LIGHTFAIR INTERNATIONAL
The future. Illuminated.
2017

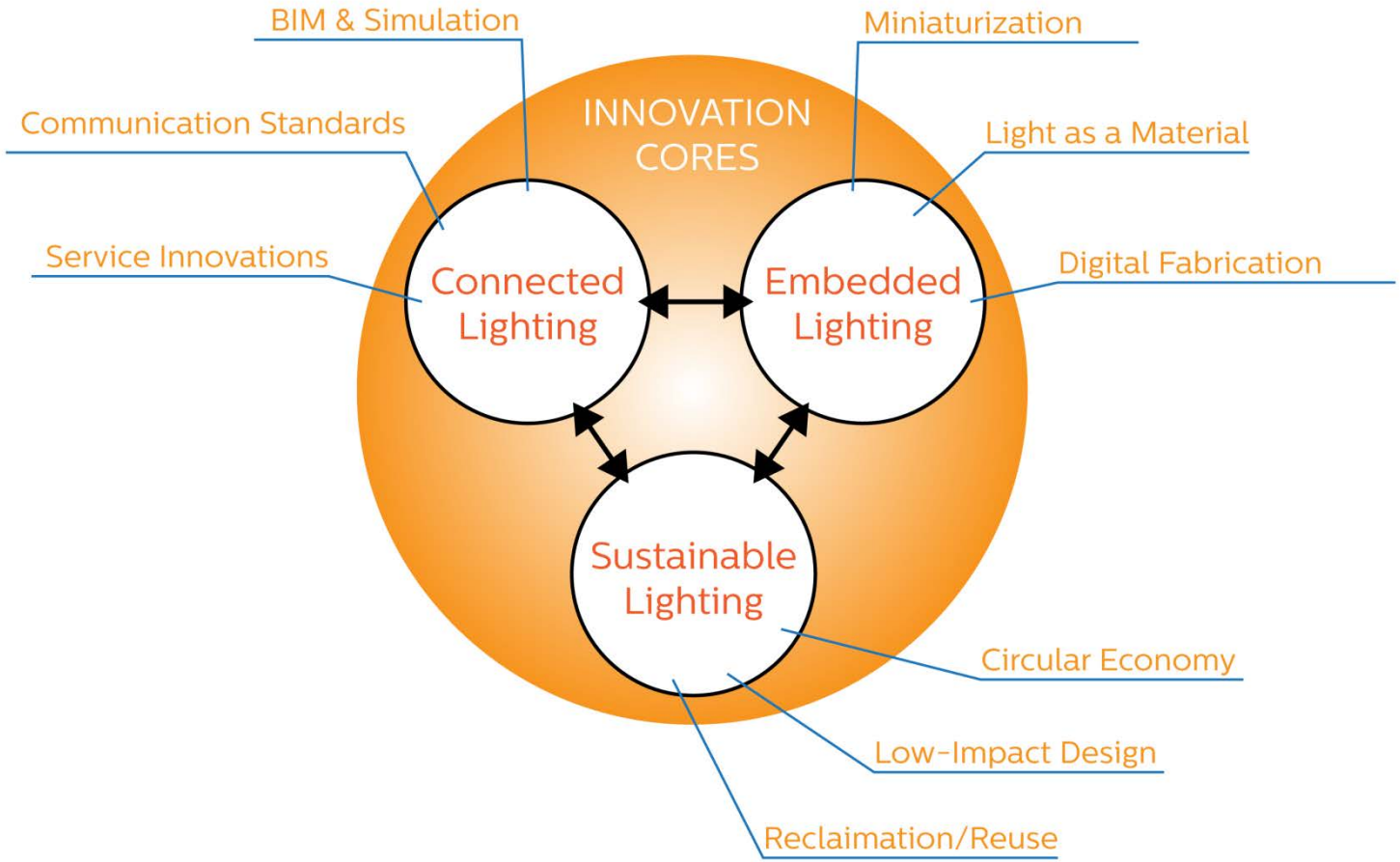
Ambient Luminescence and Experiential Design

10-MAY-2017

Brad Koerner
Creative Director – Philips Lighting

Ambient luminescence and experiential design:

- Background
- 5 Characteristics
- The Future


BIM & Simulation
Miniaturization
Communication Standards
INNOVATION CORES
Light as a Material
Service Innovations
Connected Lighting
Embedded Lighting
Digital Fabrication
Sustainable Lighting
Circular Economy
Low-Impact Design
Reclaimation/Reuse

What is “embedded lighting”?

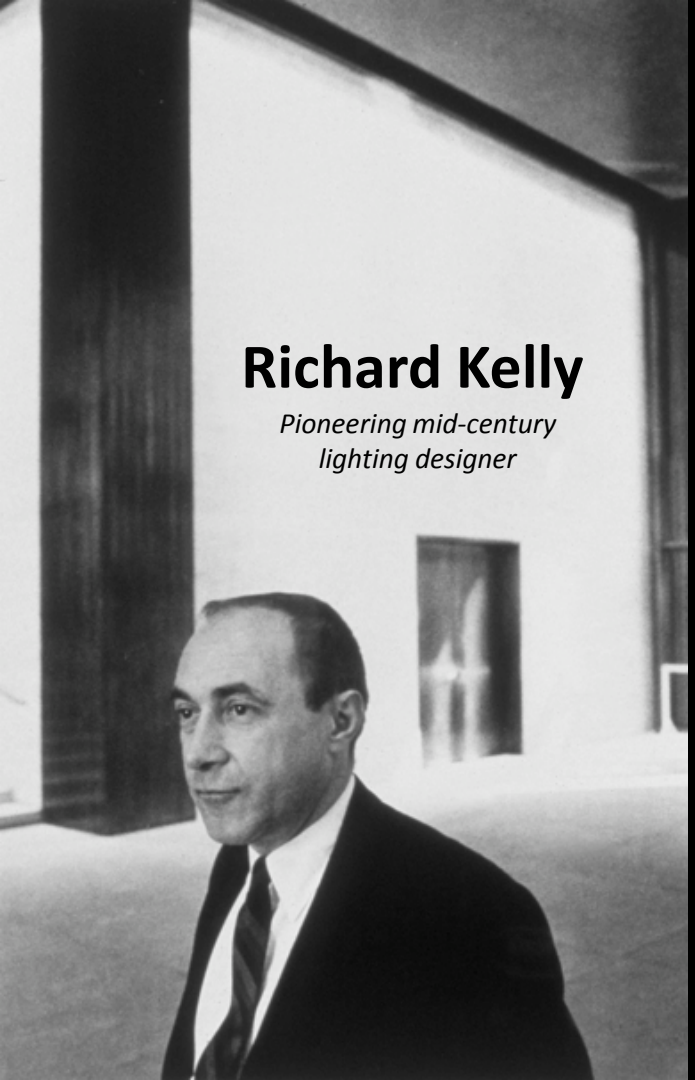
LIGHT + MATERIAL

With LEDs we have the opportunity to bring spaces to life by fusing light into architectural surfaces

Architectural System

Lighting Technology

Architects want to treat light like a material



3 types of lighting:

- Focal Glow
- Ambient Luminescence
- Play of Brilliants

Richard Kelly

Pioneering mid-century lighting designer

Focal Glow

Richard Kelly

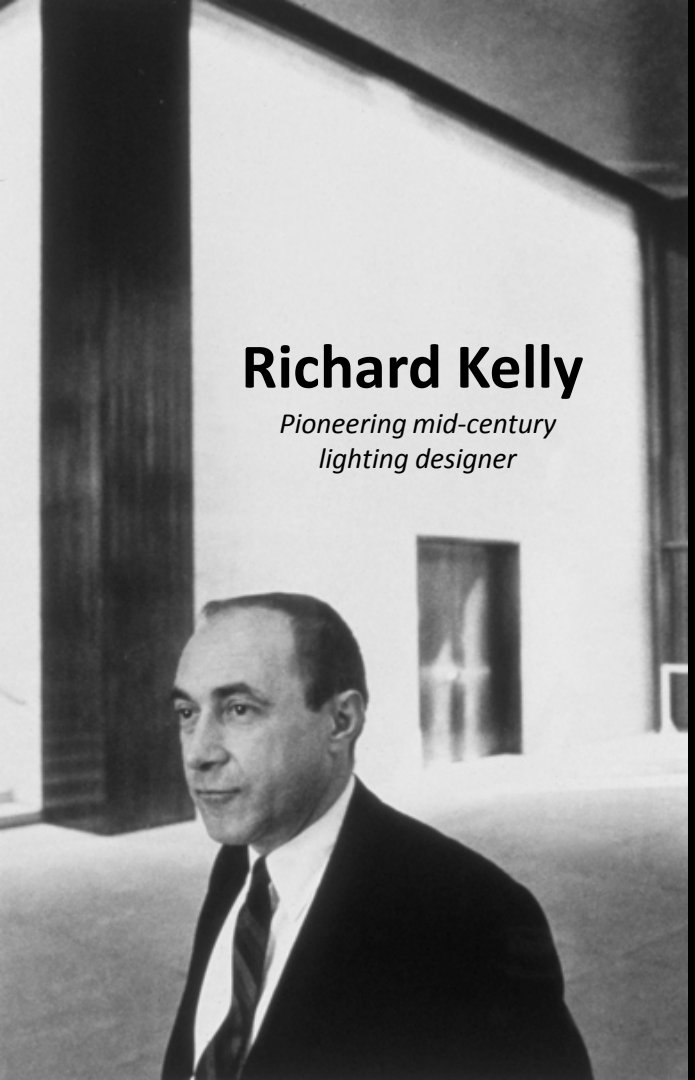
Pioneering mid-century lighting designer

Ambient Luminescence

Richard Kelly

Pioneering mid-century lighting designer

Play of Brilliants



Kelly's Six Qualities of Light

"… light itself as a physical force can have specific qualities attributed to it by the regular occurrence of effects as does the wind…"

1. Intensity
2. Brightness
3. Diffusion
4. Spectral Color
5. Direction
6. Motion

"*Play of brilliants* is Times Square at night. It is the eighteenth century ballroom of crystal chandeliers and many candle flames. It is sunlight on a fountain or a rippling brook. It is the rose window of Chartres.

"Play of brilliants excites the optic nerves, and in turn stimulates the body and spirit, quickens the appetite, awakens curiosity, sharpens the wit…."

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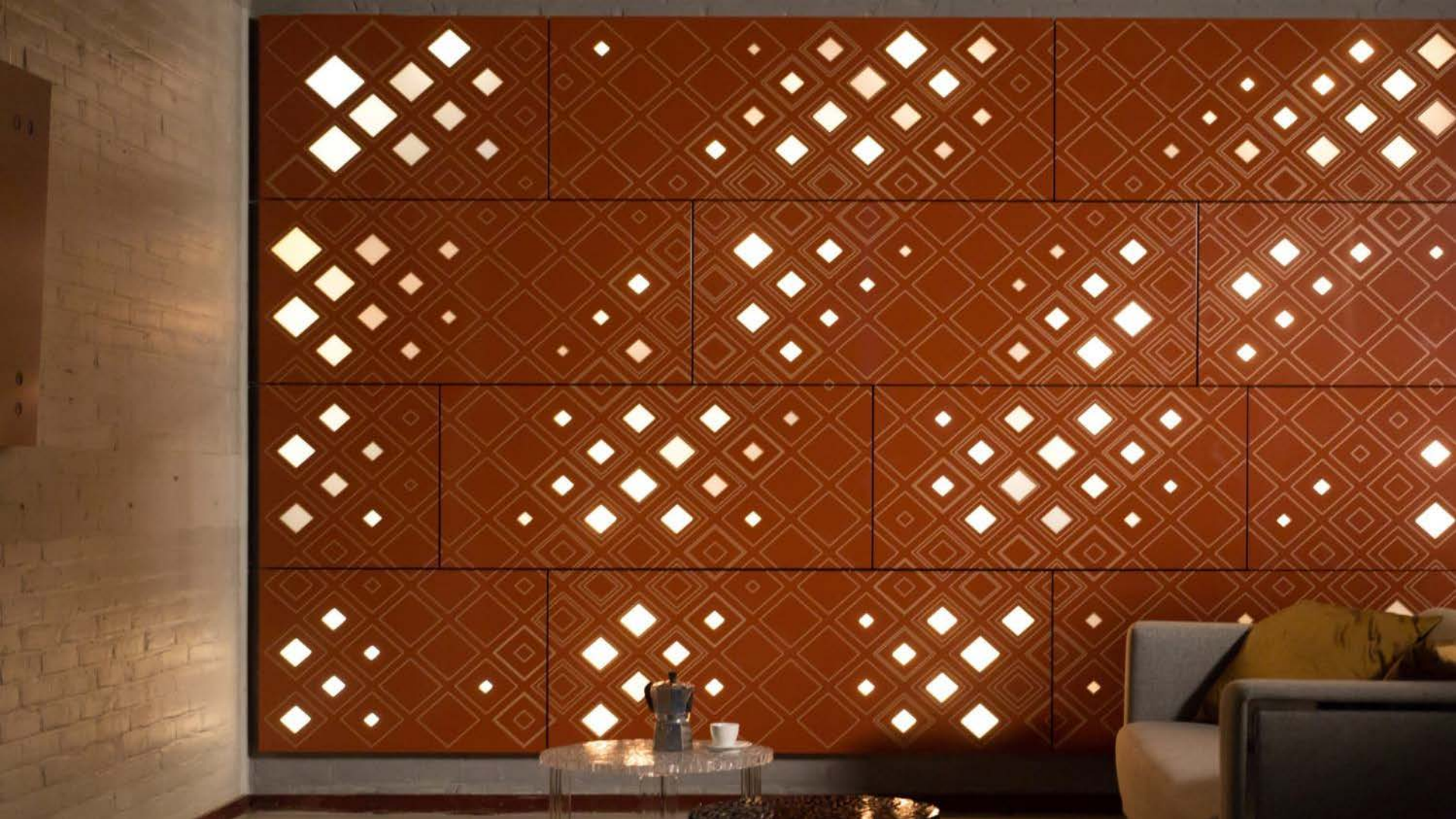
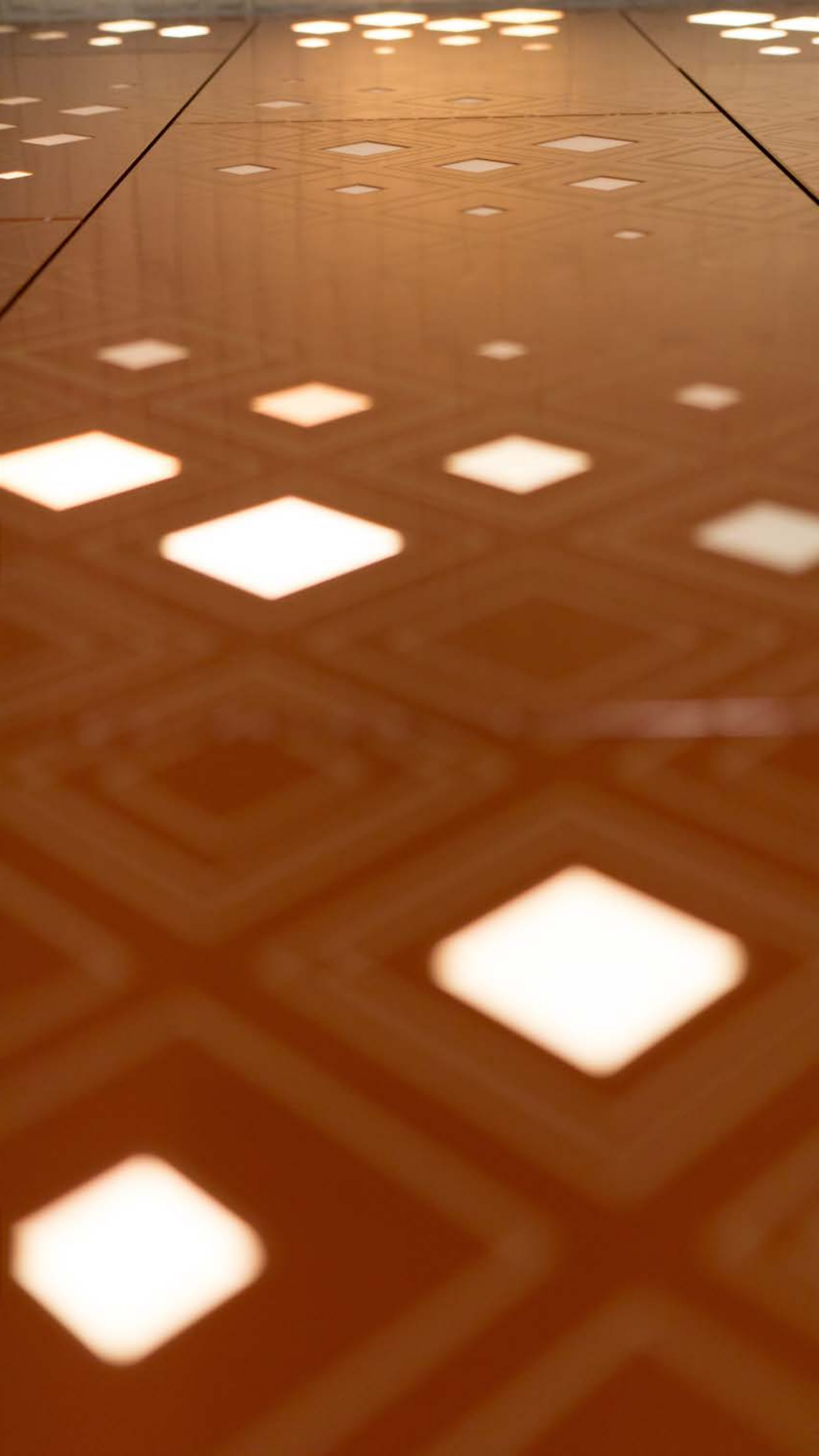
Efficiently, perfectly,
miserable
A world with no focal glow, ambient luminescence, play of brilliants, or temporal change…

“I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.”

Maya Angelou

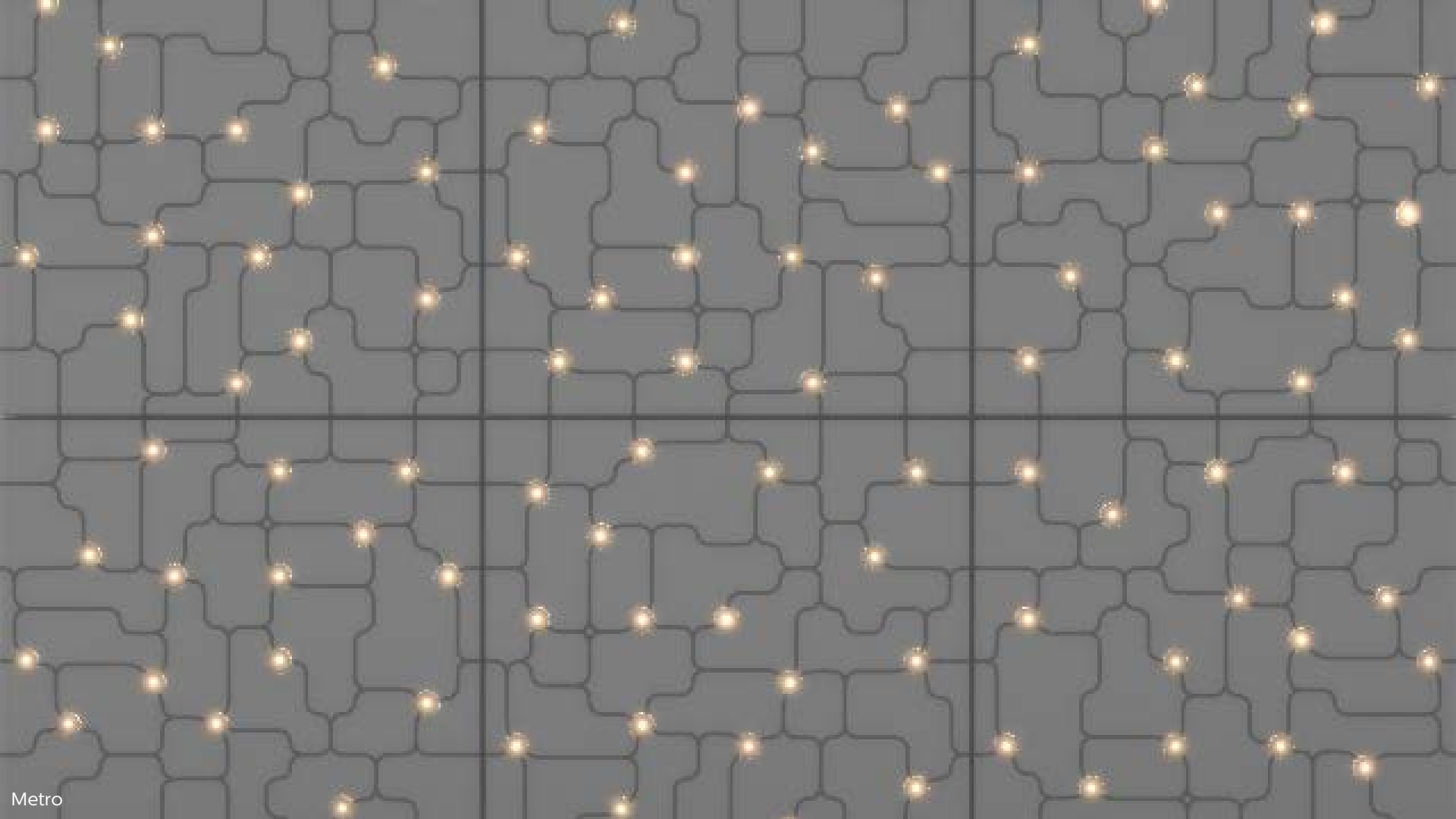
Luminous Patterns

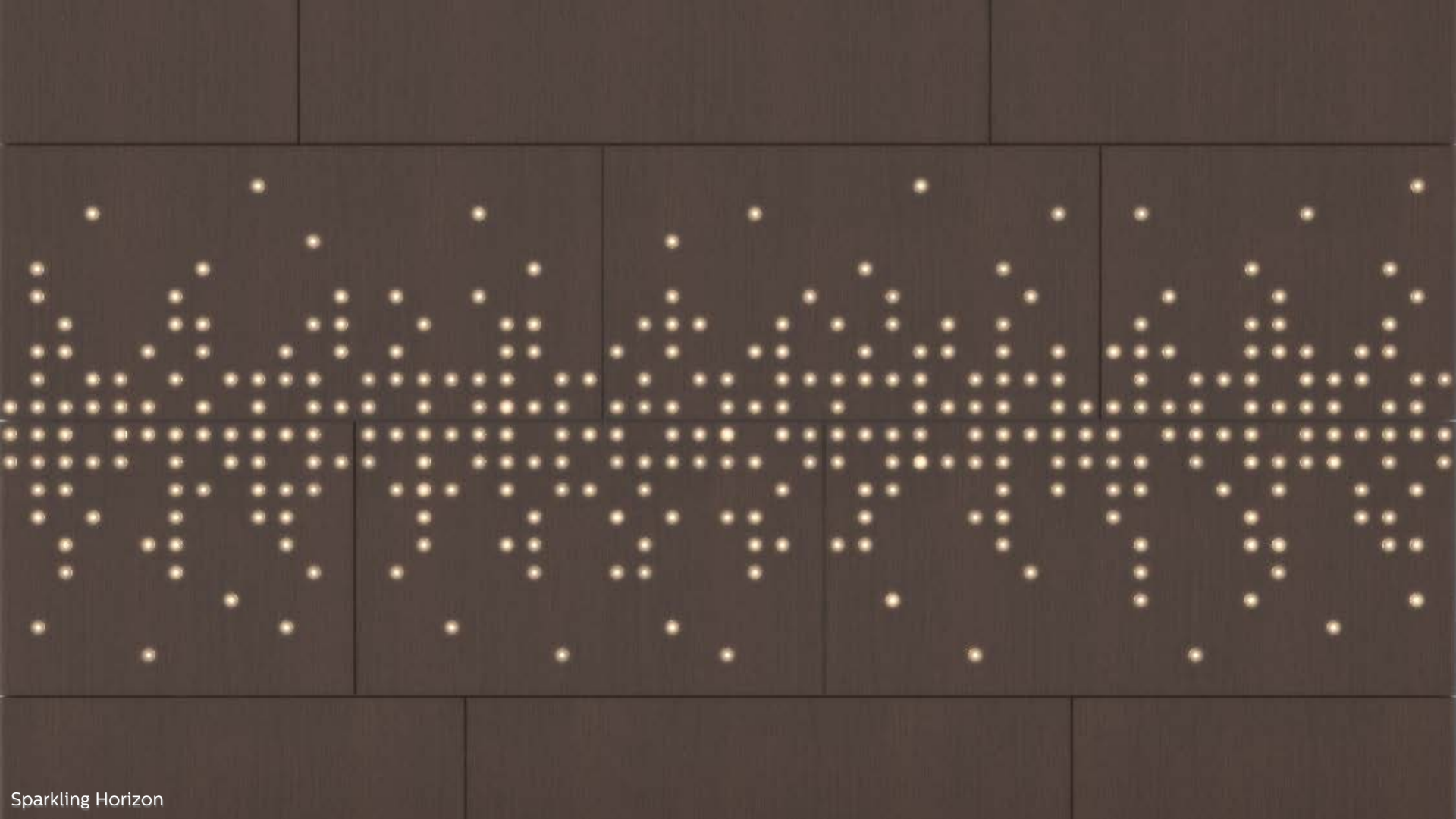




Luminous Patterns

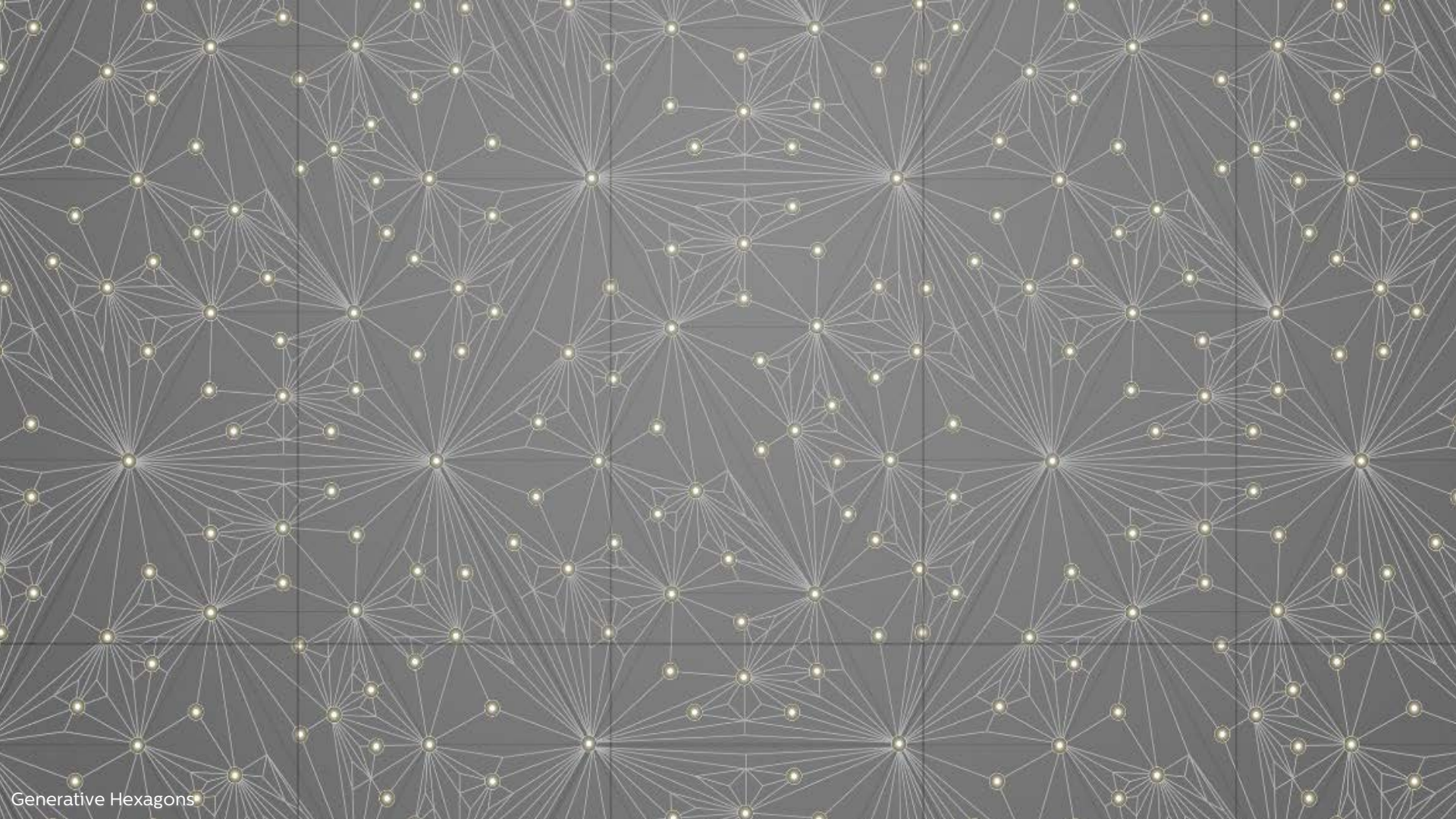
Pattern collection


Metro



Sparkling Horizon

Happy Rain

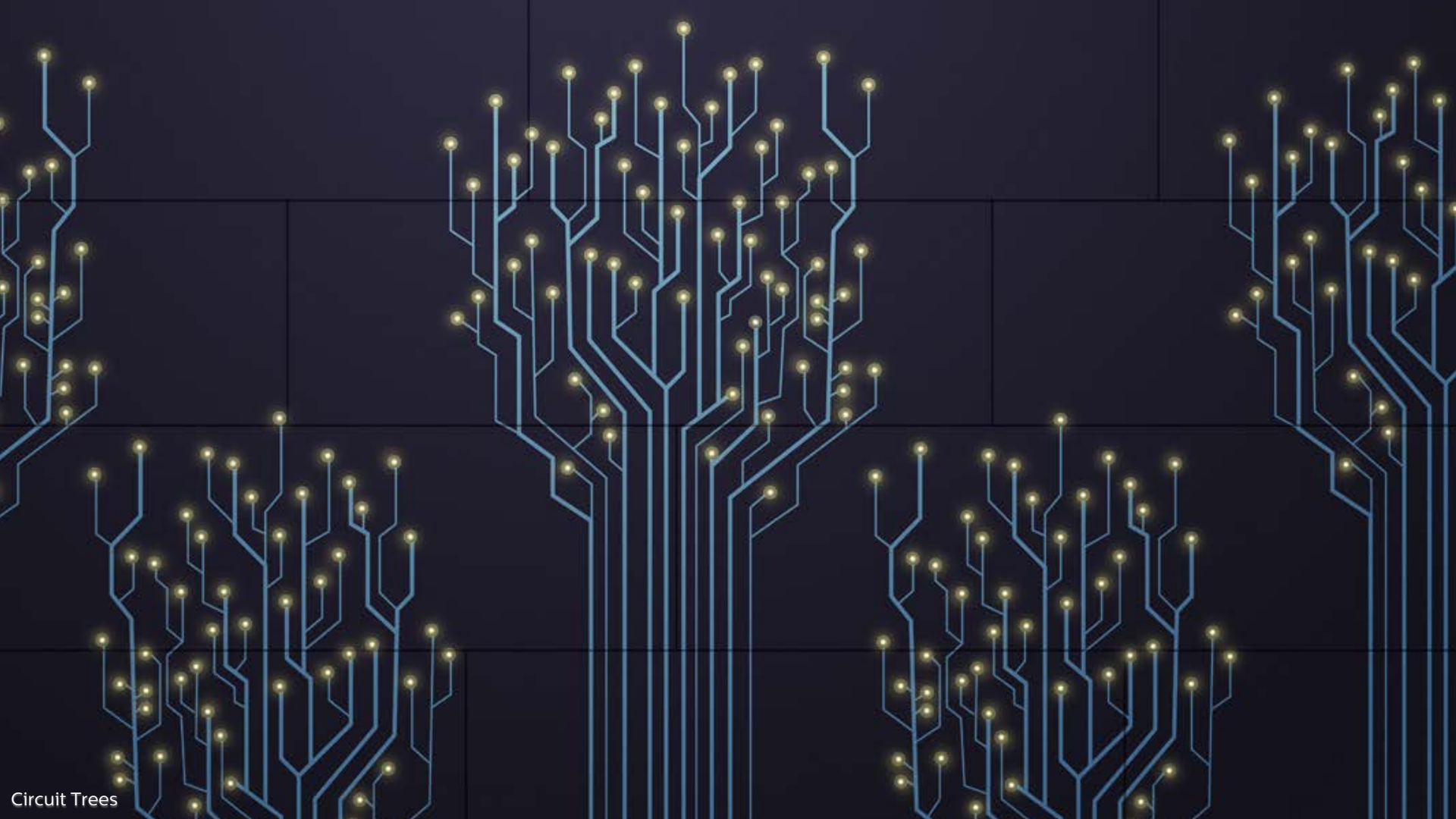

Generative Hexagons

Branches

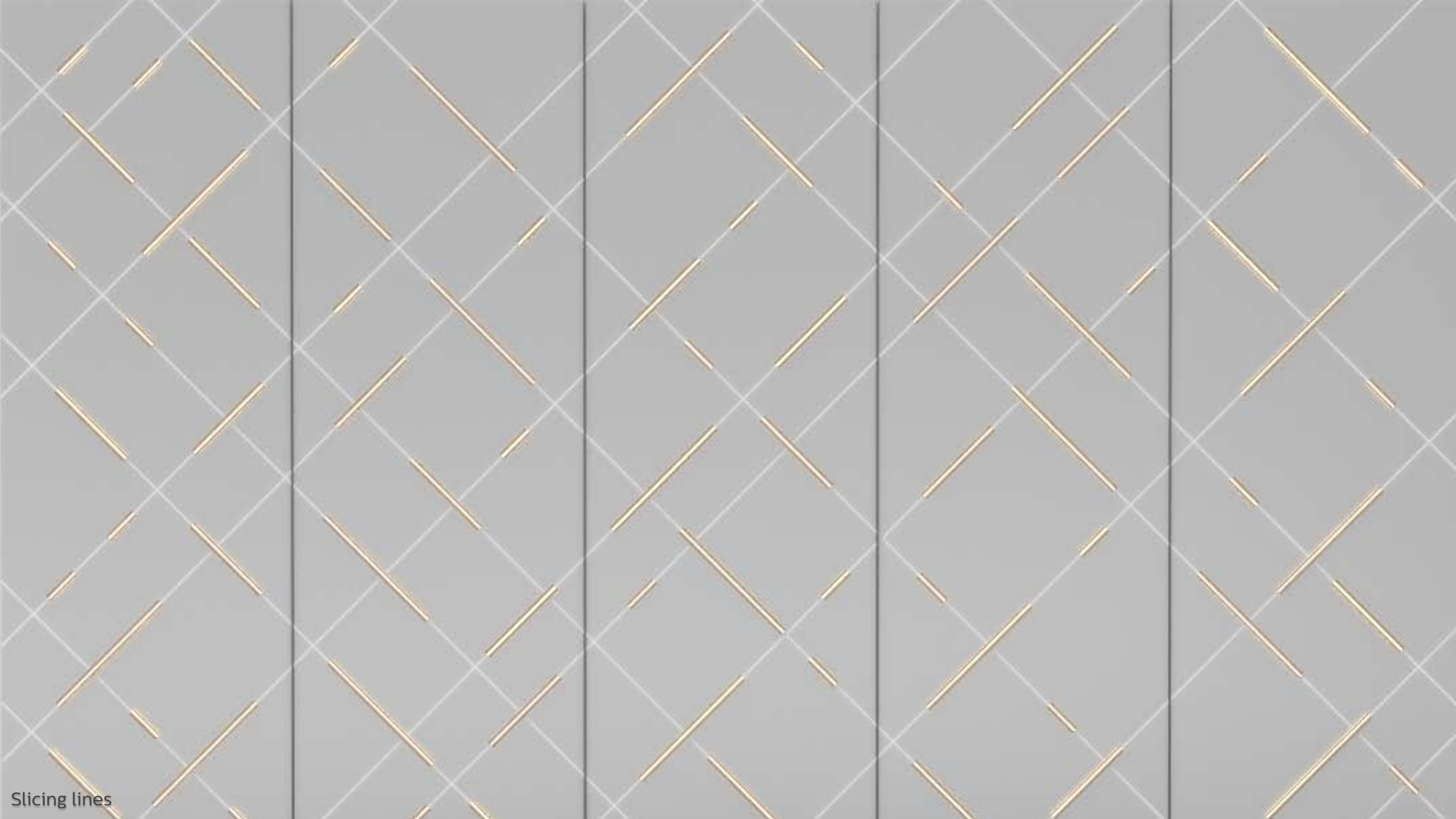
Leaflets

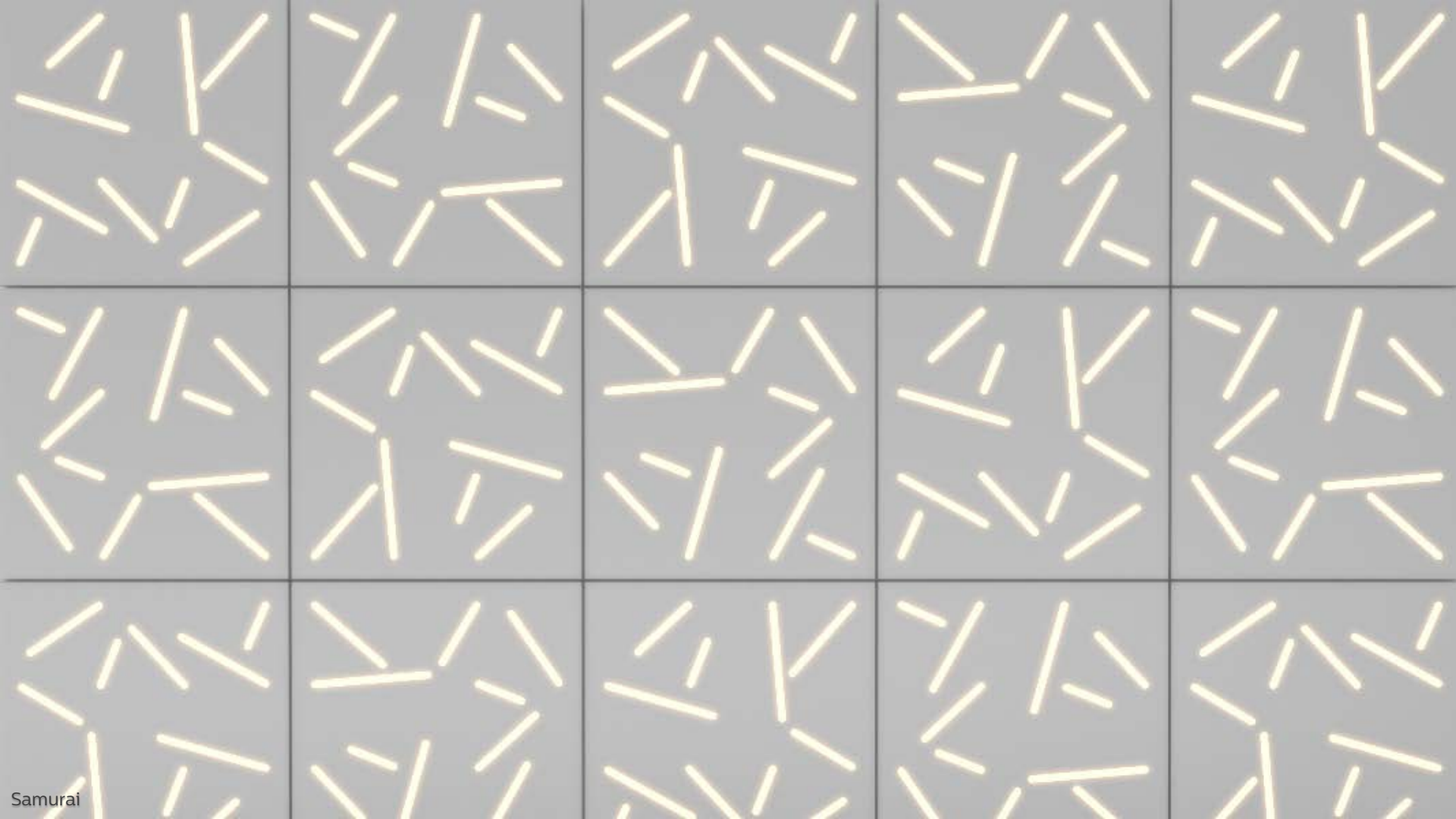
Saxophone

Waves


Circuit Trees

Hexagonal


Slicing lines


Samurai

Diagonal Lines

Diagonal Sprinkle

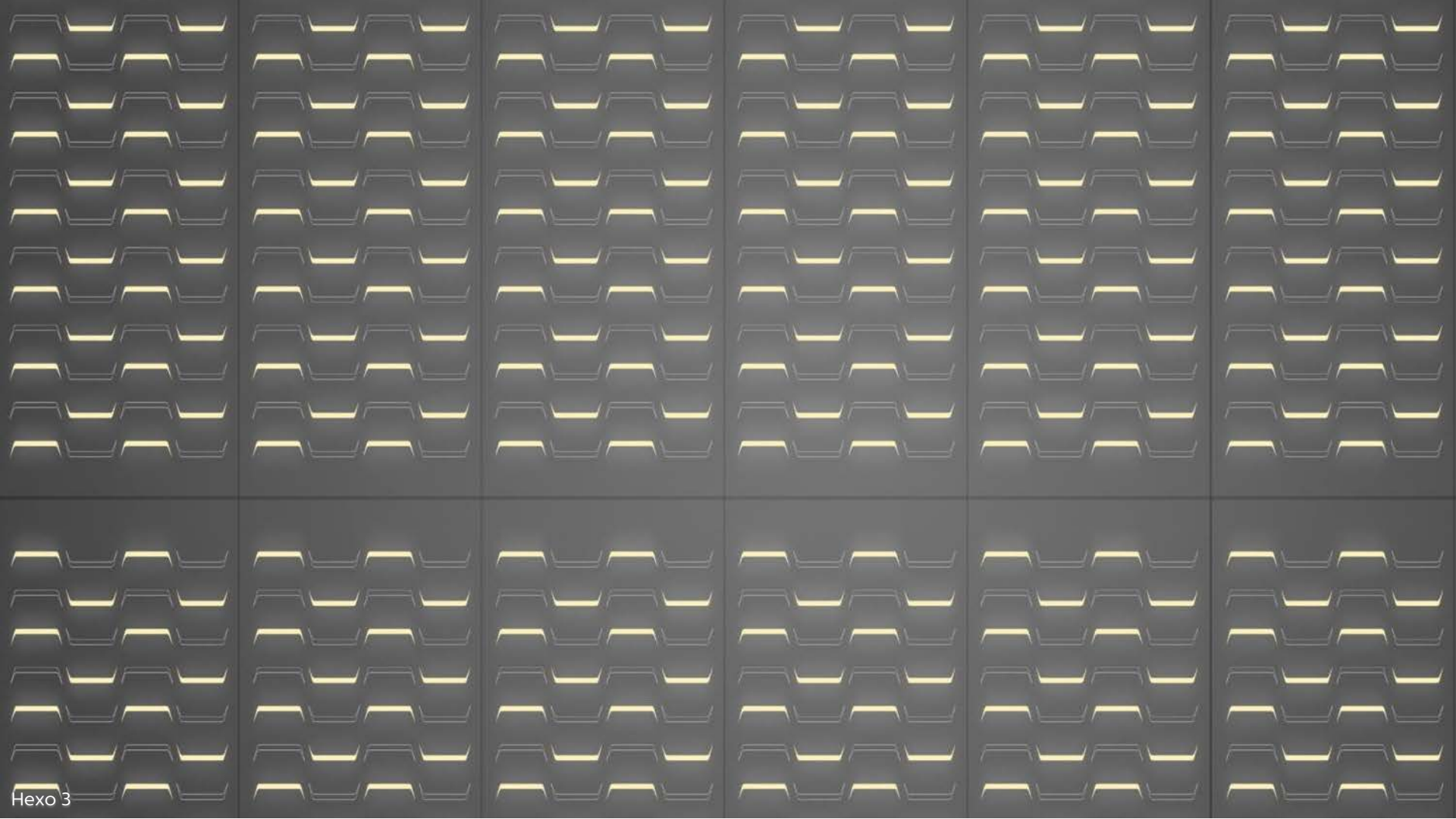
Crisscross

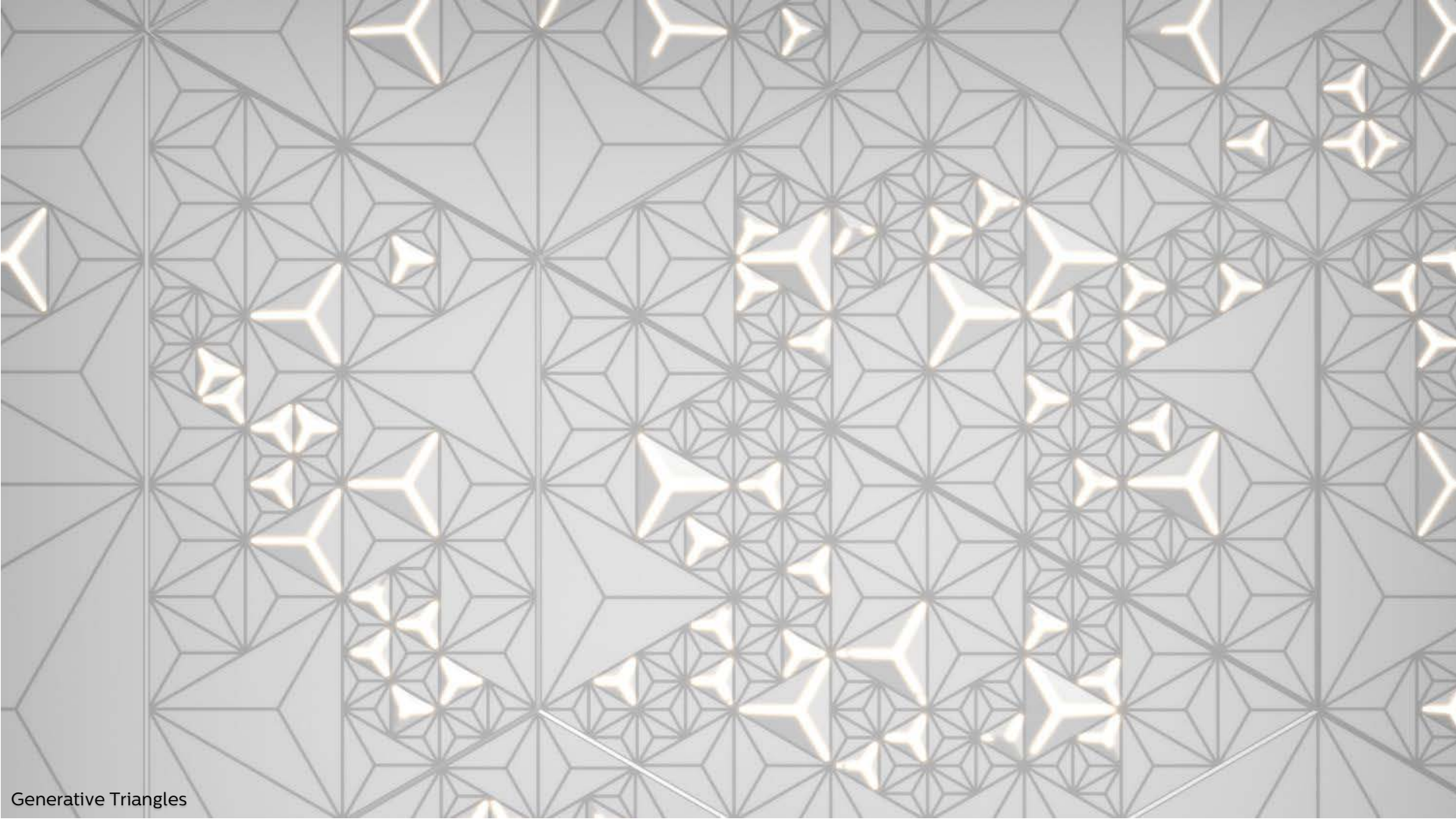
Geometric

Origami

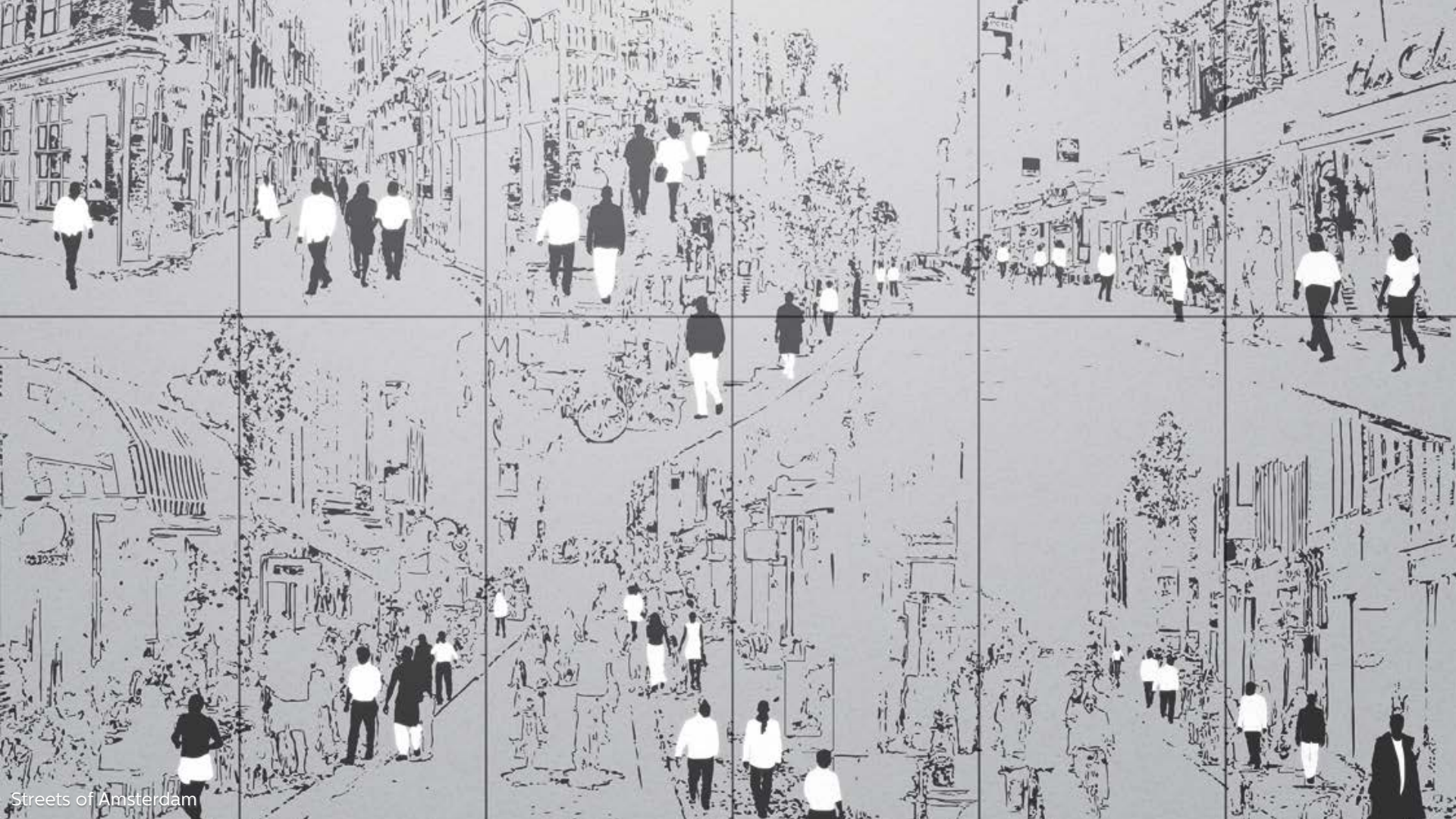
Thin Floral

Geo 2

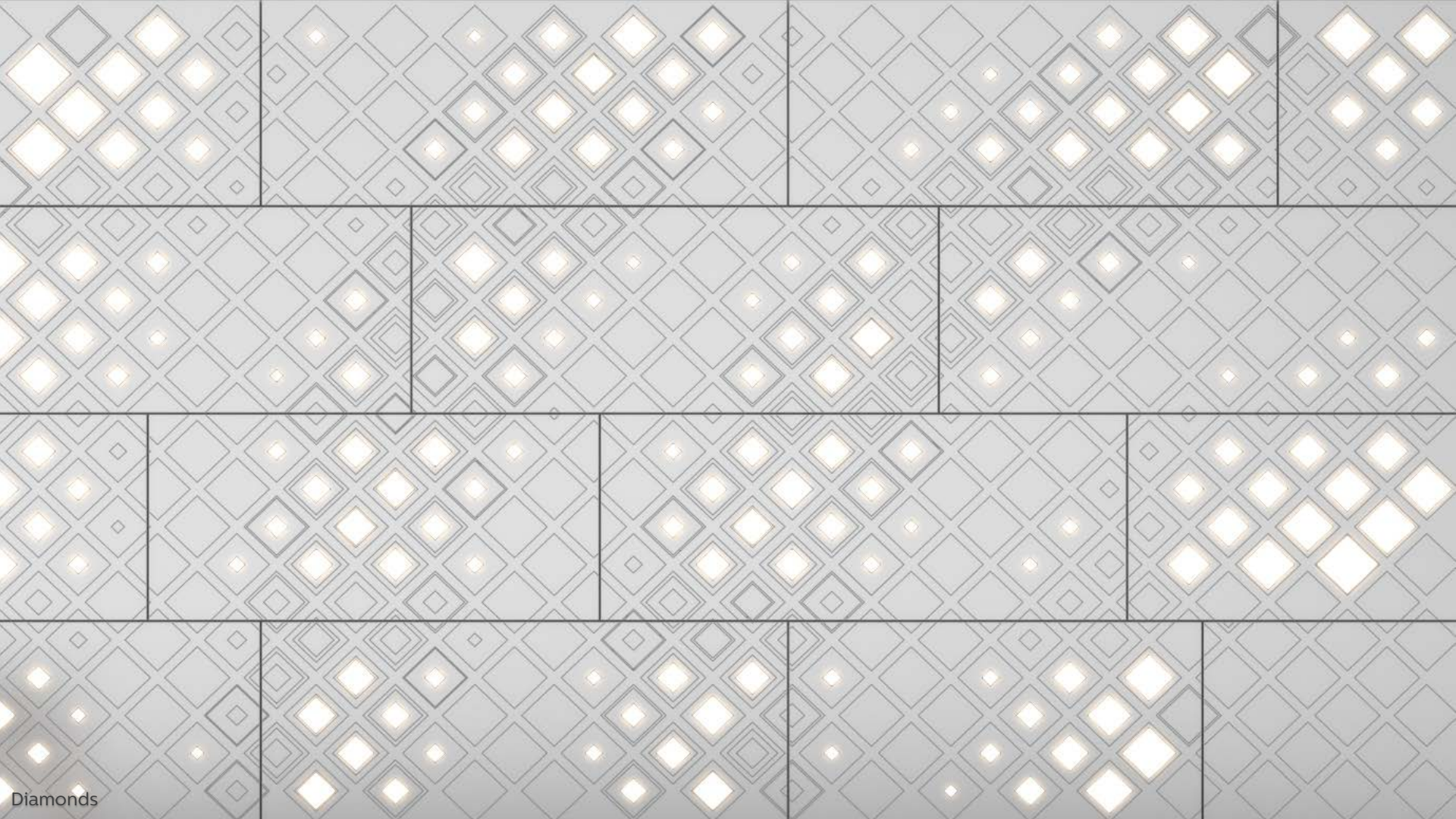

Hexo 3



Generative Triangles



Streets of Amsterdam


Diamonds

Magnolias (also available in 3D foldouts)

Foldouts

Luminous Carpets

Google

PHILIPS

HAVL
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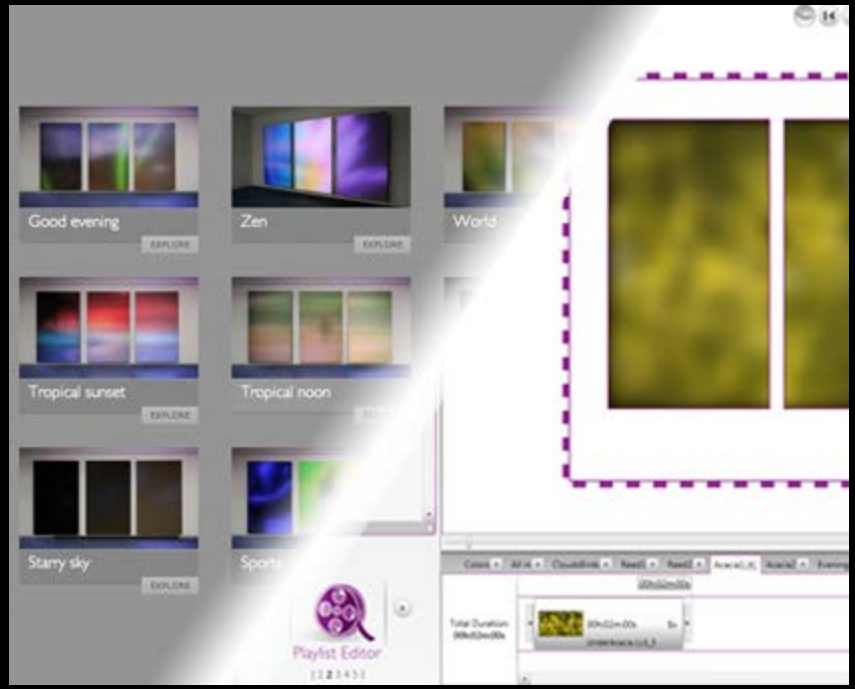
HAVL
23:56:21

BMW i3

Luminous Textiles

Fabric + Media Content



Luminous Ceilings

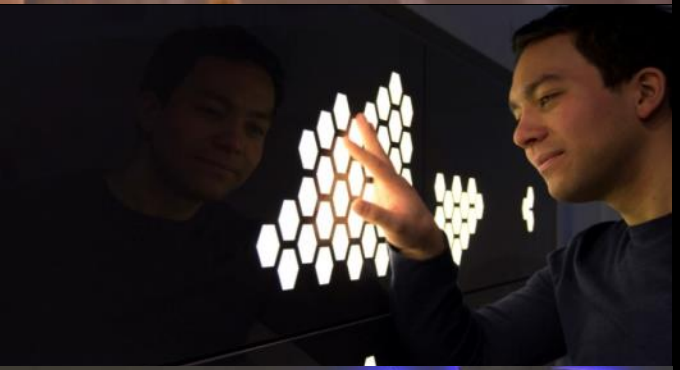
3m X 10m

5 characteristics of embedded light:

1. Light Effect
2. Composition/patterning
3. Material expression
4. Animation
5. Interactivity

Embedded Lighting:

1: Light effect



Selecting a Light Effect

Geometry?

- Points, lines, planes, graphic?

Optic?

- Brilliant or diffused?

Shape?

- Inset, flush, or protruding from the wall surface? Sculptural relief?

Silhouette?

- Direct-view or indirect-view? Shadow-play?

Color of light?

- Color system? White or color? Fixed or dynamic?

Embedded Lighting:

2: Composition or patterning

Light pattern selection

Resolution

- Number of individually controlled pixels?

Density

- Size and spacing of pixels/light effects?

Visual Field

- What style of pixels and what surrounds them?

Structure

- Are the pixels flat or dimensional? What are they mounted to? What is their order?

Graphic Arrangement

- Scaled, flowing? Repetitive tiles? Deforming pattern?

Patterns can become iconic…

Embedded Lighting:

3: Material expression

Material expression of the surface

- Contrast?
- Texture? Tactility?
- Color?
- Fusing the ephemeral magic of light plus the tactility of a material creates a whole new range of surface expressions

Material expression

Shanghai Museum of Glass (2012)
Logon Architecture

Material expression

Elie Tahari Beverly Hills (2007)
Lissoni Associati

Material expression

SK Media (2009)
Glas Platz Gmbh

Embedded Lighting:

4: Animation

Dynamic animation of embedded lighting

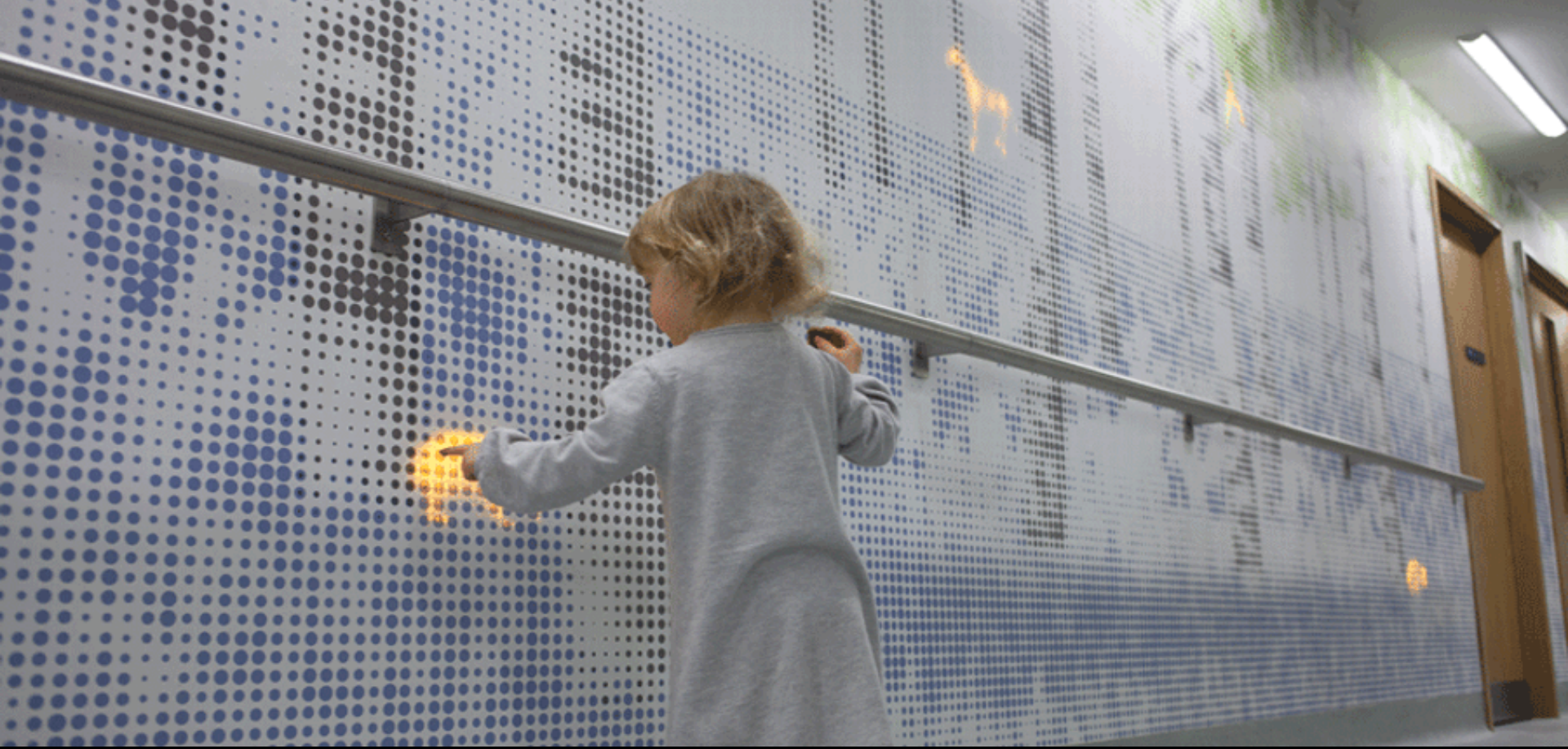
- Humans are naturally attracted by movement
- Movement creates pleasurable visual sensations
- Animation makes us feel comfortable, makes a space feel more natural and attractive

Veronica Strang

Aboriginal anthropologist

“I suspect that the shimmer of light on water echoes what is going on inside our heads. This constant neurological ‘fizz’ or ‘shimmering’ of thoughts might remind us of the mesmerizing effect of sitting beside a glittering body of water, watching the light sparkle on the surface…its powerful mesmerizing or hypnotic effects…”

Images: Tim Macauley



Animation provides distraction

Great Ormond Street Hospital (2012)
Jason Bruges Studio

"The brief was to design and install a distraction artwork helping to create a calming yet engaging route that culminates in the patient's arrival at the anaesthetic room."

Embedded Lighting:

5: Interactivity

A highly personal and dynamic experience…

Methods of interaction

Touch	(poking, grabbing, twisting)
Proximity	(zonal, near/far)
Occupancy	(passive)
Tracking	(stereo vision camera)
Identity	(facial recognition)
RFID Tagging	(iBeacon, NFC, etc.)

Me and my shadow….

Interaction

Hotel Puerta America (2005)
Jason Bruges Studio

Interaction

Hotel Puerta America (2005)
Jason Bruges Studio

Unbuilt concept by Electroland

What kind of interactions are meaningful in architecture?

Deliver “function”

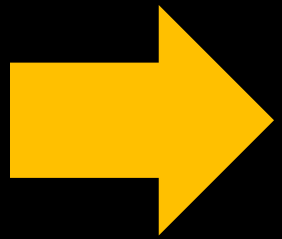
- The right light, at the right place, at the right time.

Deliver “delight”

- Dynamic-lighting-vs-the-compression-of-memory

Deliver “content”

- Architecture can act as a portal to the digital world



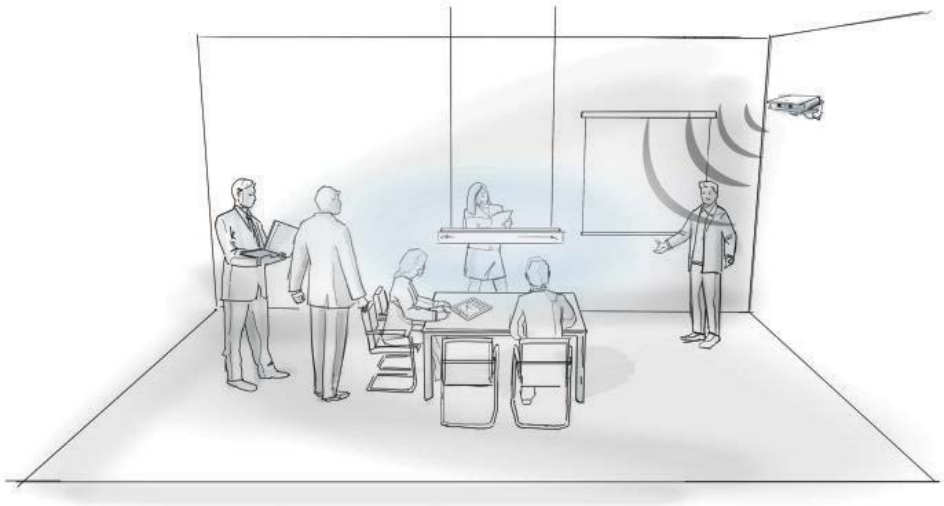
Hospitality?

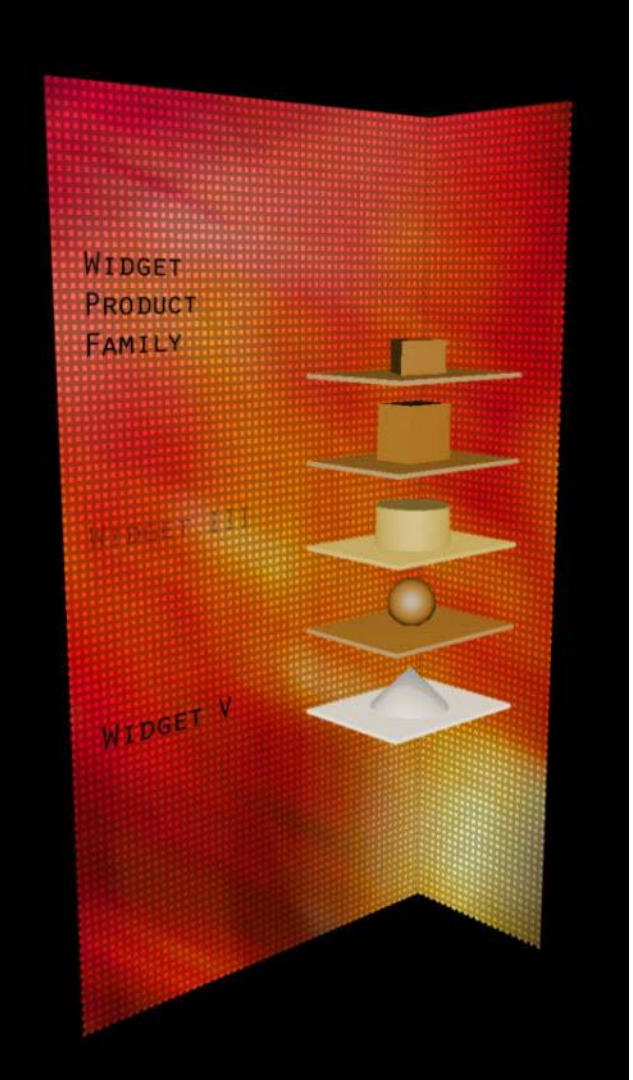
Retail?

Healthcare?

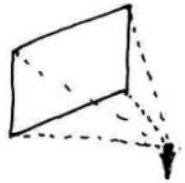
Office?

Outdoor public spaces?

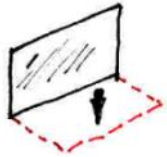


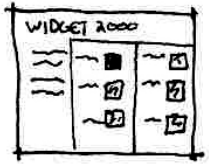

WIDGET
PRODUCT
FAMILY
WIDGET V

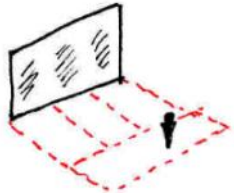
WWW.WIDGET.COM

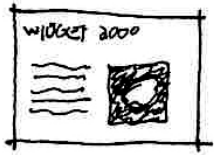


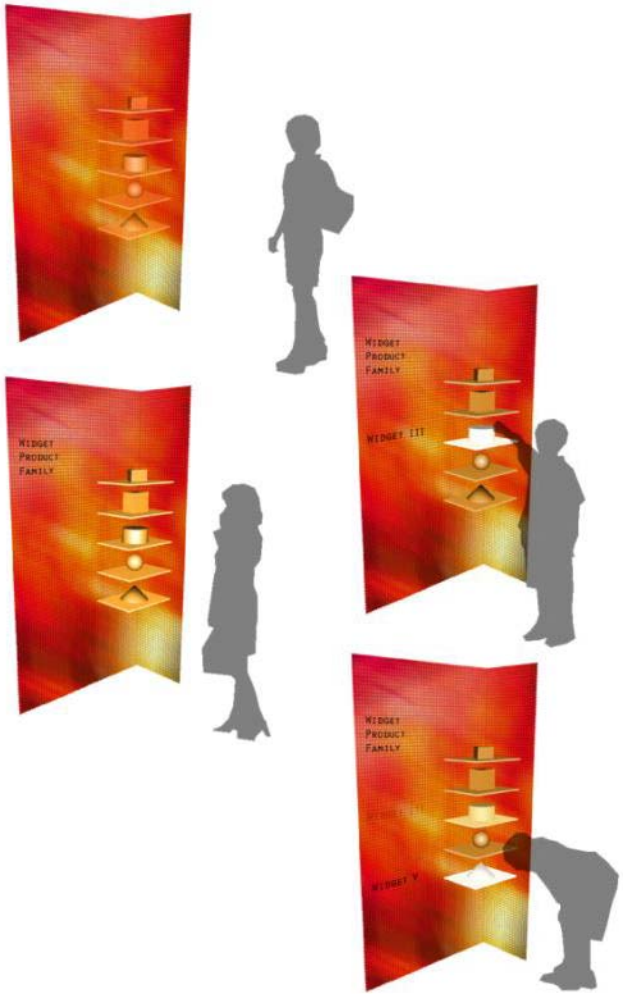
WIDGET
2000
WELCOME




WIDGET 2000




WIDGET 2000


WIDGET
PRODUCT
FAMILY
WIDGET III
WIDGET V

Ambient luminescence:

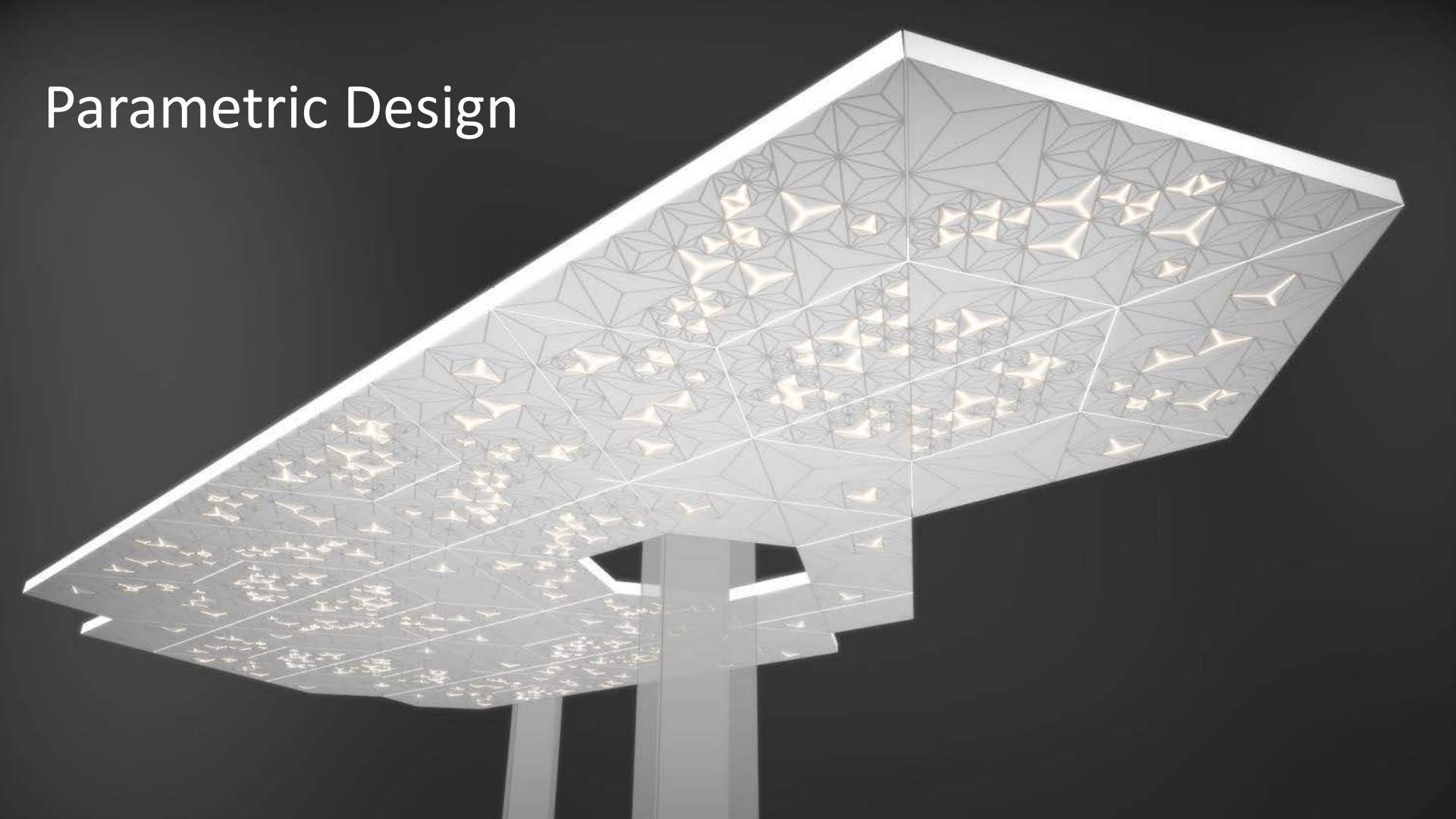
What does the future hold?

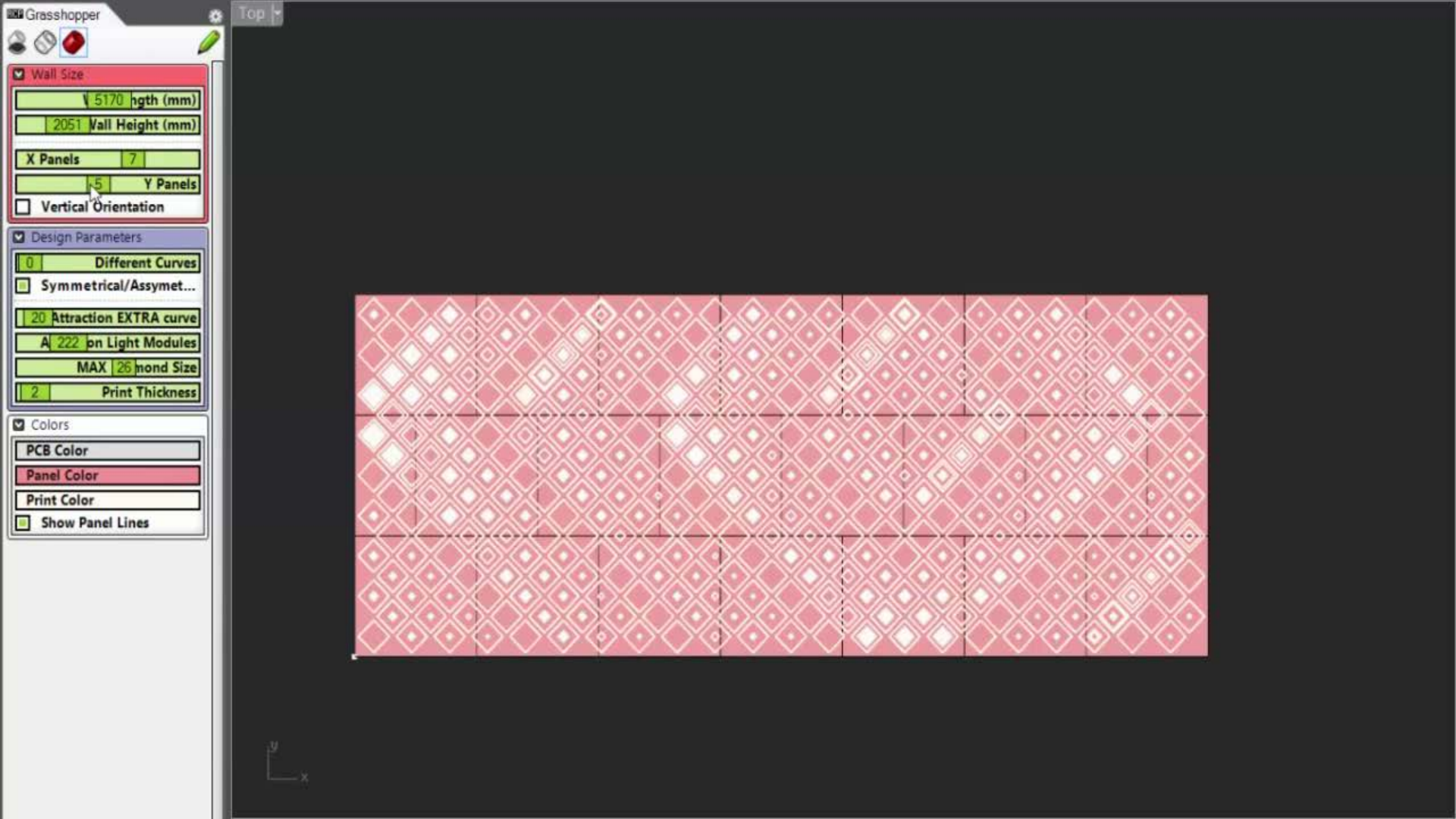
A revolution has occurred in architectural construction

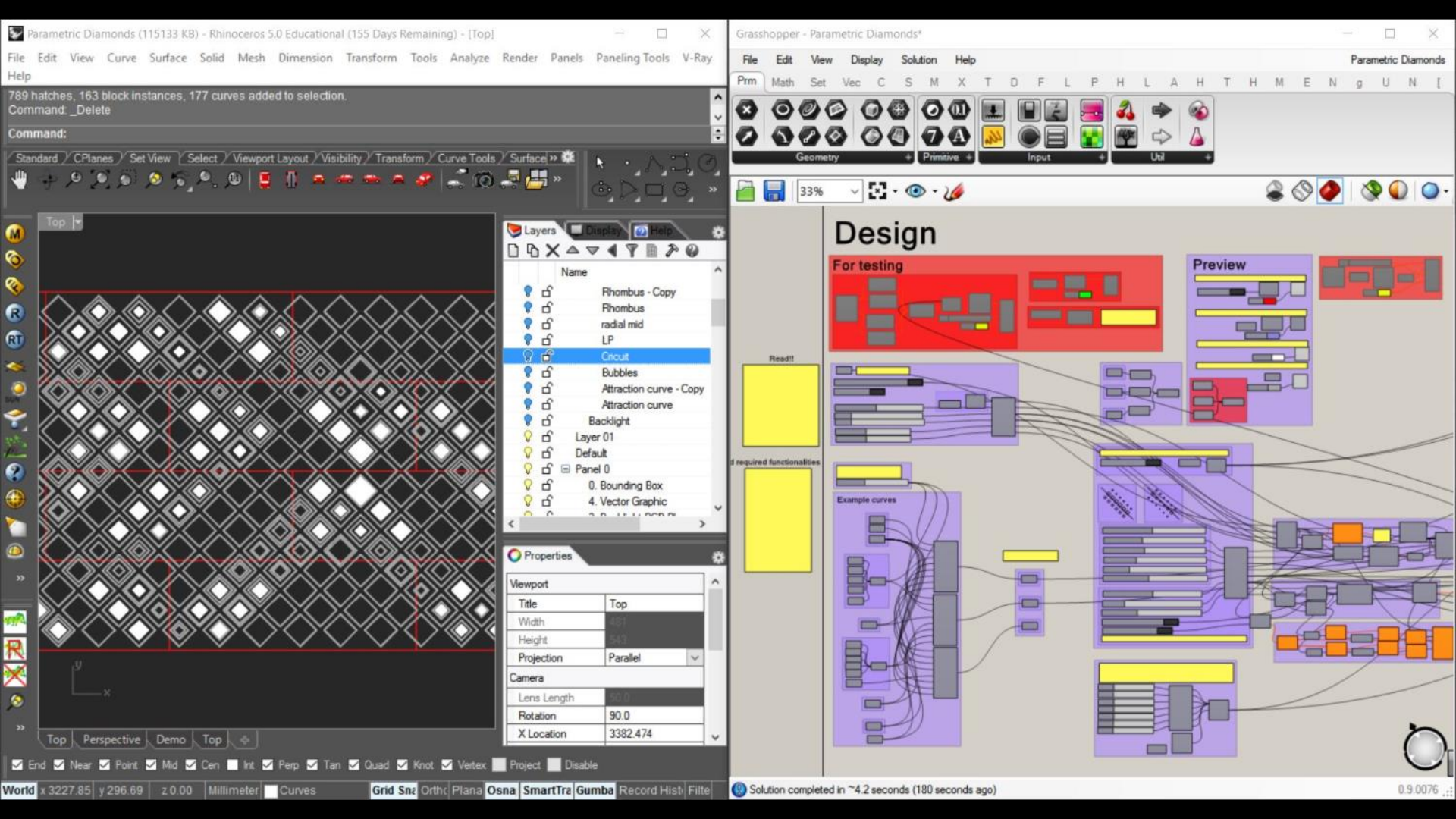
Harbin Opera House
MAD Architects

UN Studio
Taiwan Airport

Parametric Design



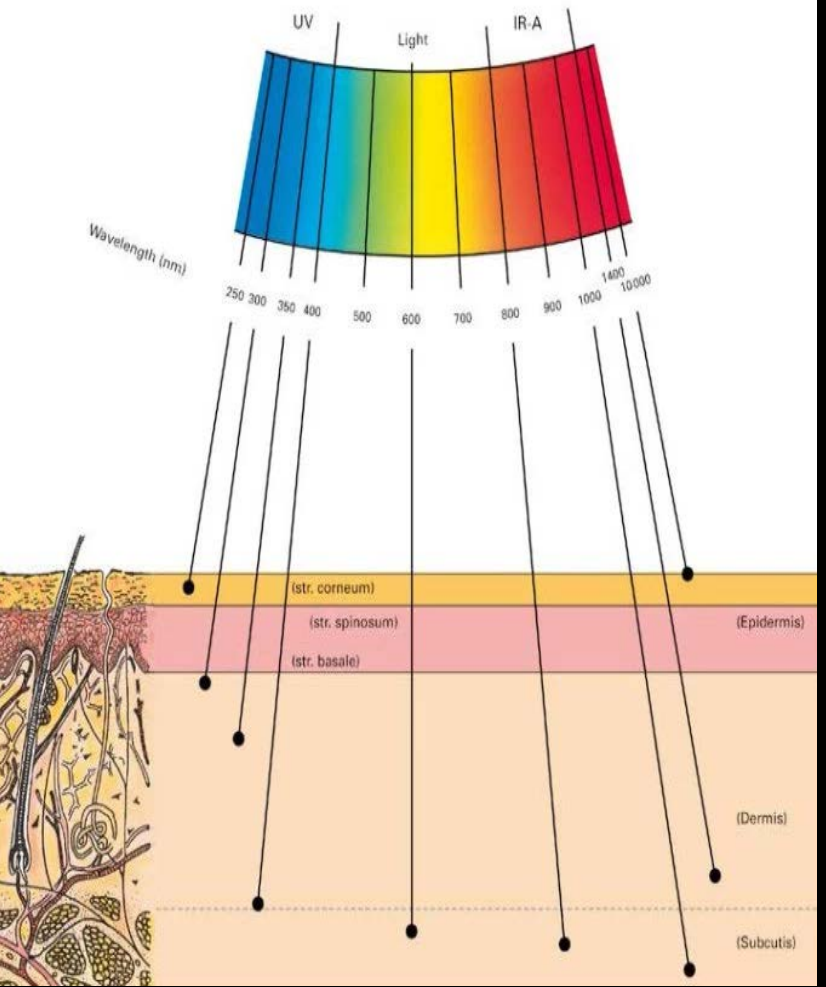

Grasshopper
Wall Size
5170 hgth (mm)
2051 Vall Height (mm)
X Panels 7
5 Y Panels
Vertical Orientation
Design Parameters
0 Different Curves
Symmetrical/Assymet...
20 Attraction EXTRA curve
A 222 on Light Modules
MAX 26 mond Size
2 Print Thickness
Colors
PCB Color
Panel Color
Print Color
Show Panel Lines
Top


Parametric Diamonds (115133 KB) - Rhinoceros 5.0 Educational (155 Days Remaining) - [Top]
File Edit View Curve Surface Solid Mesh Dimension Transform Tools Analyze Render Panels Paneling Tools V-Ray
Help
789 hatches, 163 block instances, 177 curves added to selection.
Command: _Delete
Command:
Standard CPlanes Set View Select Viewport Layout Visibility Transform Curve Tools Surface
Top
Layers Display Help
Name
Rhombus - Copy
Rhombus
radial mid
LP
Cricuit
Bubbles
Attraction curve - Copy
Attraction curve
Backlight
Layer 01
Default
Panel 0
0. Bounding Box
4. Vector Graphic
Properties
Viewport
Title Top
Width
Height
Projection Parallel
Camera
Lens Length
Rotation 90.0
X Location 3382.474
Top Perspective Demo Top
End Near Point Mid Cen Int Perp Tan Quad Knot Vertex Project Disable
World x 3227.85 y 296.69 z 0.00 Millimeter Curves Grid Snap Ortho Planar Osnap SmartTrack Gumball Record History Filter
Grasshopper - Parametric Diamonds*
File Edit View Display Solution Help
Parametric Diamonds
Prm Math Set Vec C S M X T D F L P H L A H T H M E N g U N [
Geometry Primitive Input Util
33%
Design
For testing
Preview
Read!!
required functionalities
Example curves
Solution completed in ~4.2 seconds (180 seconds ago)
0.9.0076

BIM/Parametric/Digital Fab

Light as a Material

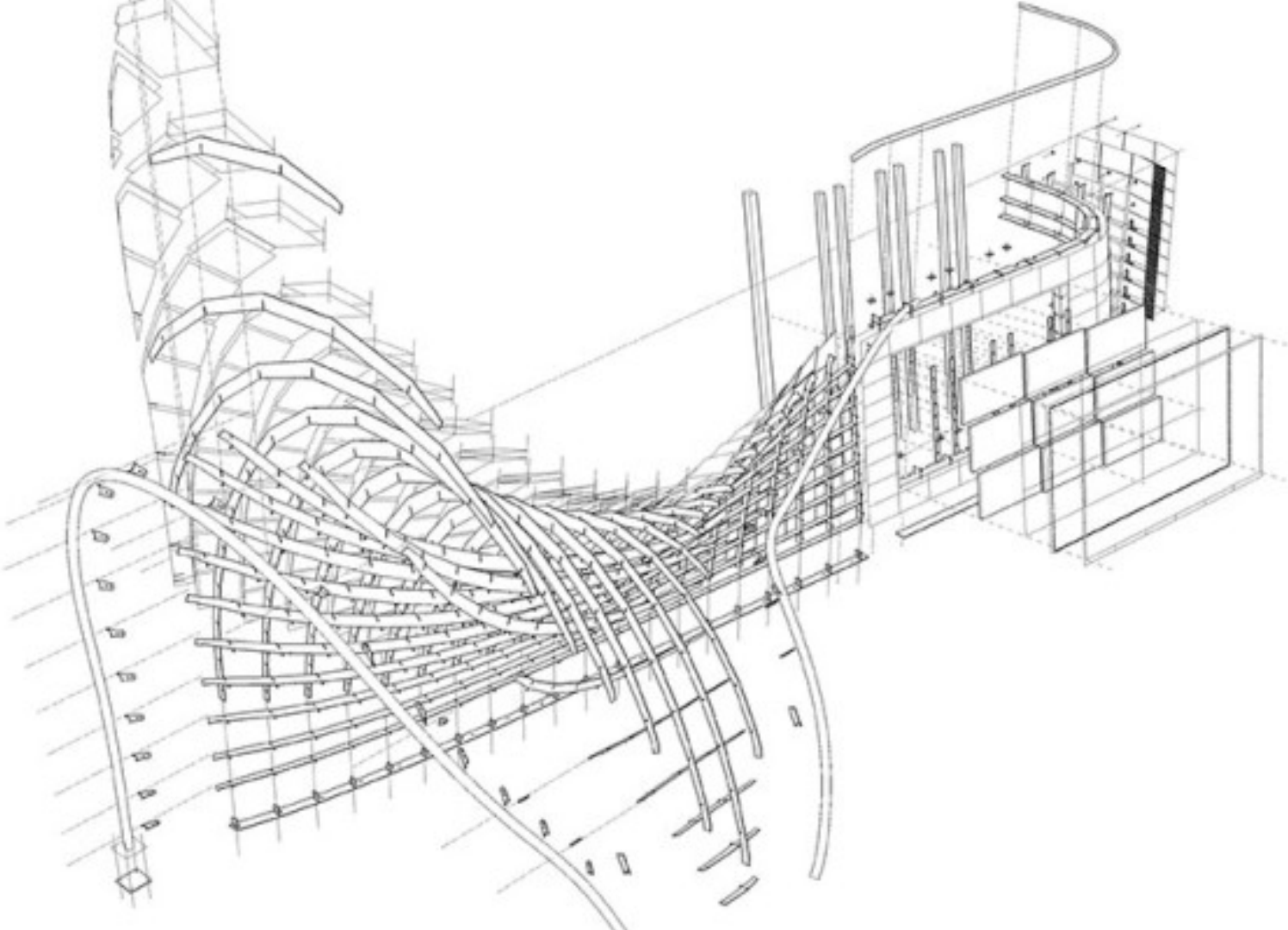
Healthy Light

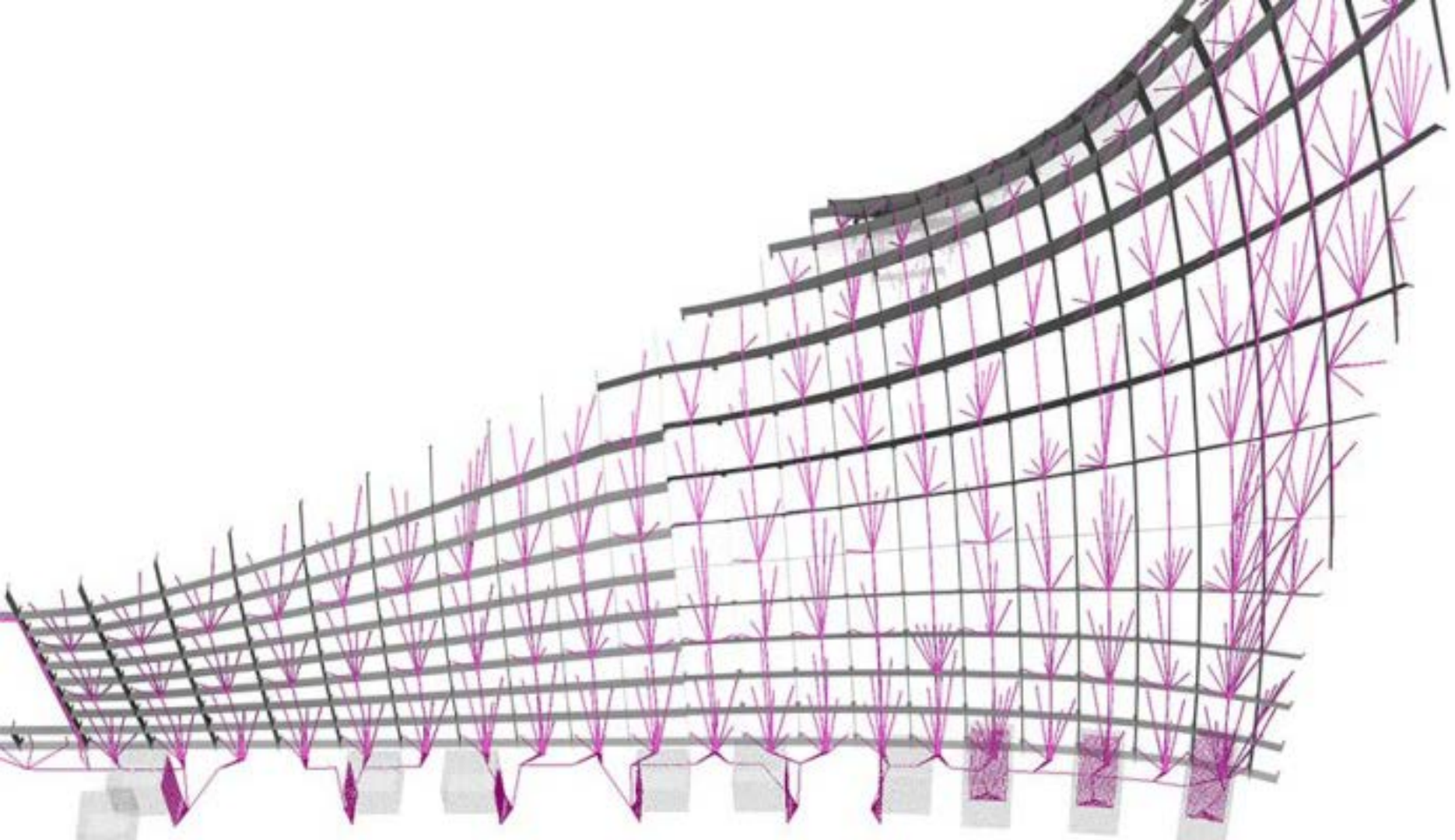


Light therapies that are in various stages of research:

- wrinkles and stimulating collagen production
- adjusting circadian rhythms and sleep cycles
- reducing/eliminating the effects of jet lag
- SAD (Seasonal Affective Disorder)
- anxiety
- skin disorders like psoriasis, eczema, acne, and vitiligo
- wounds and scars
- muscle pain
- reducing inflammation

Aurora – DirectTV Headquarters (2013)
Electroland





The future?

“The integration of energy harvesting, sensing, control, and illumination into a single, flexible, high-volume, eco-friendly material…”

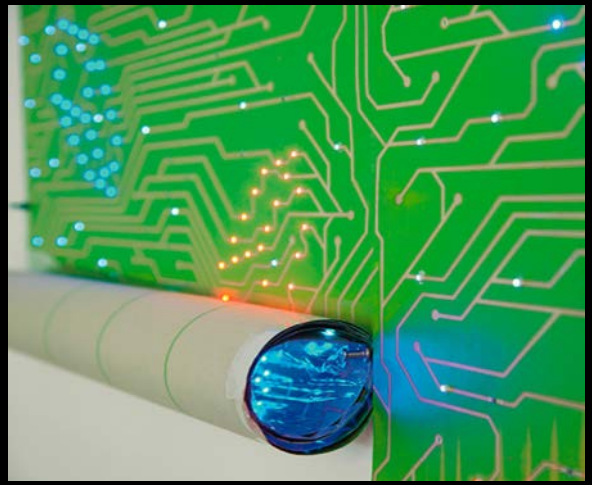
Sheila Kennedy
Harvard Graduate School of Design (1999)

The future?

Light as sheet

Flexibility

Soft House (2013)
Kennedy & Violich Architecture

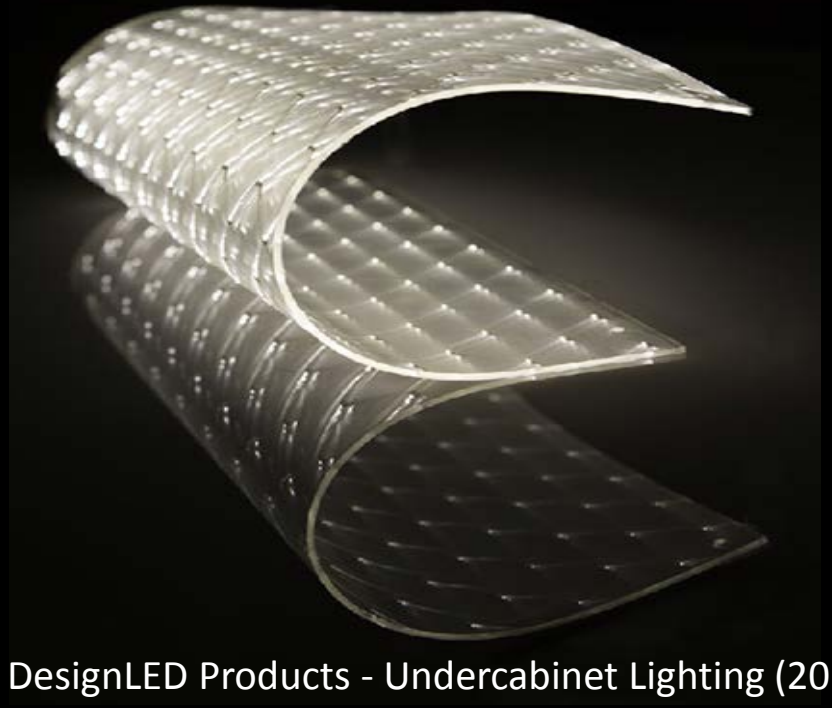


LED wallpaper

Ingo Maurer - LED Wallpaper (2011)

Planar sheets of light

Cooledge Lighting (2014)



Planar sheets of light

DesignLED Products - Undercabinet Lighting (2014)

OLED

LG Chem/LG Display

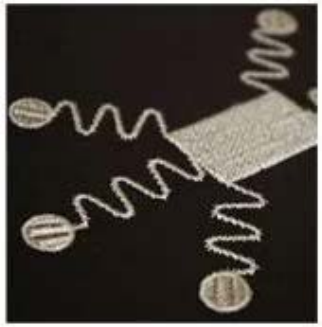
The future?

Light as a textile

Forster Rohner

The future?

Light as a textile



> TEXTILE CONDUCTORS

> TEXTILE HEATING

> TEXTILE SENSORS

> ILLUMINATED TEXTILES

Forster Rohner

The future?

Light as a textile

E-Static Shadows (2009)
Zane Berzina, et al

The future?

Light as a textile

E-Static Shadows (2009)
Zane Berzina, et al

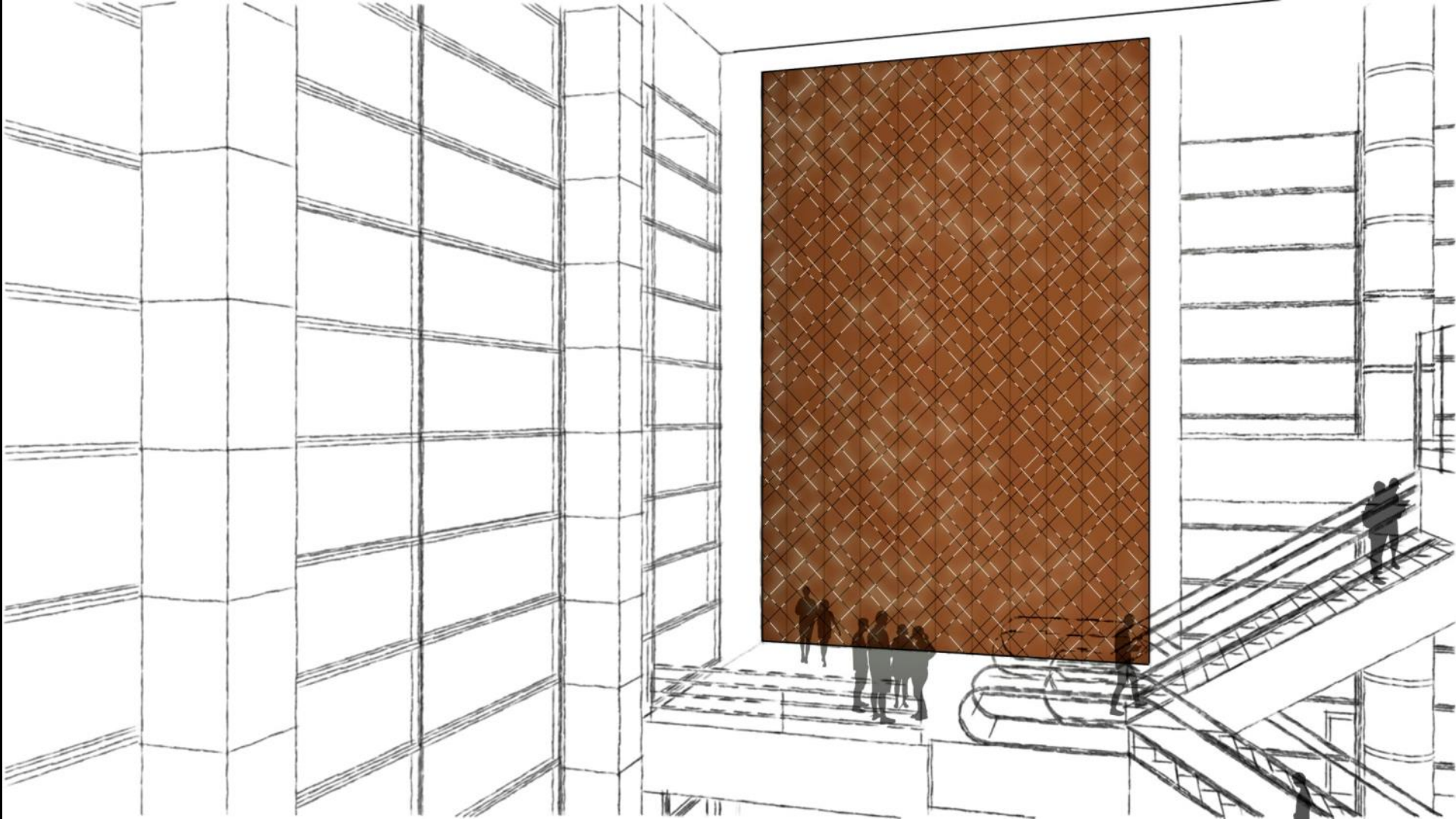
The future?

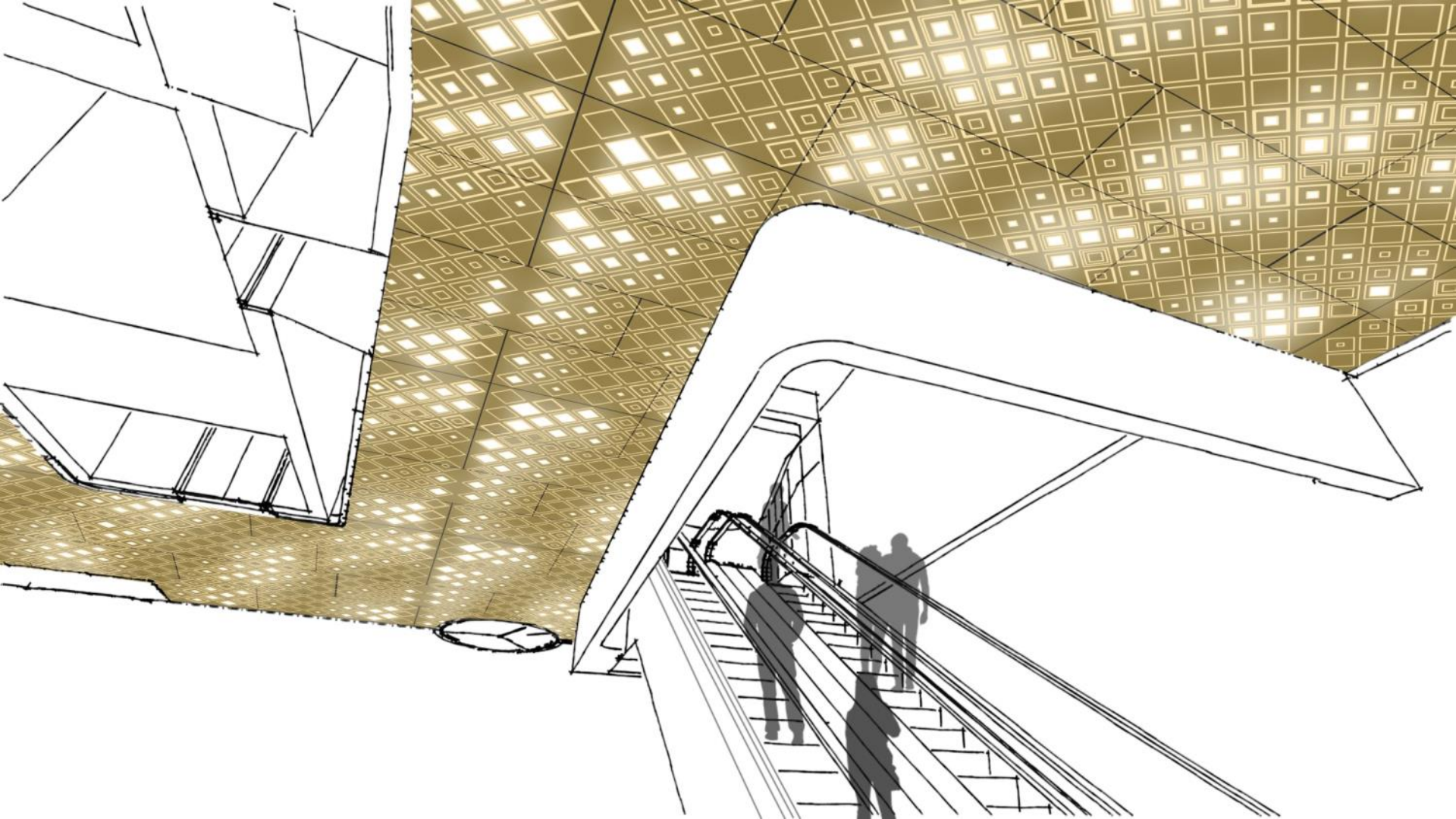
Embedded controls

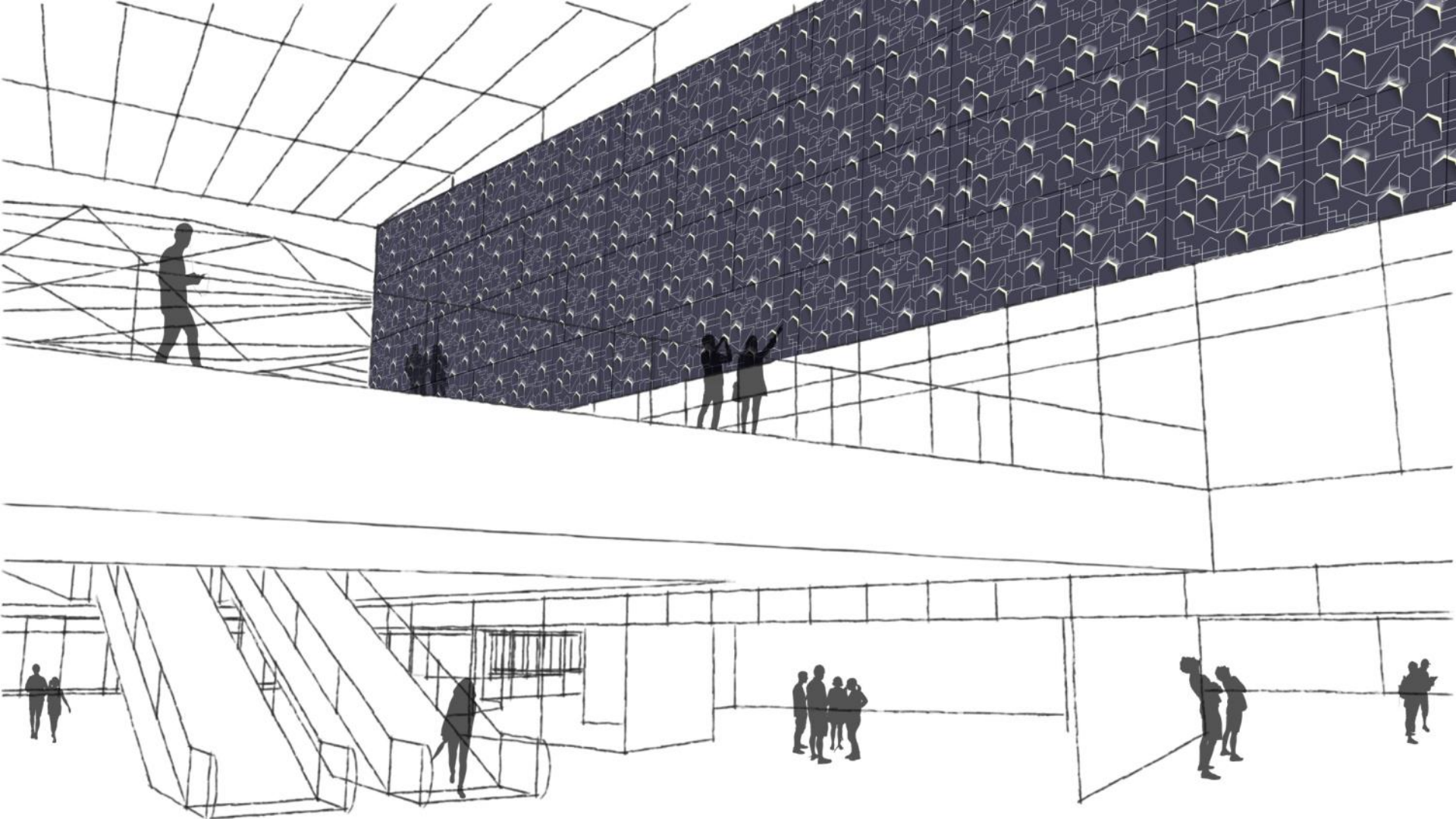
Living Wall (2010)
MIT Media Lab

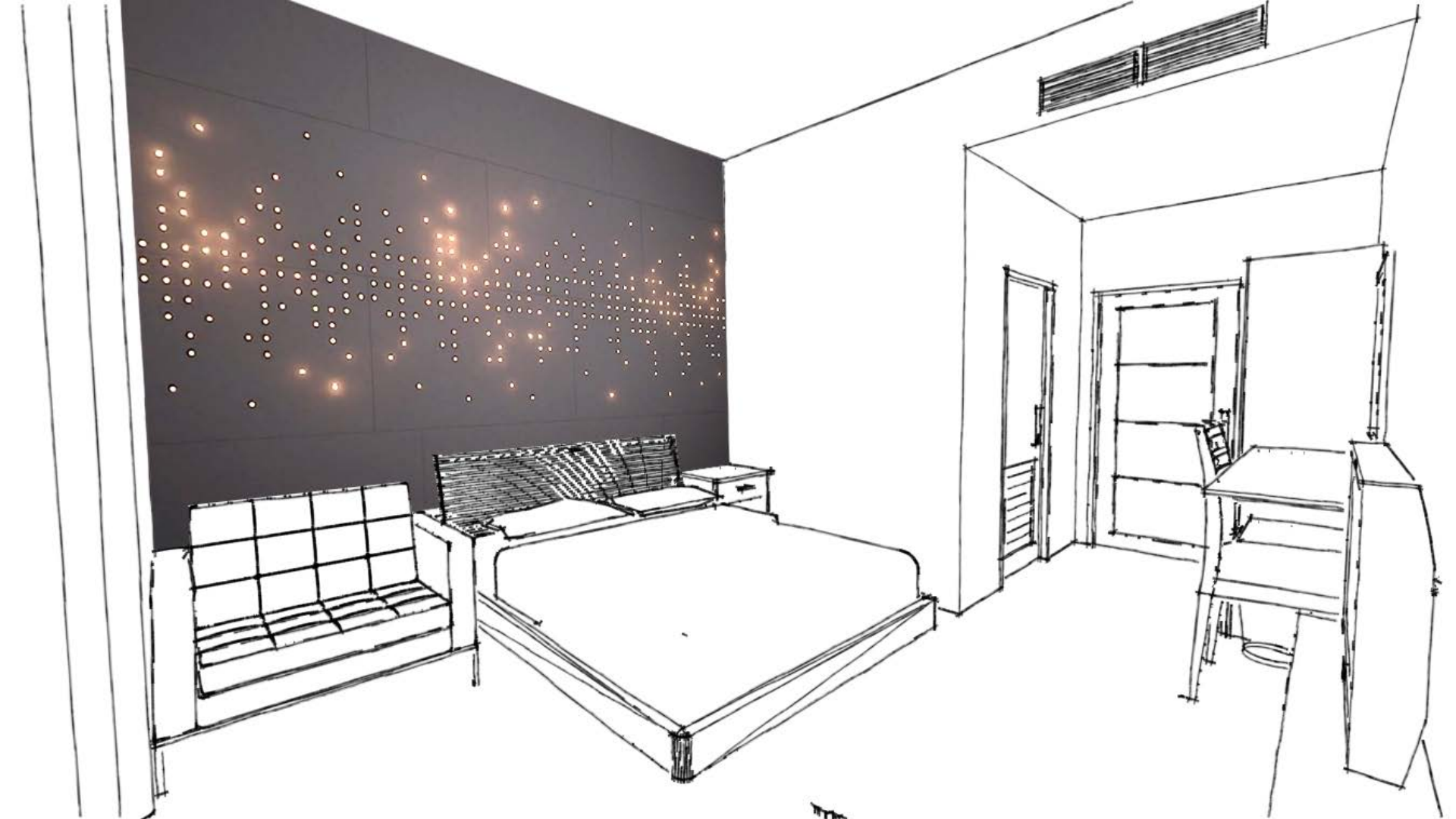
Ambient Luminescence and
Experiential Design:

Dream big!









Thank you!

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