

# Licensing Program for LED-Based Signage

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Philips Lighting Intellectual Property Organisation

June 29, 2016

# Agenda

- Introduction
- Program outline
- Contact info
- Core Technology Examples



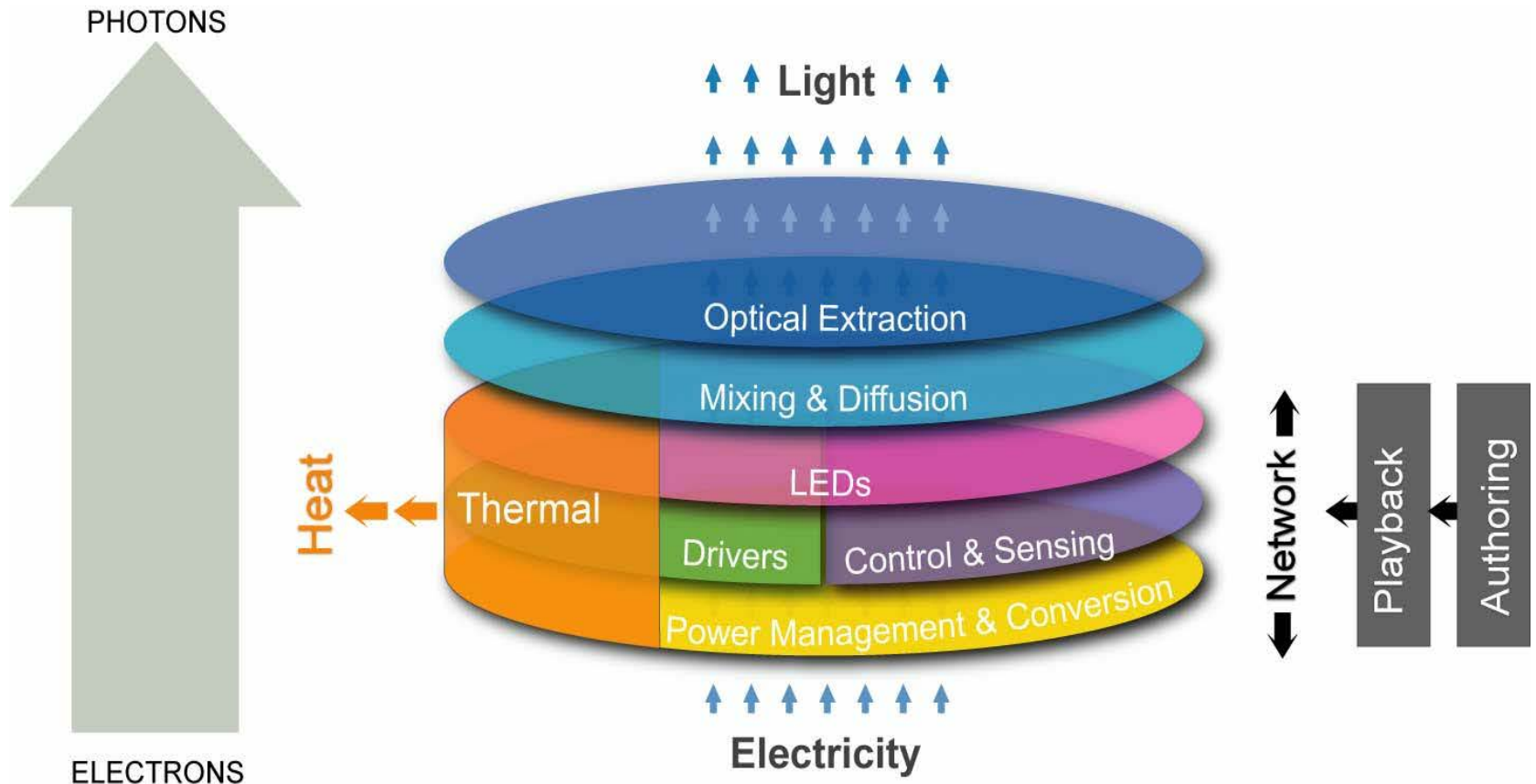
This presentation is for information purposes only. It is not intended to be a contract and shall not be legally binding in any respect on any party. There shall be no contract until a final written contract is signed by authorized representatives of both companies.

# Business Drivers

- For Licensee
  - Preferred and more economic solutions
  - More flexibility in component sourcing
  - More freedom for optimal solution
- For Licensee and Philips Lighting
  - Accelerate growth of LED Signage markets



# LED Signage Systems – What's Involved



# Philips Lighting Licensing Program Outline

- Product scope:
  - Light Engine & Driver (“Signage Kit”)

or -----

- Posterbox
- Field of use
  - LED- Based Signage

- Scope of Licensed patents;
  - Basic LED control and system level technologies
  - Includes patents (and patent applications) with priority date prior to 2008
  - Covers IP from Philips and former Color Kinetics and TIR



# Licensed Patent Portfolio

- Patents relevant to LED-Based Signage from the open Enabled SSL Licensing Program as well as Signage specific:
- More than 267 patent families
- More than 1753 issued patents
- More than 214 patents pending
- Worldwide  
(e.g. US, Europe, China, Japan, Korea, Canada, Australia, Taiwan, Hong Kong)



# Expected Relevance

- Creation of LED signage that is homogeneously illuminated
- Light distribution management by creating a Posterbox with LED module(s) within that illuminate at least one wall almost exclusively
- Light distribution management using edge-coupled sheet technologies
- Creation of specific color temperature using a combination of phosphor conversion and colored LEDs
- Combination of red, green and blue LEDs to create and tune colored light output
- Sensing and control of LEDs, LED and driver protection, dimming (phase cut, 1-10V), EMI reduction
- Simplified mounting of optics in housing

# Royalties for Posterbox & Signage Kit

- **Royalties based on Net Revenues**

- 3% single color (Posterbox)
- 4% Tunable white (Posterbox)
- 5% Color changing (Posterbox)
- or -----
- 9%-kit (Light engine + AC-DC driver)

(Charged only for manufacturing or sales in countries where Philips Lighting has at least one issued patent covering a feature of the licensed product)

- Net Revenue is the price invoiced by a Posterbox or Signage-kit supplier to licensee, excluding freight, insurances, and taxes





# Key steps to Agreement



## 1. Meet with Philips Lighting IP Licensing representative

- One of our licensing specialists will be assigned to your company so you have a personal contact with Philips Lighting. This contact person will explain the Program in detail and answer any questions you may have.

## 2. Portfolio Analysis

- We work with you to determine which of your products are relevant and require a license (Posterbox- Kit, LED Based Signage)

## 3. Choose between the **Flat Rate** and **Itemized** approach for the payment of royalties (the fees for use of Philips patented technologies) and conclude the agreement

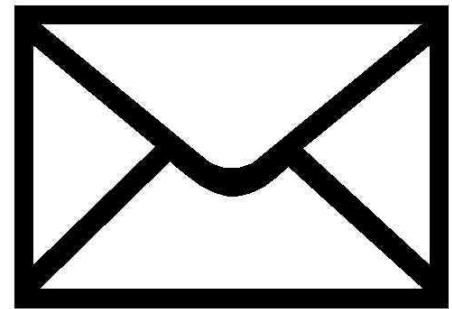
- In order to protect the confidential information that are exchanged between the parties prior to concluding the license agreement, a mutual, two-sided Non-Disclosure Agreement (NDA) will be signed.

# FAQ

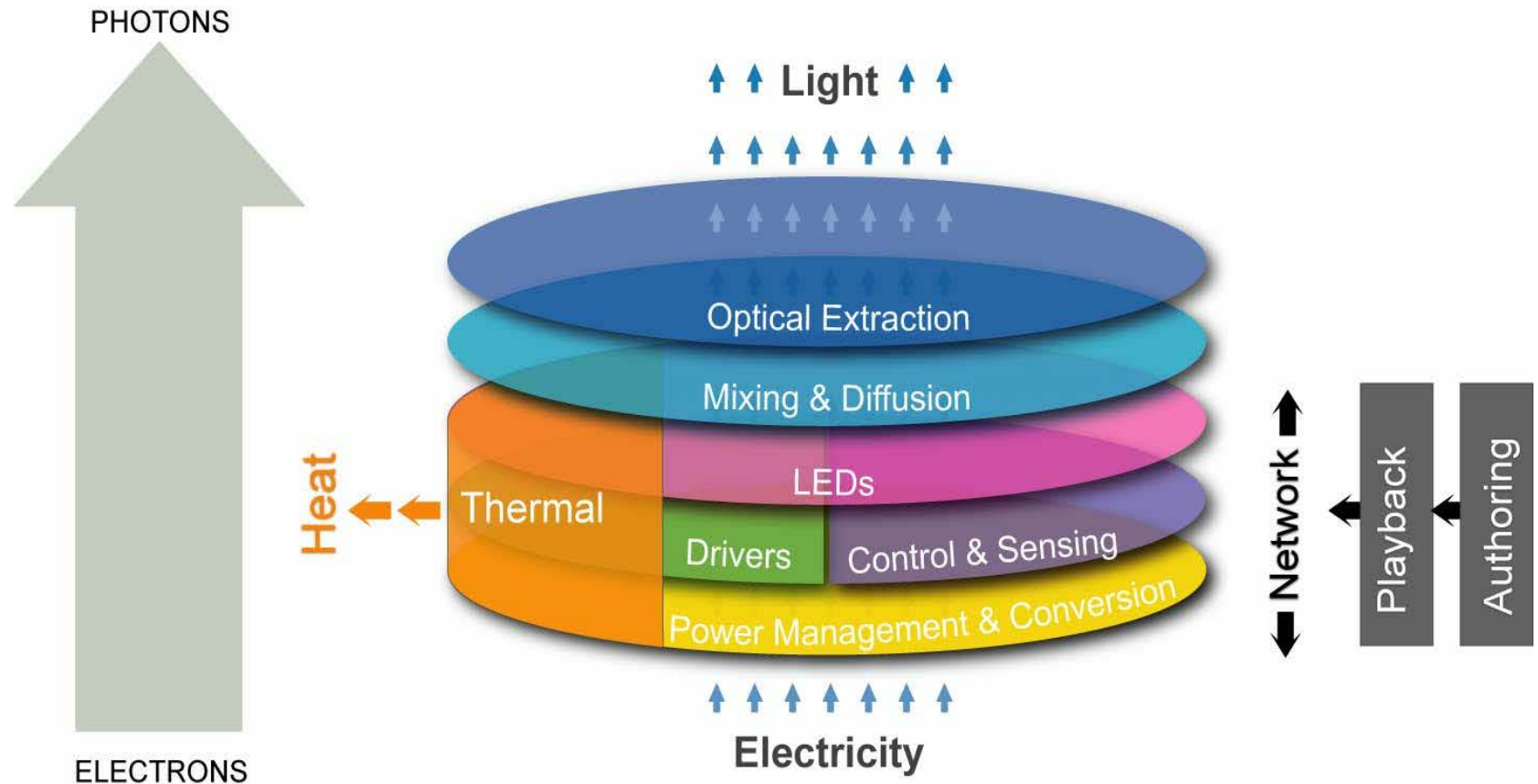
- 
- Does this program also include Philips' designs?  
No, the program only relates to patents directed to technology and not to other IP directed to the aesthetic appearance of the products
  - I'm interested in applications outside the markets addressed by your program. Can I get a license?  
We are willing to further explore your request, but willingness, list of patents and terms can deviate from the program.

# Contact info

E-mail: [info.SSLicensing@Philips.com](mailto:info.SSLicensing@Philips.com)  
Website: [www.ip.philips.com/licensing/program/112](http://www.ip.philips.com/licensing/program/112)

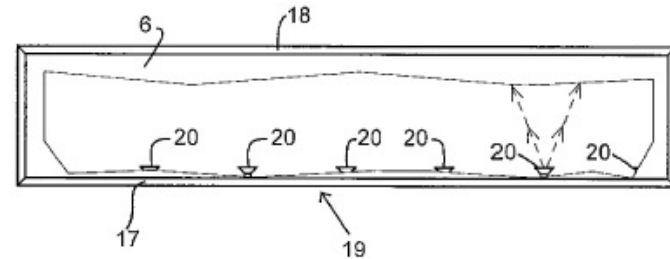
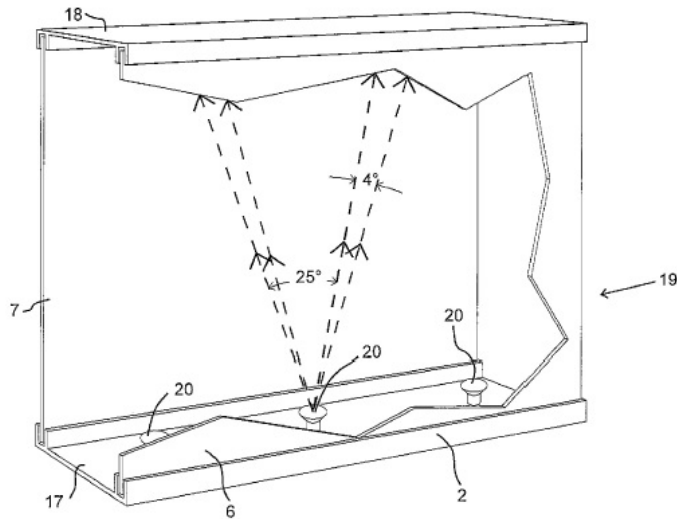


# LED Signage Systems – Examples of what could be involved



# Examples of what could be involved

# Core Technologies for LED Signage Systems



## Optical Extraction

Application: Homogeneous illumination of LED Signage Posterboxes

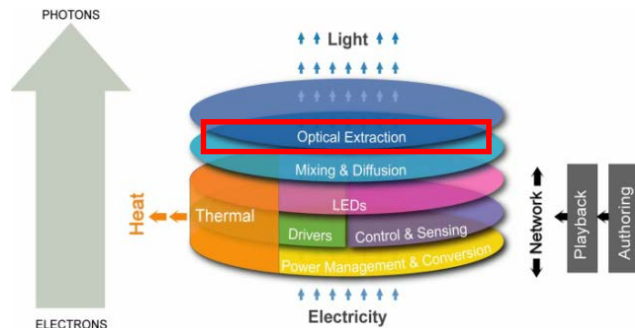
Advantage: Eliminates zoning within a signage display thus improving sign readability and impact

### Example Patents/Applications:

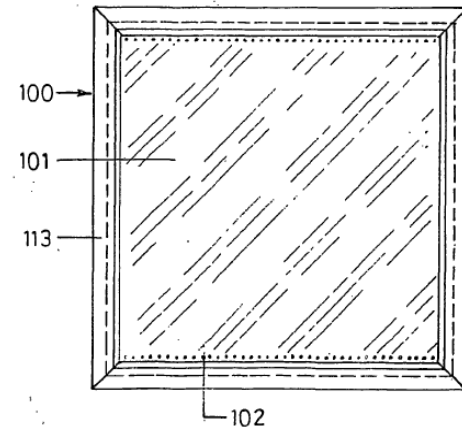
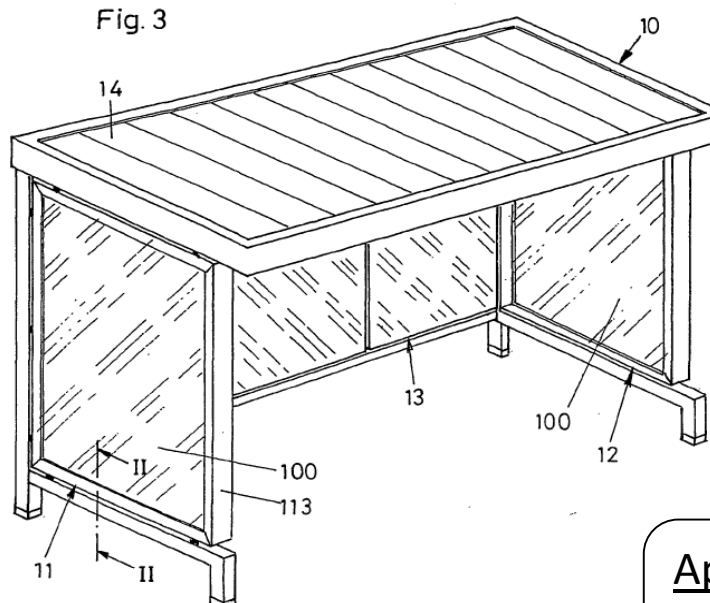
North America: US7841733

Europe: EP1938298; EP2390866; NL1030161;  
NL2000273; DE202006020673.6

Asia: CN101300616



# Core Technologies for LED Signage Systems

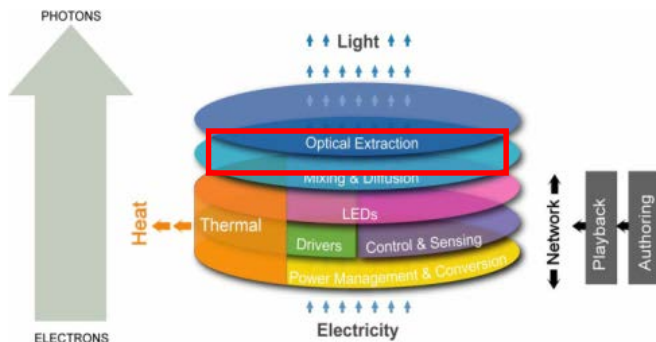


## Optical Extraction

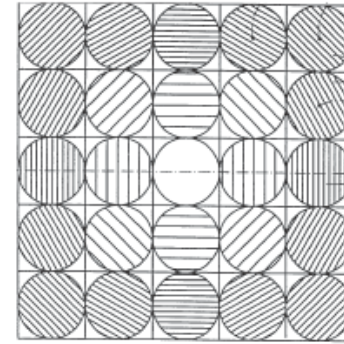
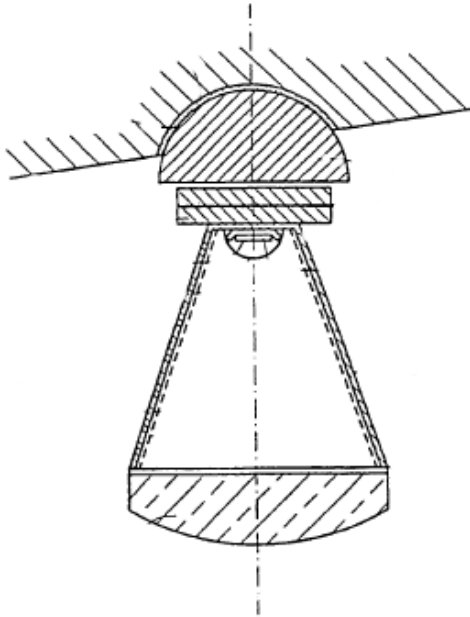
Application: Efficient homogeneous illumination of LED Signage displays

Advantage: Provides high light yield for a comparatively low energy consumption

Example Patents/Applications:  
Europe: EP1379742



# Core Technologies for LED Signage Systems



## Light Mixing and Diffusion

Application: Light output control

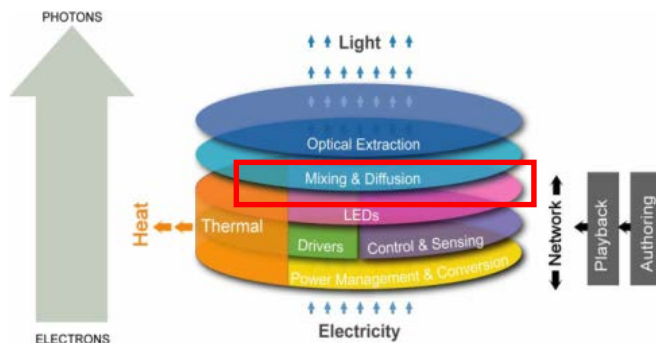
Advantage: Effective and efficient blending and directing of LED light output

Example Patents/Applications:

North America: US6250774; CA2249423

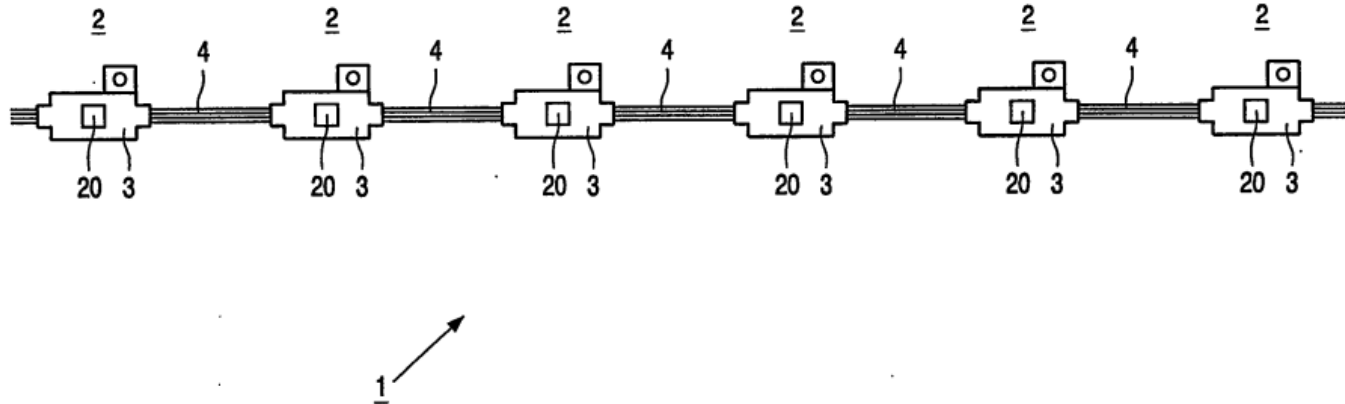
Europe: EP0890059

Asia: JP4014227; TW093750; CN98800051; KR0471705





# Core Technologies for LED Signage Systems



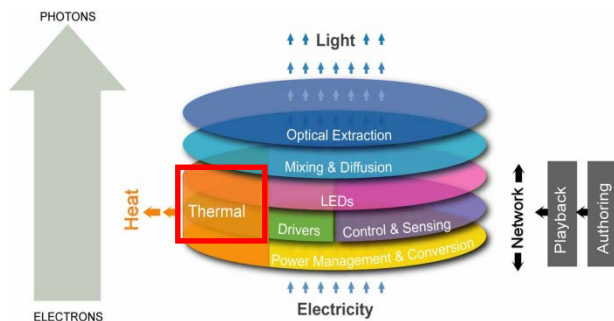
## Thermal Management

Application: Thermal management of LED Strings

Advantage: Efficient heat-sinking with simple manufacturing

Example Patents/Applications:

Europe: EP1537354,  
Asia: JP4865227



# Core Technologies for LED Signage Systems

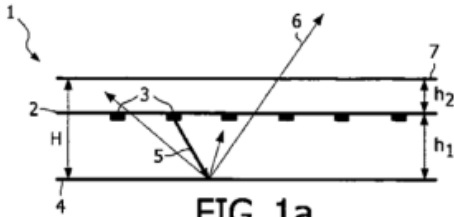


FIG. 1a

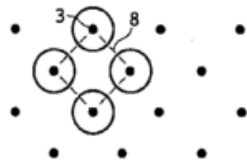


FIG. 1b

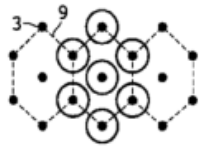


FIG. 1c

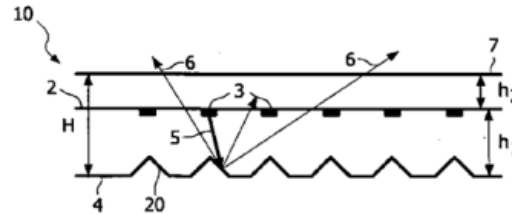


FIG. 2

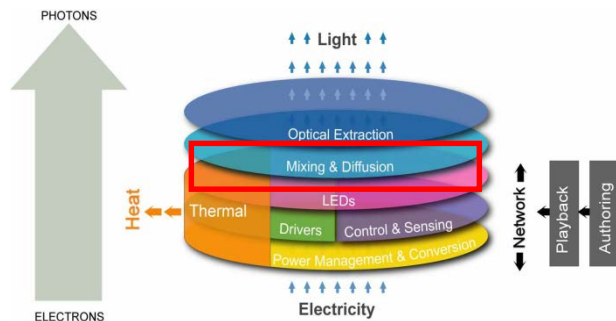
## Light Mixing & Diffusion

Application: Efficient homogeneous illumination of LED Signage displays

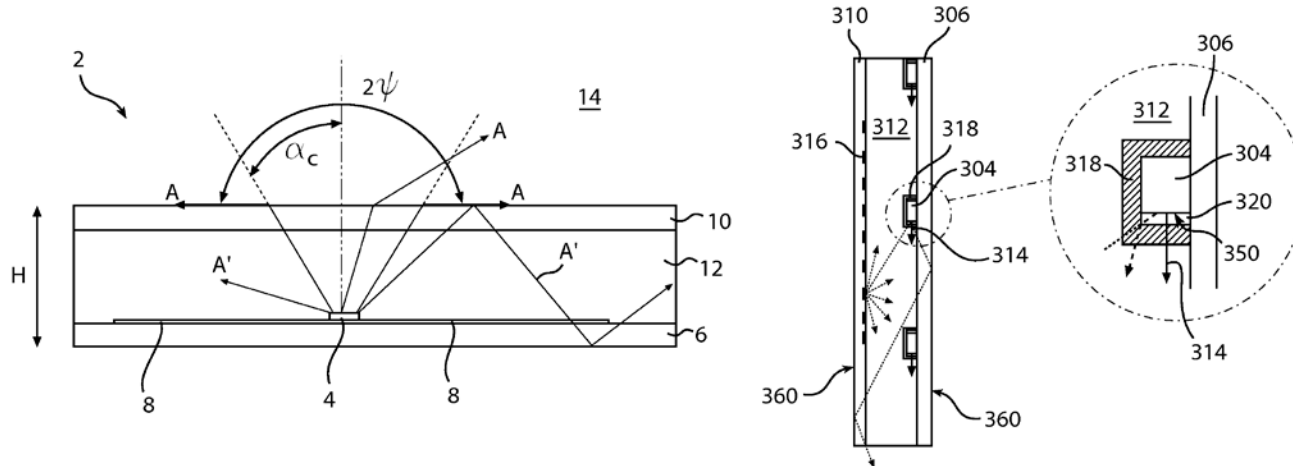
Advantage: Provides a thin illumination device using an array of LEDs

Example Patents/Applications:

Europe: EP2082160,  
Asia: CN101523109



# Core Technologies for LED Signage Systems



## Light Mixing & Diffusion

Application: Efficient homogeneous illumination of LED Signage displays

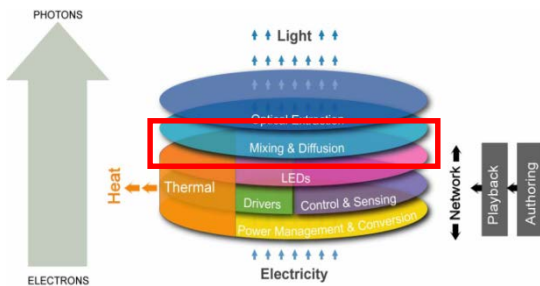
Advantage: Provides a thin illumination device using side emitting LEDs

Example Patents/Applications:

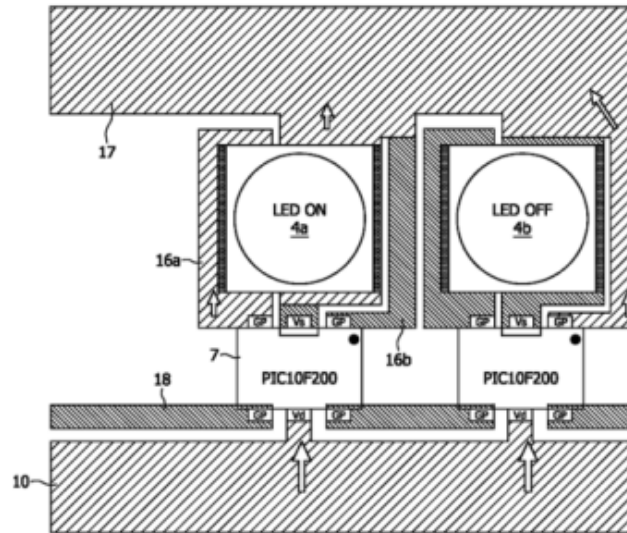
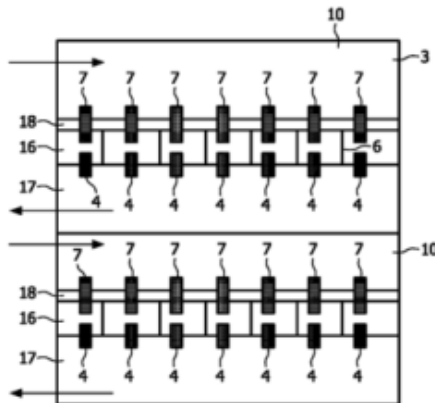
North America US7943940

Europe: EP2147349,

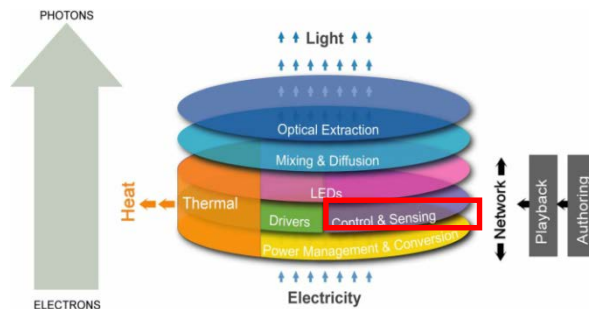
Asia: JP4955101



# Core Technologies for LED Signage Systems



## Control and Sensing



Application: Efficient control of Embedded LEDs

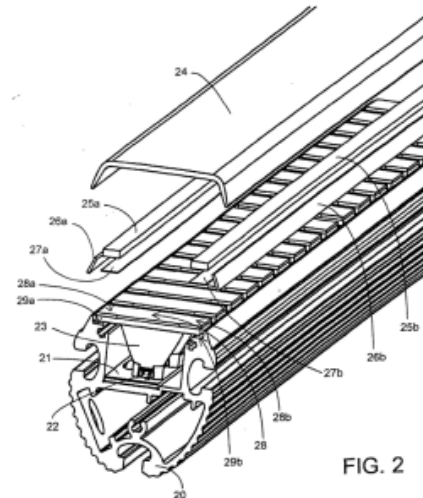
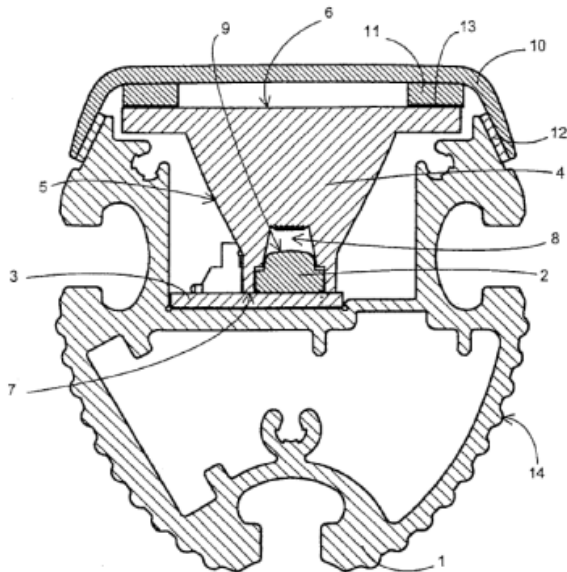
Advantage: Provides a selective control of individual light sources.

Example Patents/Applications:

North America US8207541

Asia: CN101657672

# Core Technologies for LED Signage Systems



## Light Mixing & Diffusion

Application: LED fixtures with optics

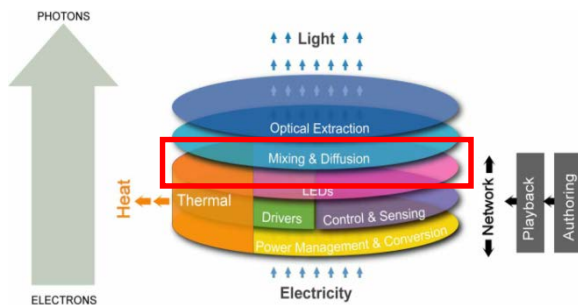
Advantage: Simplifies mounting of optics relative to LED

Example Patents/Applications:

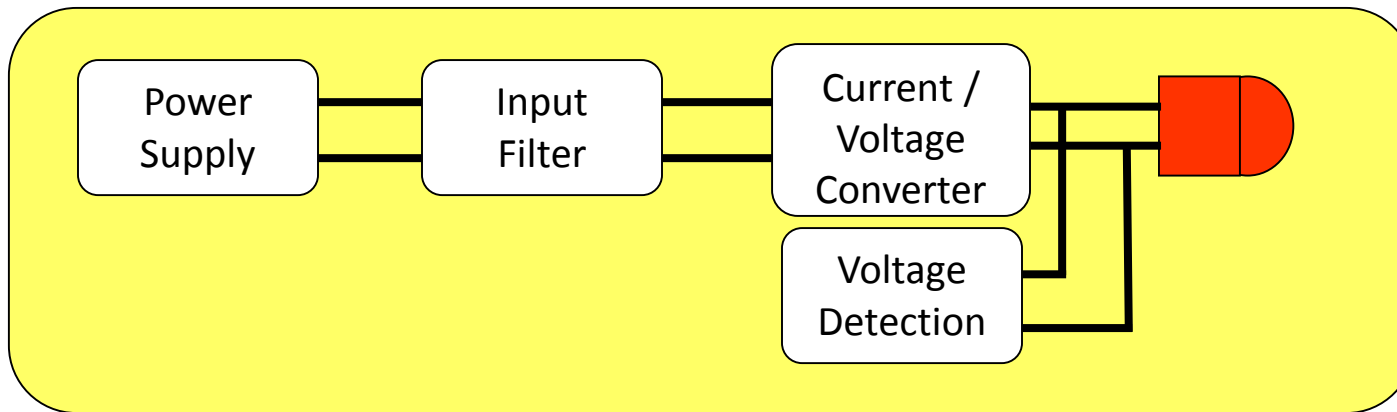
North America: US6561690

Europe: EP1182396

Asia: JP4749623, CN01135741



# Core Technologies for LED Signage System



Control / Protection when changes in LED's occur

## LED Driving

Application: Safe conventional light source replacement

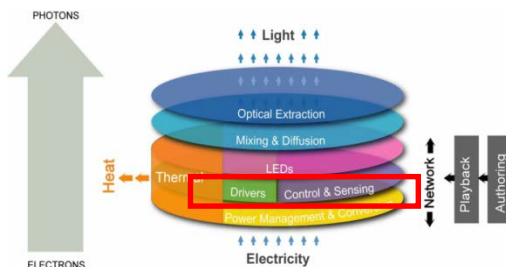
Advantage: Allows accurate control and protection of driver circuitry in case of changes in the LED's at the output, such as over voltage, short circuits or malfunctioning of an individual LED in a string

Example Patents/Applications:

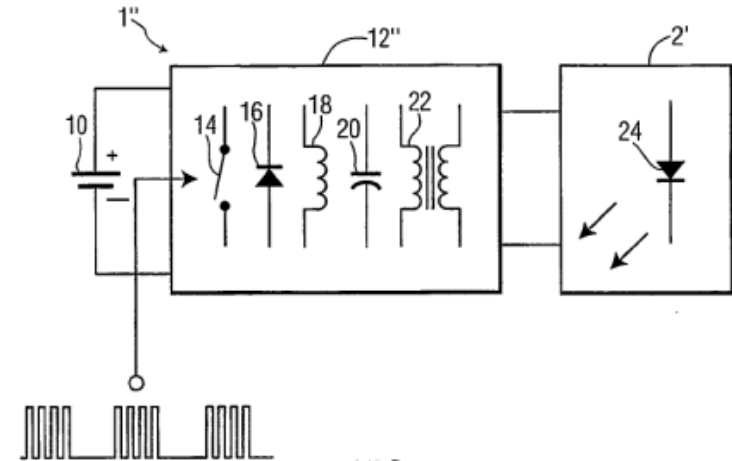
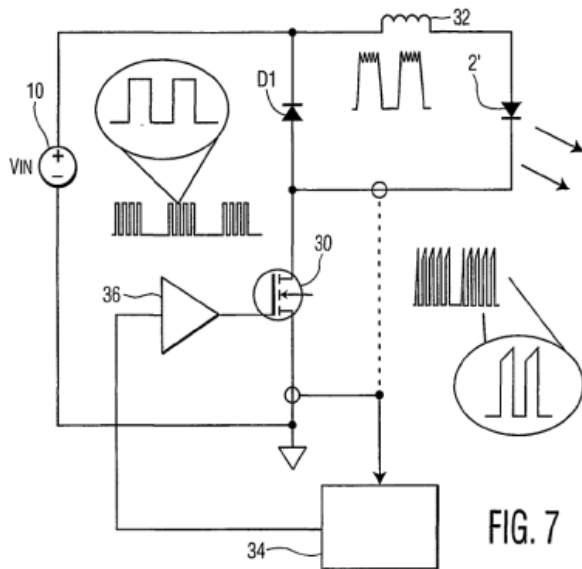
North America: US6094014; 6577512; 6586890; 6972525

Europe: EP0929992; 1415518

Asia: JP4260226; CN1241348



# Core Technologies for LED Signage Systems



## LED Dimming

Application: PWM (e.g. 1-10 V) based LED dimming

Advantage: Efficient and full range linear LED dimming

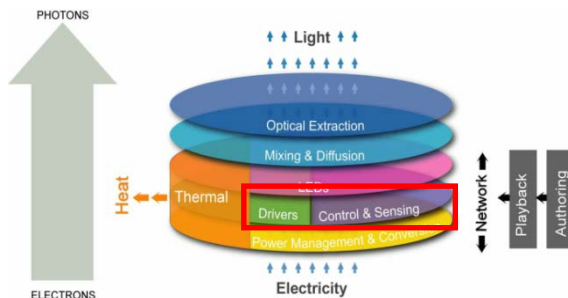
Example Patents/Applications:

North America: US7071762B2

Europe: EP1576858B1

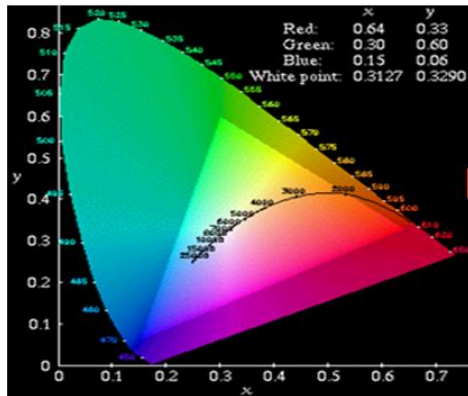
Asia: CN200380106654.2; JP4901104;

KR10-0978019

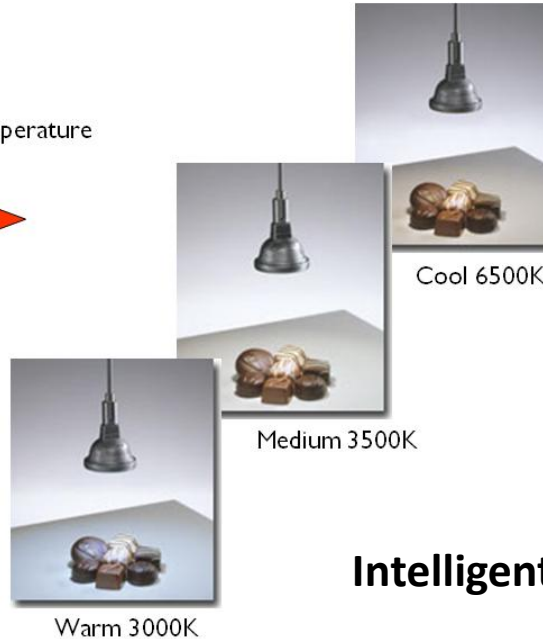




# Core Technologies for LED Signage Systems



White Light Temperature Control



## Intelligent White Light Illumination

Application: White color temperature control

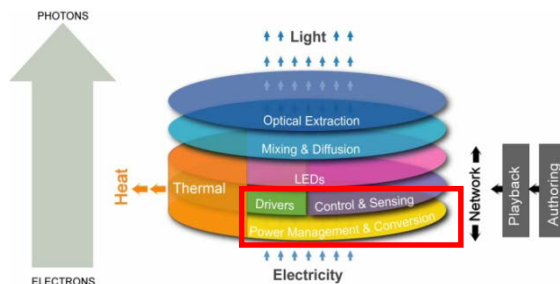
Advantage: Produce high quality tunable white light

Example Patents/Applications:

North America: US7014336; 6636003; 6513949; 6234645

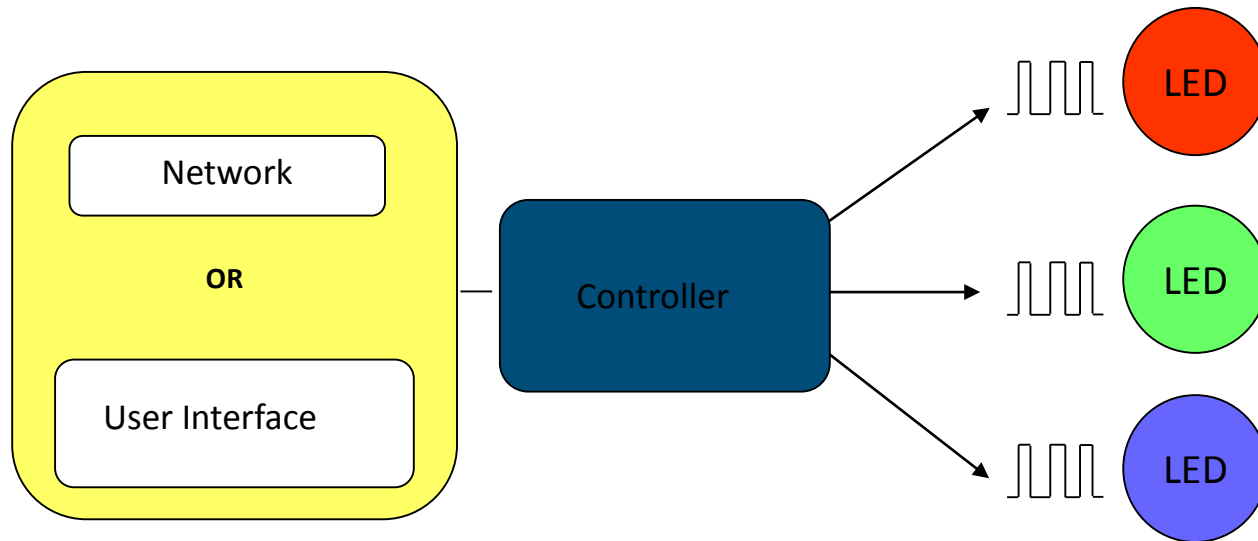
Europe: EP1016062; 1234140; 1118252; 1047904

Asia: JP02525836; 01542388; CN1289397; 1327707



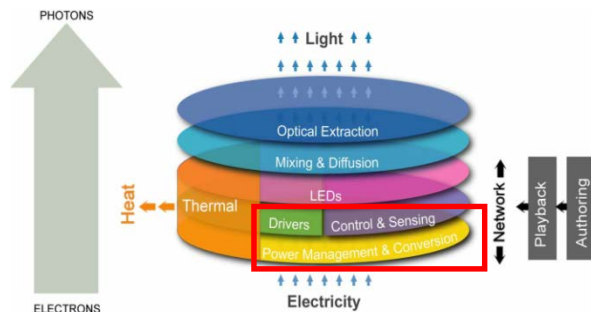


# Core Technologies for LED Signage Systems



## Intelligent Color Illumination

Current Switch



Application: Intelligent RGB color control

Advantage: Allows creating simple to sophisticated illumination effects

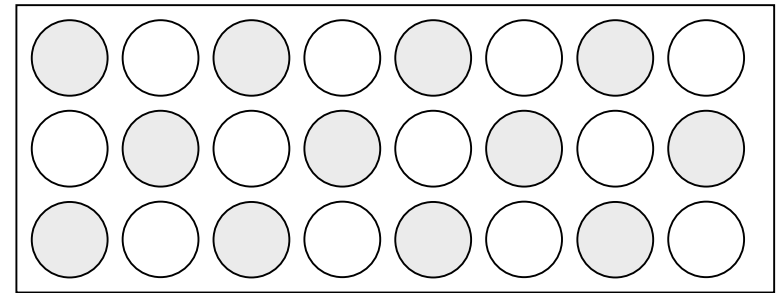
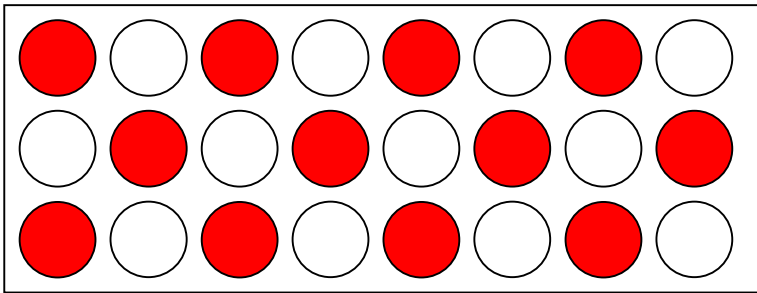
Example Patents/Applications:

North America: US6016038; 6788011; 6806659; 6234645

Europe: EP1016062; 1047904

Asia: HK1025416; JP02525836; CN1289397

# Core Technologies for LED Signage Systems



## Mixing Light from Different LEDs

Application: Using two or more different LEDs to generate light (for single color or white, tunable white and color-changing)

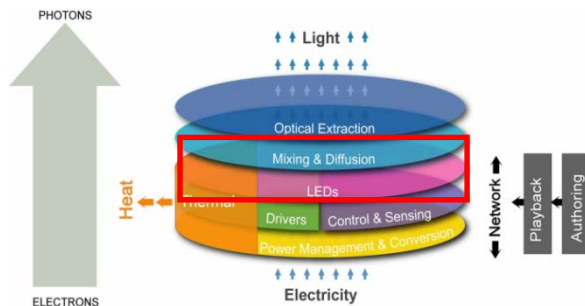
Advantage: Achieve desired color of light or color temperature of white light, for both static and dynamic (e.g., color-changing) applications

### Example Patents/Applications:

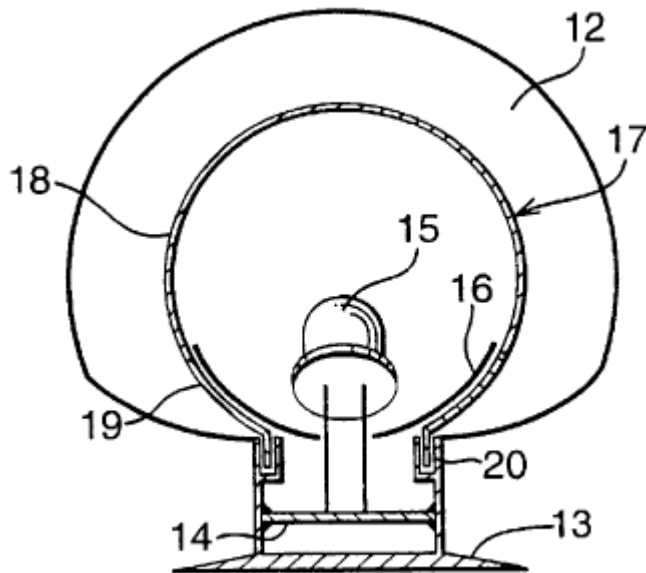
North America: US6692136; 6234648; 6234645; 6513949

Europe: EP1046196

Asia: JP4366016; JP4376464; IN210549; CN99802435.X;  
CN99802434; KR10-0702273; KR10-0776837; TW167039



# Core Technologies for LED Signage Systems



## Apparatus and method for providing a linear effect

Application: Linear effect apparatus for lighting display

Advantage: Allows creating simple to sophisticated linear illumination effects

Example Patents/Applications:

North America: US7118248; 6676284

Europe: EP1110198; 1391650

