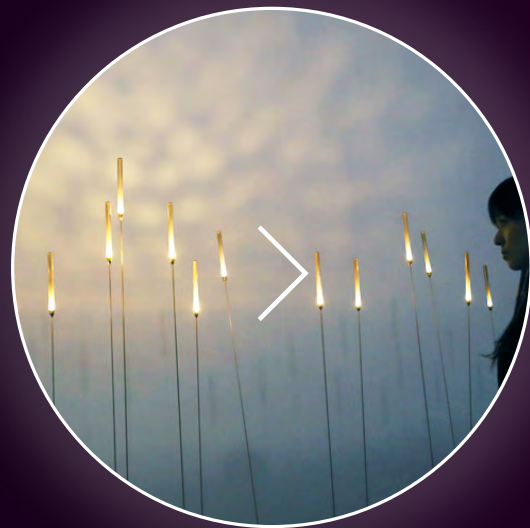
# Luminous Relationships

Lighting designs that trigger positive emotional responses, changing a person's relationship with their friends and family, their surroundings and even the products that occupy their lives.



"Light's a joy. People respond to light. It makes places lively and engaging."

**Barry Richards**  
Principal and Studio Leader, Rockwell Group



Responsive  
Environments



Welcoming  
Light



Remotely  
Connected

# Responsive Environments

Designers are leveraging advanced sensors to develop connected products and environments that respond to a person's proximity or touch with novel lighting experiences. These technology-enabled solutions help create an intuitive, and highly personalized link between people and world around them.



**Desk Lamp Responds To Mood Of  
Its Owner And Environment**



Clyde

## Responsive Enviornments > Luminous Relationships



Clyde is an expressive LED desk lamp that can be programmed with personality modules to react to the user and its environment in unique ways. Using Arduino, an open-source electronics software, the lamp can be 'taught' to respond with different colors and intensities of light based on when certain conditions occur. For example, when Clyde is in 'afraid of the dark' mode, it can light up

depending on how dark a room is. In 'touchy feely' mode, Clyde cycles through different light colors when users touch its flexible legs. The project was created by Canadian design company Fabule and successfully backed through crowdfunding site Kickstarter.

 [kck.st/14MPLSu](https://kck.st/14MPLSu)

A blurred figure of a person walking past a brick wall. A horizontal LED light strip is mounted on the wall, emitting a warm, yellowish light. The person is wearing a dark jacket and a backpack. The background is a brick wall with a horizontal LED light strip. The person is walking from left to right. The light strip is mounted on the wall, and the person is walking past it. The image is blurred to convey a sense of motion.

# LED Tracks Commuters Moving Through A Tunnel



# Walk The Light

Responsive Environments > Luminous Relationships



Walk The Light is an interactive lighting design project that consists of a long tunnel of light with a band of white light that actively follows visitors, forming a bright line tracking their journey upon entrance at London's Victoria & Albert Museum. Developed by interactive design company Cinimod Studio, the installation activates as a person passes through the tunnel, while the white light jumps to the next arrival. On either side of the white band, washes of color are pushed and pulled along the tunnel creating an ambient lighting effect that represents the overall ebb and flow of the day's visitors. Throughout the day these colors shift in hue and saturation as they respond to the prevailing flow of the crowds. Using a combination of technologies, including thermal camera tracking and Philips LED lighting mounted on a moving monorail, Walk The Light demonstrates a sophisticated and playful use of light to transform the experience of arriving at the museum.



 [bit.ly/UhtXpl](https://bit.ly/UhtXpl)

The image shows an art installation titled 'Trees'. It consists of numerous thin, vertical poles of varying heights, each topped with a glowing, cylindrical light fixture. The poles are arranged in a way that they appear to lean and sway towards the right side of the frame. On the right side, the silhouette of a person is visible, looking towards the installation. The background is a dark, textured wall with a warm, orange glow from the lights. The text 'Installation 'Trees' Lean And Sway Towards Visitors As They Approach' is overlaid in white at the bottom.

**Installation 'Trees' Lean And Sway  
Towards Visitors As They Approach**



# INAHO

INAHO is an array of freestanding LED bulbs shaped like golden ears of rice, which glows and gently leans towards people as they approach. INAHO, which means “ear of rice” in Japanese, is composed of LEDs encased in golden tubes fixed to the end of three-millimeter-wide carbon fibre columns that imitate rice stems. Tiny perforations in the tubes distribute the light into a smattering of blurry dots reminiscent of a rice paddy field, while movement sensors within the base of each stem direct the golden tips in the direction of passing people. Installation creators Hideki Yoshimoto and Yoshinaka Ono of Tangent: studio wanted to create the impression of golden ears of rice slowly swaying in the wind.



[bit.ly/1d27Div](https://bit.ly/1d27Div)

Responsive Enviornments > Luminous Relationships



Responsive Environments > Luminous Relationships



Centralized Lighting Center Enables  
Intelligent Control On A Citywide Scale



## CityTouch Technology

## Responsive Enviornments > Luminous Relationships

The city of Rotterdam has installed a centralized lighting management system that enables the effective and efficient deployment of light throughout its city. Incorporating CityTouch technology from Philips, Rotterdam is able to track the consumption and output of their city-wide lighting system and can fine-tune lighting levels to meet local needs, providing light precisely when, where and in the right amount needed. Each bright spot can be controlled by radio frequency and can react with the push of a button if there is sudden calamity where more light is needed. When combined with LED lighting, City Touch can achieve up to 70% savings in energy, and is being effectively deployed in a number of other European cities.

 [bit.ly/13KvcTk](https://bit.ly/13KvcTk)



## About >

Immersive installations are reacting to a person's proximity and touch to create novel ways to experience light. These solutions leverage rapid advances in sensor technology to help create an intuitive, and highly personalized link between people and their surroundings.

## Opportunities >

Lighting can be programmed to respond to conditions like user stress, changing color to induce calming effects or simply to indicate that it's time to take a break.

Lighting reacts to people using stairways, alleys, and other cautionary zones like construction sites during the nighttime hours.

Museum lighting can add dramatic effects to artwork and exhibitions by reacting to visitors as they approach, making the displays come to life.

# Expert View >

“I think a lot of cities will want to start with sensor based solutions, because they save a lot of energy. There are the opportunities to save and just to be smarter about your illumination of your city, and to preserve darkness, which I think also is an important aspect of dealing in a respectful way with the environment. It makes the city a better place.”

**Rogier van der Heide**  
Vice President and Chief Design  
Officer. Philips Lighting

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“It’s better to think about light installations that genuinely do something personalized, something that is unique to that person, that nobody else gets, even when they make the same movements/touches.”

**Usman Haque**  
Director. Haque Design + Research

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“Using light to respond over time to people’s presence, to their activities, to their preferences and desires is something that was not really possible previously, certainly not on any large scale.”

**Susanne Seitinger**  
City Innovations Manager. Philips Color Kinetics

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“It’s interesting how light changes depending on where you are and you can then have almost a conversation, specifically trying to engage the public or send a message to consumers.”

**Ben Wilson**  
Co-Founder. Wilson Brothers Design Co.

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“Systems that can be more individually responsive could blend both the natural and electric light and offer the most interesting aspect of sustainable lighting.”

**Teal Brogden**  
Senior Principal  
Horton Lees Brogden Lighting Design

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“I think in social events it’s very interesting to use interactive light. Recognition of presence or of specific presence of people, breaks social barriers, rather than confirming them.”

**Winka Dubbledam**  
Principal. Archi-Tectonics

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“The important thing to do with urban spaces is to energize them, which sometimes requires other program elements. Encouraging people to pass through a space is one thing, but encouraging people to stay and interact with it sometimes is a different lighting assignment.”

**Ed Bakos**  
Managing Director. Champalimaud

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“If we can think about light as a natural element and then use that to connect people, that would make the emotional response, that makes it authentic and real and helpful for people.”

**Barry Richards**  
Principal and Studio Leader  
Rockwell Group

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“If you make something that’s interactive or reactive, you encourage people to walk up and spend time there.”

**Brett Renfer**  
Senior Technologist. Rockwell Group

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“Intelligent lighting provides the right amount of light precisely where it is needed and when it is needed. This enables municipal authorities to save energy and maintenance costs and to reduce obtrusive light, while making urban spaces safer and more attractive, thus strengthening city branding.”

**Eric Rondolat**  
CEO. Philips Lighting

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“There are hundreds of interesting natural phenomena that would be quite fun to reproduce with light. Because in the end it’s about creating richness and texture in our environment where there is a lot of artificiality that doesn’t have to be as artificial as it is.”

**Jason Bruges**  
Architect. Jason Bruges Studio.

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## About >

Derelict and forgotten urban spaces are being reinvigorated through the deployment of creative lighting displays that promote safety and community. By harnessing the potential of light to create alluring environments, these installations challenge long-held assumptions around spaces fallen into disuse, carving out new possibilities around congregation, play, and safe passage.

## Opportunities >

Reinvigorate areas of the city that have fallen into disuse by adding lighting that encourages public congregation and passage.

Use phosphorescent paint to create illuminated pathways at night for runners and cyclists in parks, encouraging safe passage.

Weave cities together through the use of color schemes demarcating neighborhoods, parks and passageways, promoting safety and identity.

# Expert View >

“Illumination is more than traffic safety and down to earth functionality. It has really become something that is important in your life because of what it adds to the city.”

**Rogier van der Heide**  
Vice President and Chief Design  
Officer. Philips Lighting

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“If an area is lit properly, especially if it’s a pedestrian area, where there’s a high emphasis on vertical illumination lighting for people and things, then it’s automatically welcoming.”

**Richard Bracebridge**  
Lighting Designer. Light Works

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“The public are quite aware that light quantity is not the only predictor for the sense of safety, and that the quality of light is something that people are quite interested in too.”

**Teal Brogden**  
Senior Principal  
Horton Lees Brogden Lighting Design

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“Any urban lighting system needs to consider the specific needs of its community. It shouldn’t be imposed on them, but rather include them. An open platform could be rescripted and reprogrammed by locals to achieve their own goals, a sort of urban participatory operating system.”

**Usman Haque**  
Director. Haque Design + Research

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“Functional street lighting provides a base level of visual comfort for people to be able to find their way. The excitement comes from the ability to control that lighting in a more fine grained way, whether it’s just changing color temperatures or changing color or integrating light differently with architecture or with urban furniture or with any infrastructure.”

**Susanne Seiting**  
City Innovations Manager  
Philips Color Kinetics

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“Lighting attracts people to a city. It makes it safer, you can take something and amplify it. The right light and the right intensity in the right areas can really create the desired mood and effect.”

**Ben Wilson**  
CoFounder  
Wilson Brothers Design Co.

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“I think light as a safety effect is really important. I think if it’s done thoughtfully and done with a level of respect for people and artistic input in an interesting way, or playing with graffiti or something like that, I think it would be enhanced...rather than just putting a big blast of light on a bad neighborhood.”

**Winka Dubbledam**  
Principal. ArchiTectonics

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“It is amazing how sometimes derelict spaces are only missing one or two things that are important to energize them. Certainly a sense of personal safety is one those things that is linked to making successful spaces.”

**Ed Bakos**  
Managing Director. Champalimaud

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“Light’s a joy. People respond to light. I think that kind of joyful spirit does connect to a lot of people. It makes places lively and engaging.”

**Barry Richards**  
Principal and Studio Leader  
Rockwell Group

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“By ‘painting the city with light’, [cities] have brought people out of their homes to create communities that otherwise would not have existed.”

**Harry Verhaar**  
Senior Director. Energy and  
Climate Change. Philips

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# Experts >



## Ed Bakos

Managing Director. [Champalimaud](#)

Ed Bakos is the Managing Director at Champalimaud, where his extensive experience developing solutions for the luxury hospitality and the restaurant industries has positioned him as a leader in the design industry. As Managing Director, he works across project categories that leverage the firm's hospitality focus and innovative approach to create relevant and differentiated design solutions for clients. Past projects have included the first W Hotel, the Belvedere Hotel in Mykonos and the Cosmopolitan Resort and Casino in Las Vegas, which included an interactive lighting exhibit in the hotel lobby.



## Richard Bracebridge

Lighting Designer. [Light Works](#)

Richard Bracebridge is a lighting designer at Light Works, New Zealand's leading independent lighting design studio. His firm works with client/architect/designers to take lighting design from the conceptual stage to final solution. His work at Light Works brings an international perspective to lighting design, functioning in a complementary capacity to architects and interior designers.



## Teal Brogden

Senior Design Principal. [Horton Lees Brogden Lighting Design](#)

Teal Brogden is the Senior Design Principal at Horton Lees Brogden Lighting Design, an internationally recognized design firm focused on high quality architectural lighting for both interior and exterior environments. She is responsible for ensuring the needs of a project are met through the use of innovative, high quality lighting design. Her interest in architectural lighting design brought her to the consulting firm of Jules Fisher & Paul Marantz in New York, where she was responsible for the design and management of a wide variety of projects, including the Holocaust Museum in Washington, DC and the Ritz Carlton Hotel in Barcelona.

> The following tastemakers were interviewed as part of the research process.





## Winka Dubbeldam

Principal. [Archi-Tectonics](#)

Winka Dubbeldam is the principal of Archi-Tectonics and a Practice Professor and the Director of the Post-Professional Program at the University of Pennsylvania in Philadelphia. At Archi-Tectonics her work analyzes the use of digital design, hybrid materials and smart building systems to develop a new design language and space formation. Her work has expanded into retail, residential, and improving cities at scale, with special emphasis on embedding principles of sustainability into all aspects of architectural design.



## Usman Haque

Director. [Haque Design + Research](#)

Usman Haque is director of Haque Design + Research, the founder of Pachube (now known as Cosm.com), a real-time data infrastructure and community for the Internet of Things. Trained as an architect, he has created responsive environments, interactive installations using light, digital interface devices and dozens of mass-participation initiatives.



## Brett Renfer

Senior Technologist. [LAB at Rockwell Group](#)

Brett Renfer is a Senior Technologist at the LAB at Rockwell Group, where he has conceptualized, designed and produced permanent and temporary architectural scale interactive environments for clients such as Google, Intel, the Cosmopolitan of Las Vegas, the Whitney Museum of Art, New York Magazine, and Jet Blue. His current focus is on experimenting with ways people interact with digital environments, helping them see the brighter side of a more personal interaction with technology.



## Barry Richards

Principal & Studio Leader. [Rockwell Group](#)

Barry Richards is a Principal and Studio Leader at architecture and design firm Rockwell Group. The firm specializes in a wide array of project types, from hospitality, cultural and healthcare, to educational, product, and set design. Barry's projects include overseeing the creative direction of Imagination Playground, the Walt Disney Family Museum; set designs for film, television and theater, including the 2009 and 2010 Academy Awards ceremonies.



## Susanne Seitinger

City Innovations Manager. [Philips Color Kinetics](#)

Susanne Seitinger is City Innovations Manager at Philips Color Kinetics, where she is responsible for leading the research and strategy around the impact of programmable LED lighting elements to create safe, inviting and responsive urban environments. She previously taught at the Technical University of Vienna in Austria and worked on a grant on dynamic lighting in public transit networks at the Austrian Institute of Technology. As a postdoctoral student at MIT, she worked on the LightBridge for MIT's 150th Anniversary Festival of Art, Science, and Technology in the Fluid Interfaces Group at the world-renowned MIT Media Lab.



## Rogier van der Heide

Vice President & Chief Design Officer. [Philips Color Kinetics](#)

Rogier van der Heide is the Vice President and Chief Design Officer of Philips Lighting. He has extensive experience working in lighting design, working on public and commercial projects all over the world. Under his design leadership, Philips Lighting has received over 30 international design awards such as Red Dot and iF product design award. Other notable achievements include the opening of the New Rijksmuseum museum in 2013, comprising of nearly 4,000 LED luminaires that are individually, wirelessly controlled. Rogier worked on the project a total of 15 years, and its design includes a natural light design, that Rogier developed in collaboration with the team at Arup Lighting between 2006 and 2007.



## Ben Wilson

Co-Founder. [Wilson Brothers Design Co](#)

Ben Wilson is co-founder of Wilson Brothers Design Co, where he specializes in creating unique retail experiences through building interactive and immersive experiences. His work has integrated innovating lighting schemes into a variety of projects, including the Nike Stadium in London; a retail space where visitors encounter PIXARAMIC—a large scale, visuals-based, wall cladding system comprising of 6,000 manually positioned pixel cubes, each acrylic cube with 6 different coloured faces in red, green, yellow, blue, black and white.