

LIDE 3 BERLIN

5-10 OCT

2015



DORA KOURKOULI

IHAB ADLY

JULIE PAUWELS

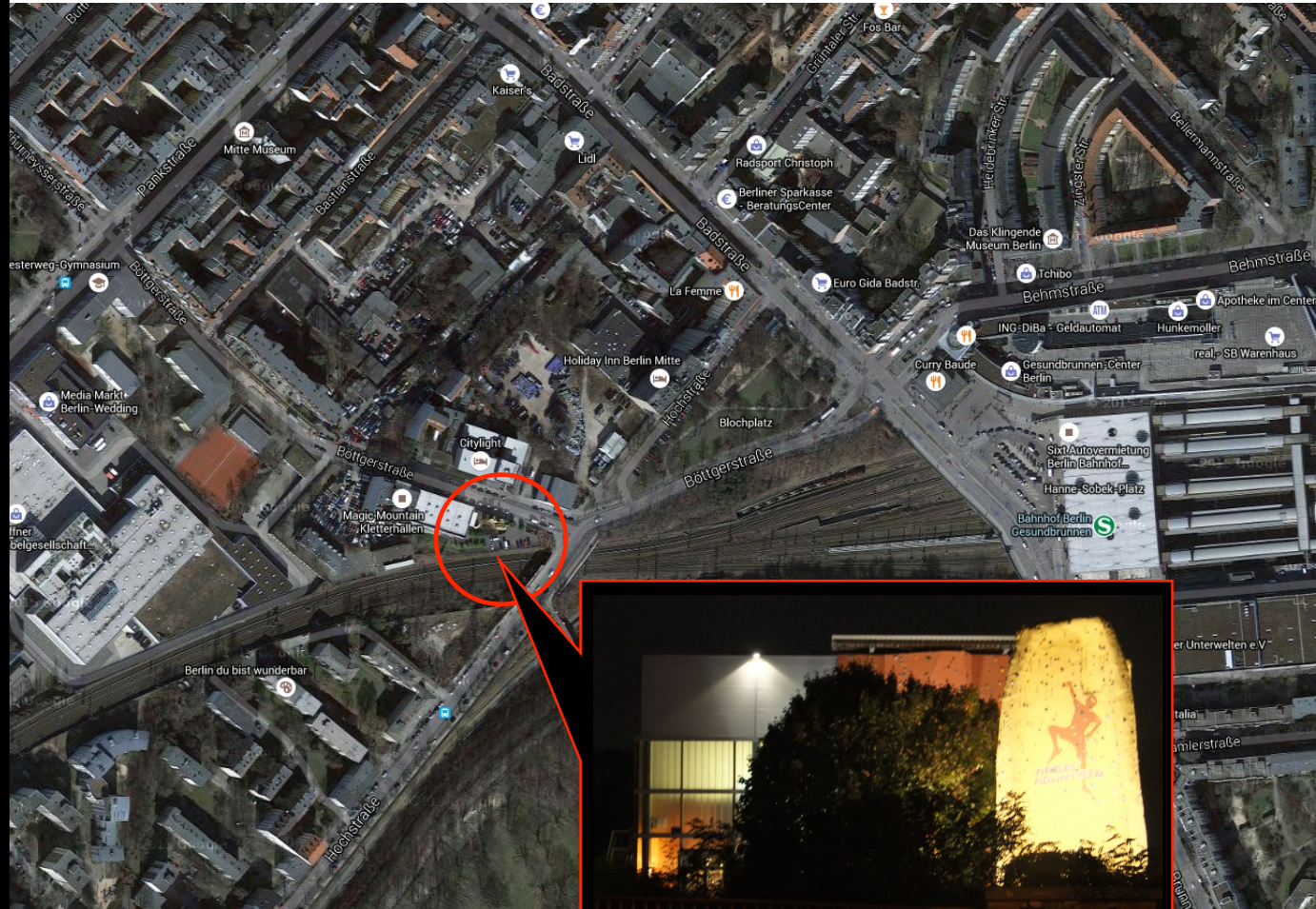
NATASHA FOIGEL

NIKOS ZAIRIS

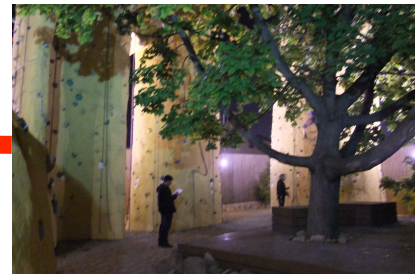
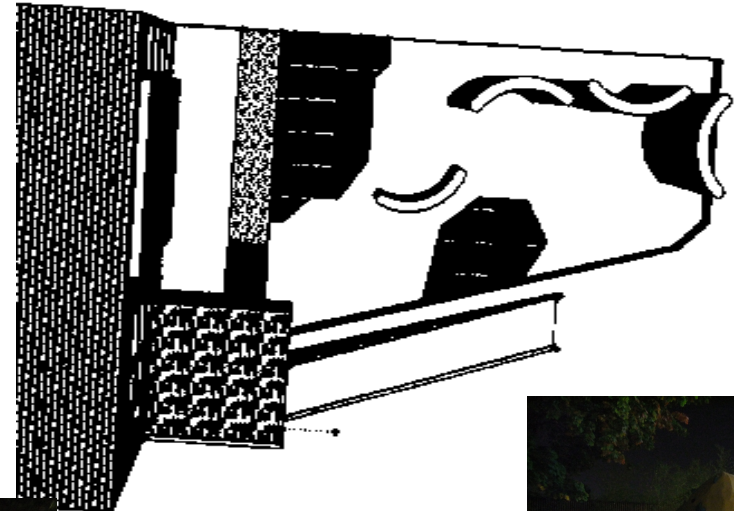
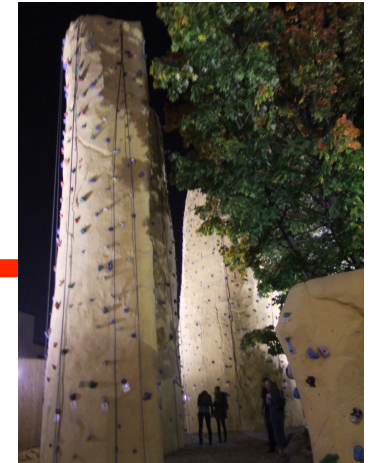


THE MAGIC MOUNTAIN CLIMBING CENTER

Böttgerstraße 20-26,
U/S-Gesundbunnen,
13357 Berlin-Mitte



THE MAGIC MOUNTAIN CLIMBING CENTER



METHODOLOGY

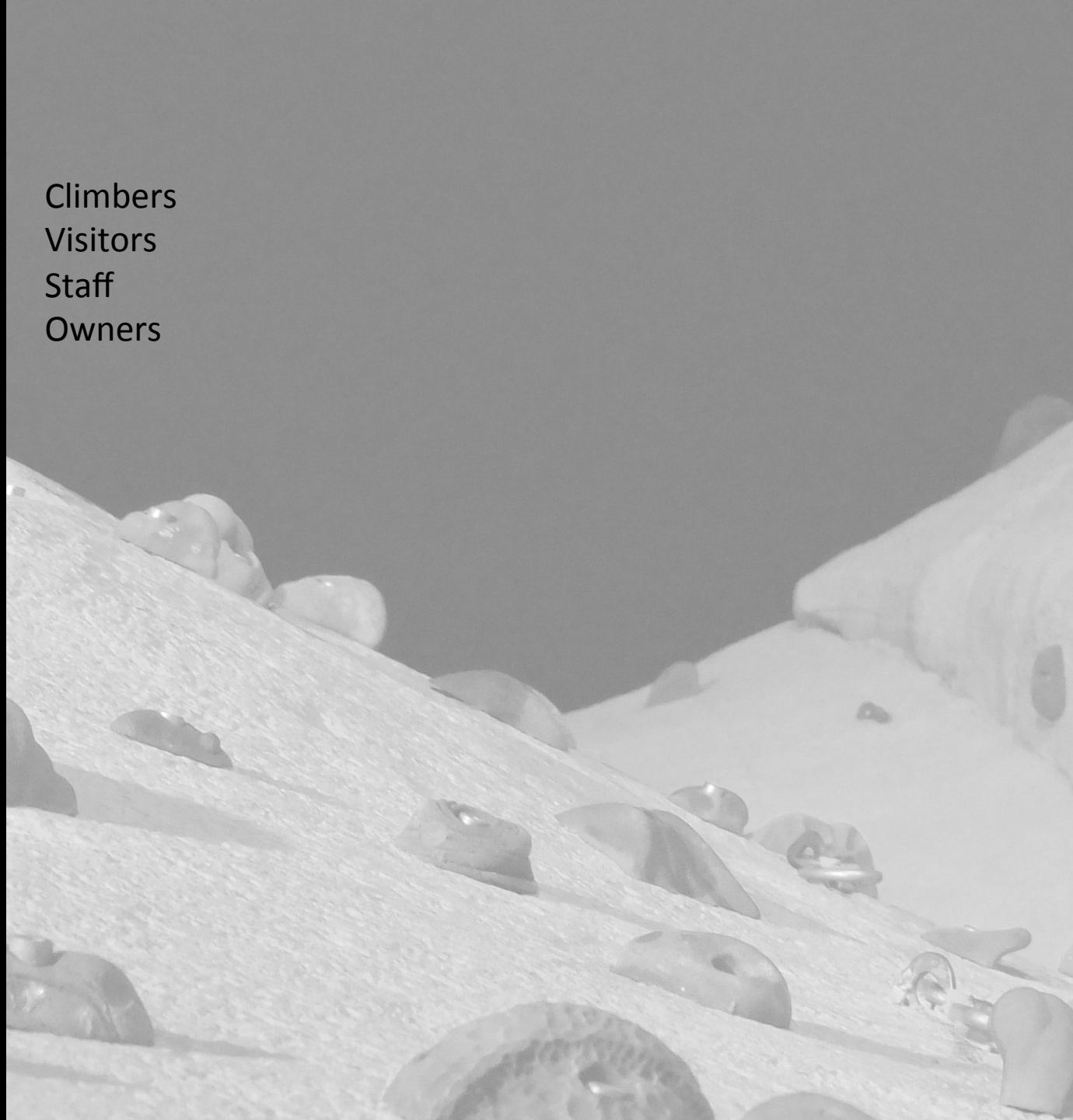
- Identifying the groups of users
- Defining the needs of every group of users
- Identifying current weaknesses
- Research
- Aims
- Concept design
- Proposing lighting plan
- Conclusion



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Climbers
Visitors
Staff
Owners



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Climbers

- climb safely and comfortably

Visitors

- pleasant use of the center facilities

Staff

- work in a good environment

Owners

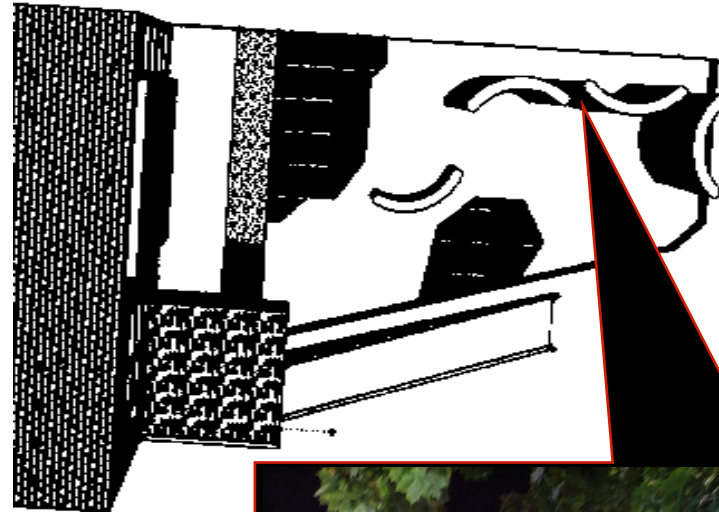
- provide secure and enjoyable climbing experience

- advertising the center



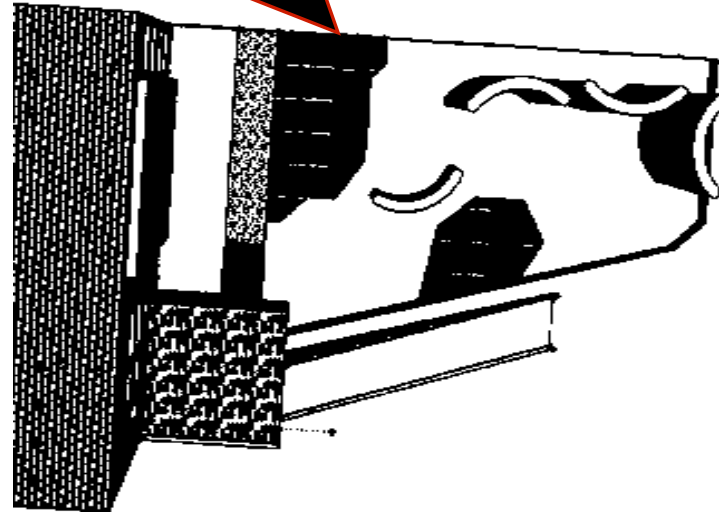
METHODOLOGY

- Identifying the groups of users
- Defining the needs of every group of users
- Identifying current weaknesses
 - Dark areas
 - Glare
 - Energy waste
 - inability differentiating holds' colors (routes)
 - high light level
 - light pollution
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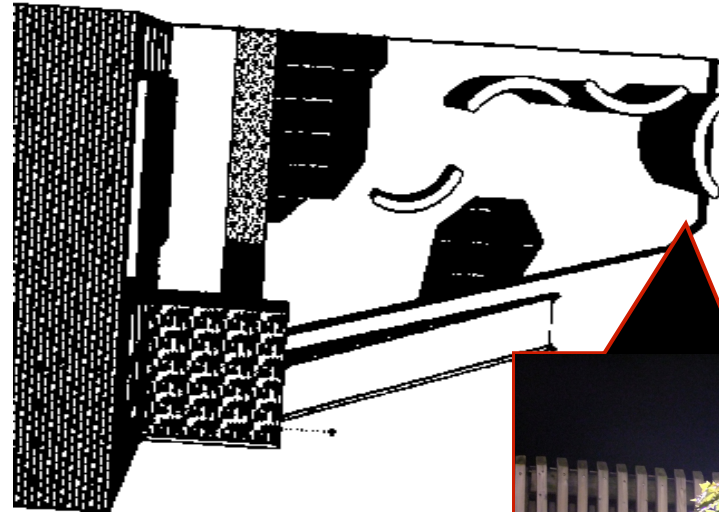
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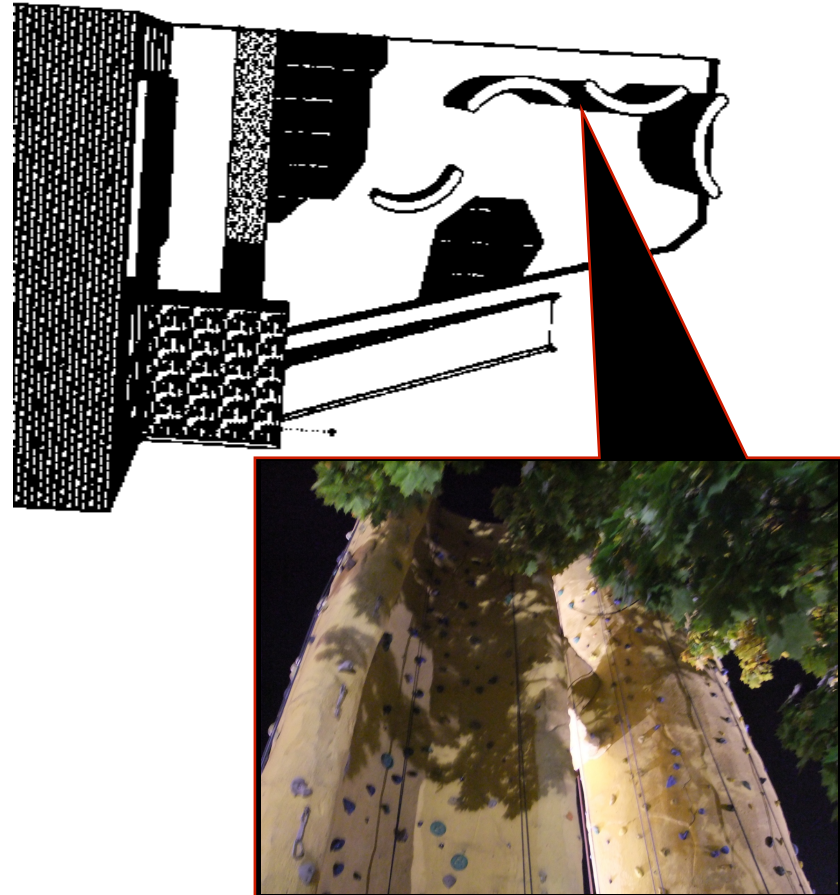
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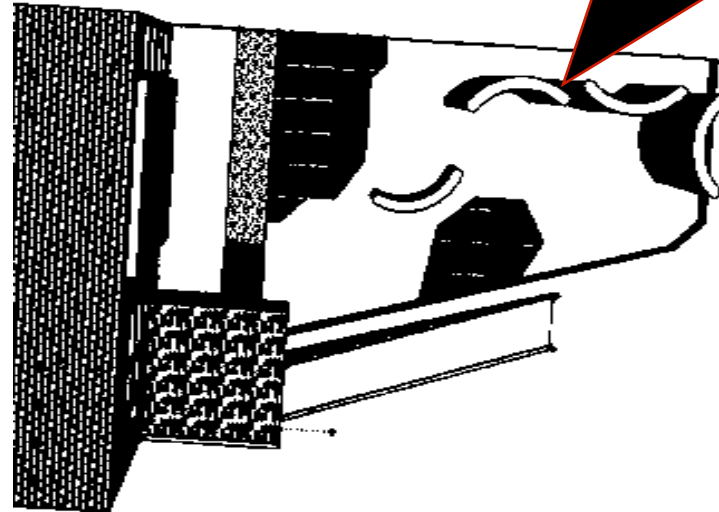
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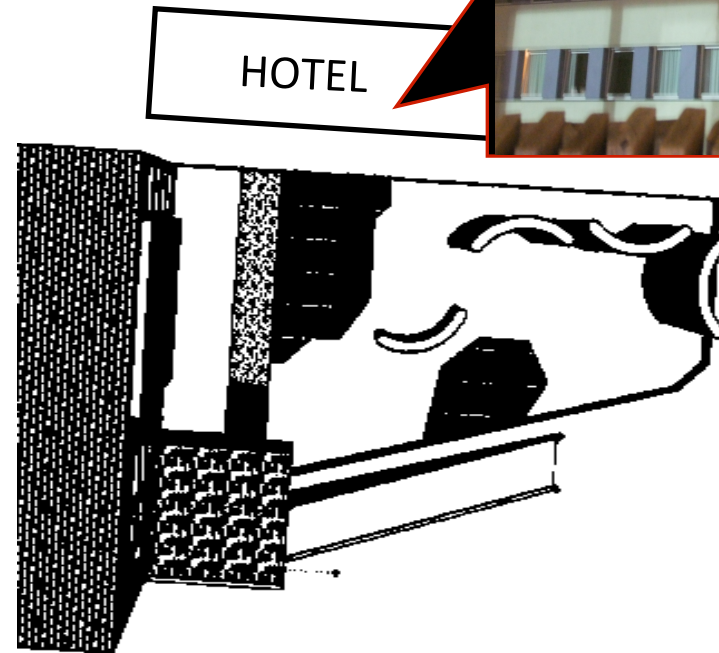
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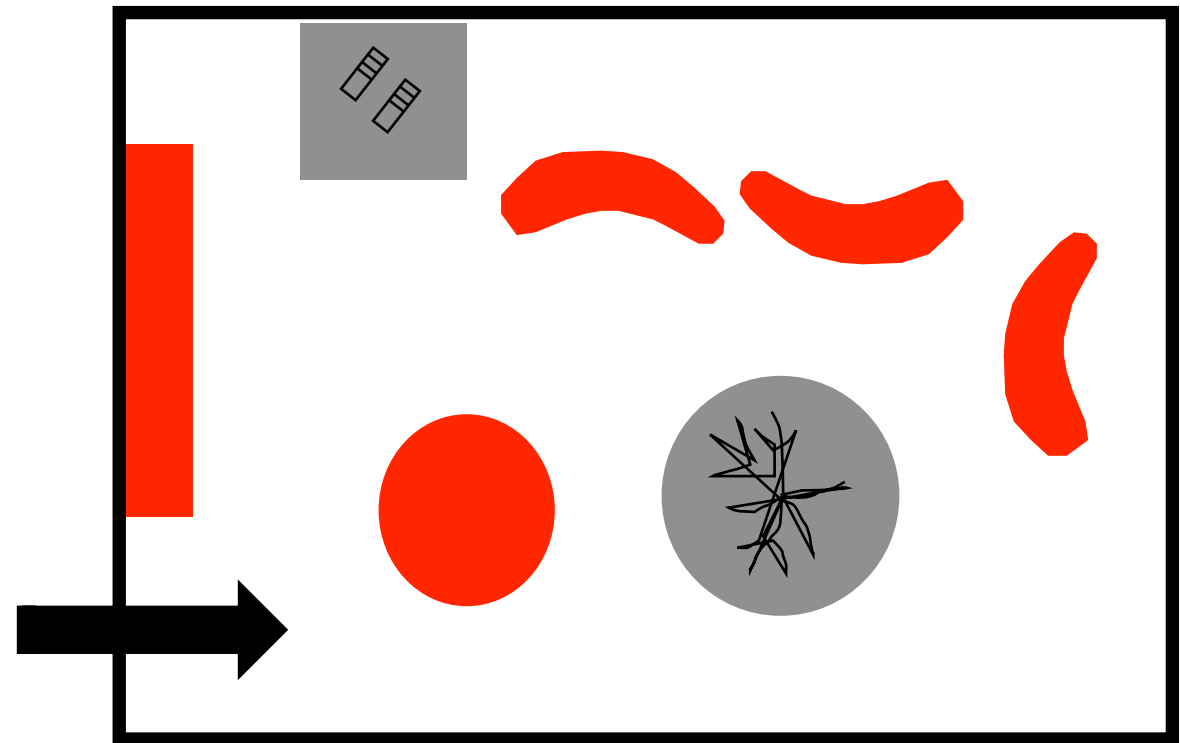


METHODOLOGY

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- **Aims**
 - appropriate light levels (EU Standards)
 - high uniformity
 - maximum clarity
 - light control (light levels and areas)
 - emphasize the entrance
 - signify the pathways
 - efficient energy use
 - avoid disturbing glare on the hotel building
 - reduce light pollution
 - propose installations for special events
- Concept design
- Proposing lighting plan
- Conclusion

METHODOLOGY

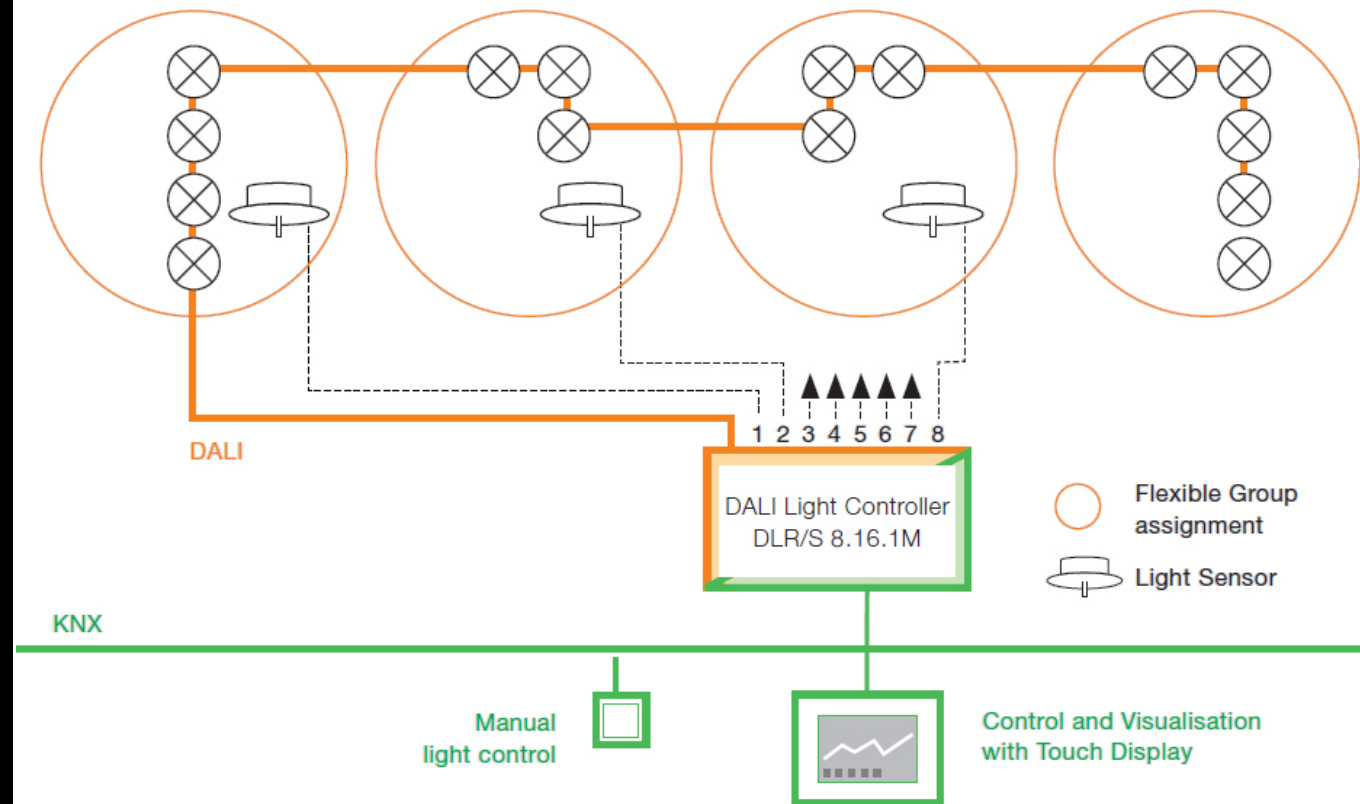
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- **Concept design**
 - different light zones
 - lighting control
 - customized lighting
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- walls
- rest areas
- fence

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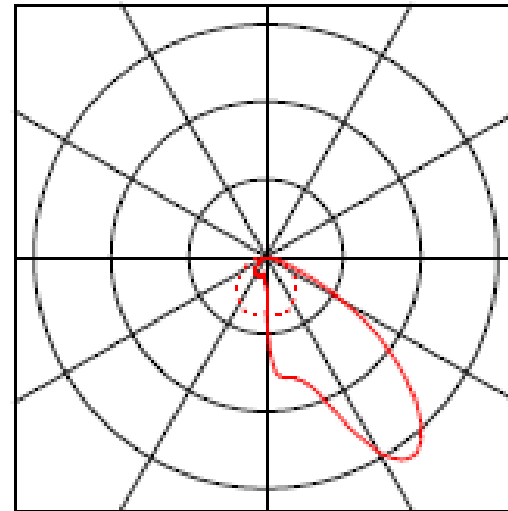
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 - routes indicated
- through lighting
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-Climbing wall luminaire



Luminaire data

Luminaire efficiency	: 77.8%
Luminaire efficacy	: 77.8 lm/W
Classification	: A40 ↓100.0% ↑0.0%
CIE Flux Codes	: 44 84 99 100 78
UGR 4H 8H (20%, 50%, 70%)	
C0 / C90	: 28.9 / 27.0
Control gear	:
System power	: 220 W
Length	: 530 mm
Width	: 532 mm
Height	: 80 mm

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-Climbing wall luminaire

General

Calculation algorithm used
Maintenance factor

Average indirect fraction
0.80

Total luminous flux of all lamps
Total power
Total power per area (2500.00 m²)

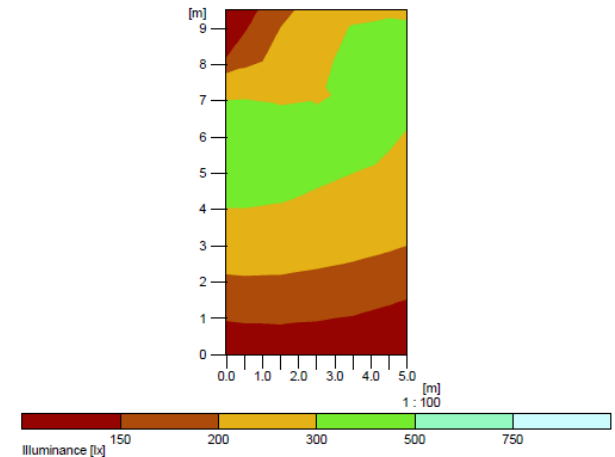
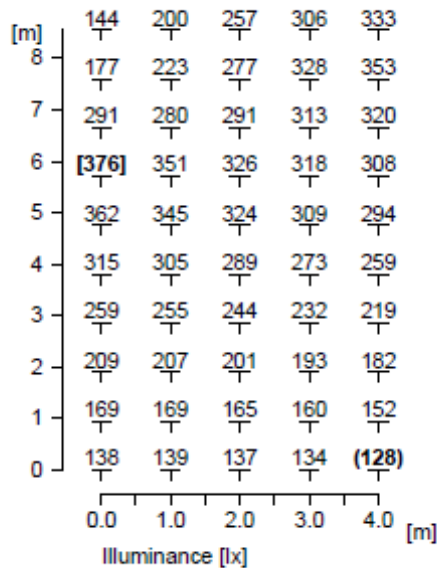
110000 lm
1100 W
0.44 W/m²

Illuminance

Average illuminance
Minimum illuminance
Maximum illuminance
Uniformity U₀
Diversity U_d

E_{av}
E_{min}
E_{max}
E_{min}/E_m
E_{min}/E_{max}

251 lx
128 lx
376 lx
1:1.96 (0.51)
1:2.95 (0.34)



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P O W E R C A L C U L A T I O N S

-Current Installations in the outdoor area:

▪13 Halogen Flood Light x 150 W =1950 W

▪1 Halogen Flood Light x 300 W = 300 W

▪Total for out door area = 2250 W

-Proposed solution:

▪3 LED fixtures per wall x 220 W x 4 walls
= 2640 W

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C O N S U P T I O N C A L C U L A T I O N S

-Energy consumption in the outdoor area:

- 6 daily working hours x 1950 W = 11.7 kWh
- 12 daily hours for the ad. w 300 W = 3.6 kWh
- Yearly consumption = 5.6 MWh

-Energy consumption with dimming to 25 %

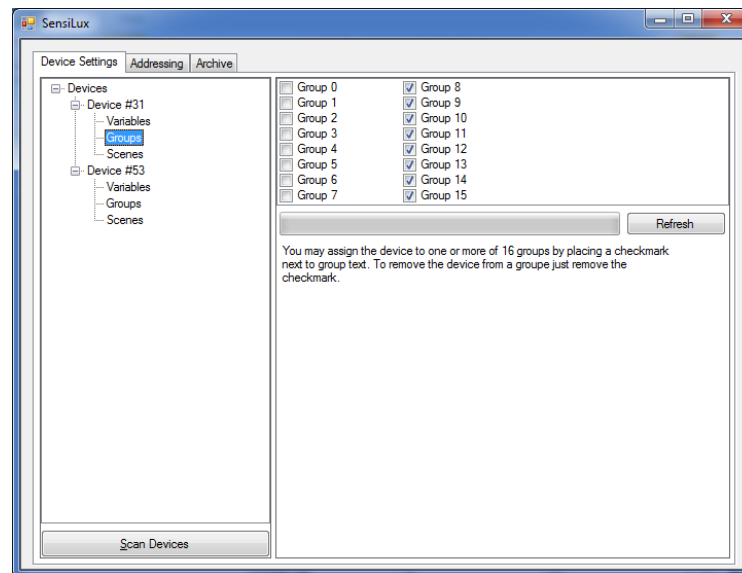
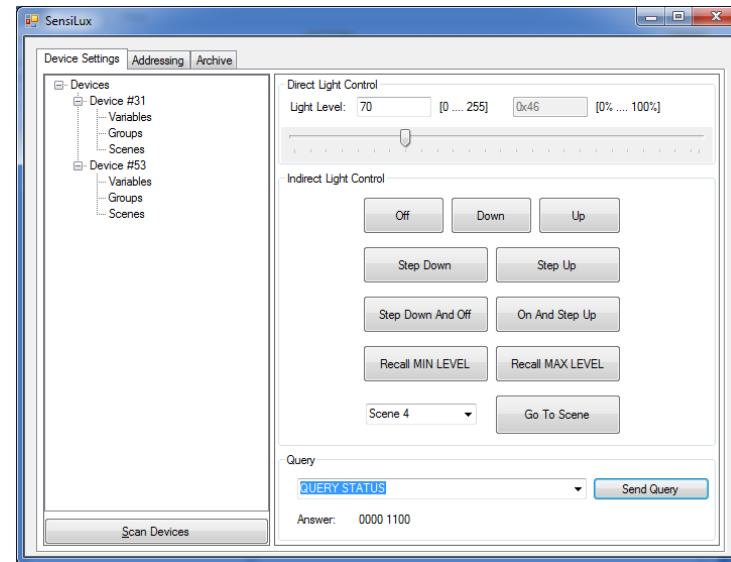
assuming 50% work load:

- $(3\text{h} \times 1980\text{ W}) + (3\text{h} \times 1980\text{ W} \times 0.25) = 7.43\text{ kWh}$
- $(6\text{h} \times 660\text{ W}) + (6\text{h} \times 660\text{ W} \times 0.25) = 4.9\text{ kWh}$
- Yearly consumption = 4.5 MWh

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DALI Configurations



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● Climbing walls ● Area ■ Lounge ■ Entrance route

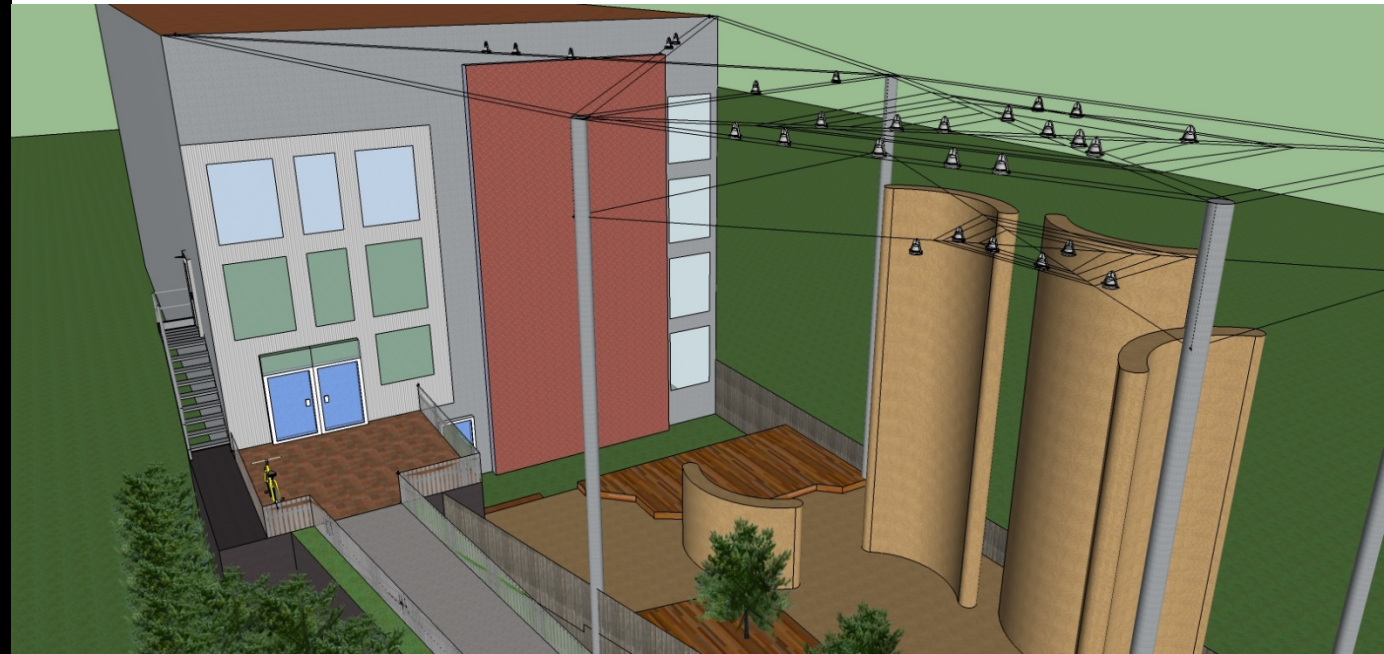
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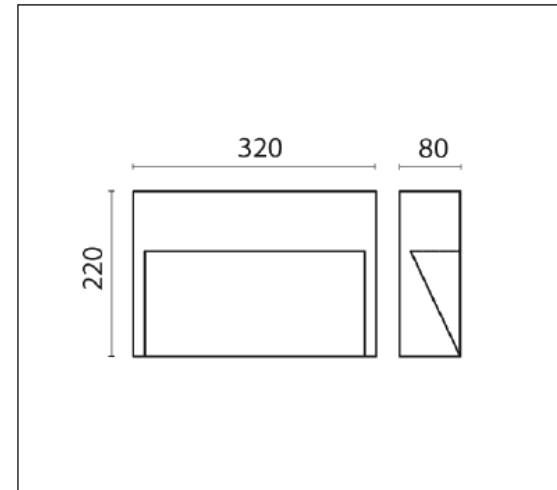
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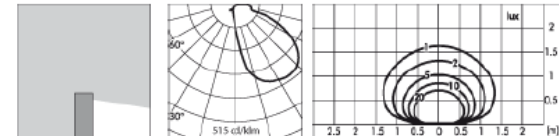
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-Lounge area luminaire



MODULES LED 3000K 230V 1650lm CRI 80
Rated luminaire luminous flux: 304lm
Rated input power: 18W
Luminaire efficacy: 17lm/W
Electronic ballast 220÷240V 50/60Hz



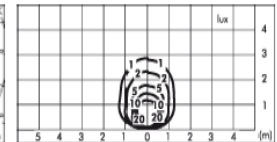
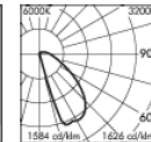
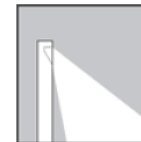
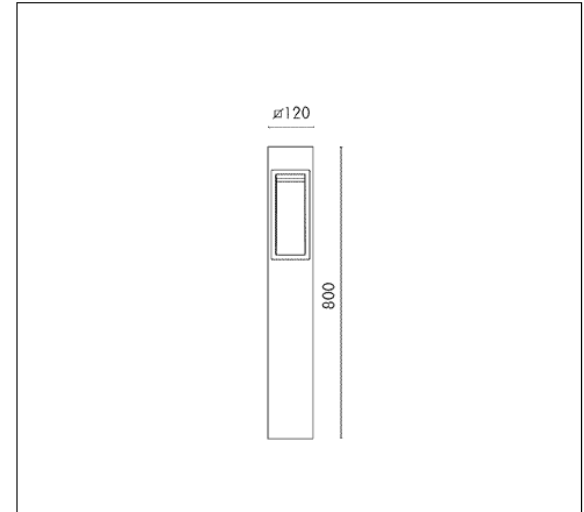
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-Entrance luminaire



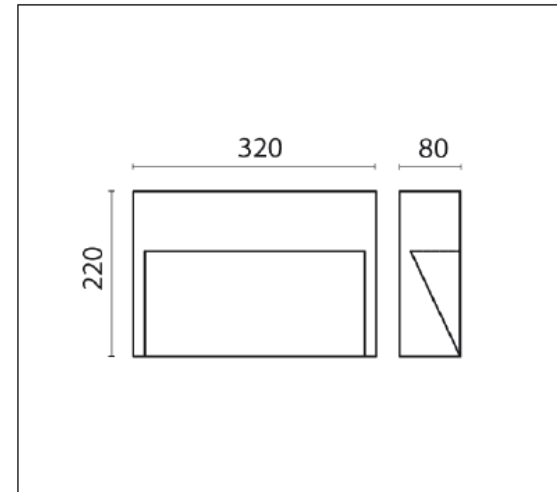
4 MODULES LED 3200K 230V 777lm 8.4W CRI 80
 Rated luminaire luminous flux: 131lm
 Rated input power: 11W
 Luminaire efficacy: 12lm/W
 Electronic ballast 100+240V 0/50/60Hz



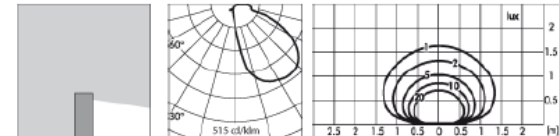
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-Fence luminaire



Product benefits

- Controllable via smart devices (via Android and iOS)
- Complete LIGHTIFY function
- Easy to install and use
- Contains no mercury

Product features

- Flexible, self-adhesive RGB strip with integrated smart lighting function
- RGB color control
- Adjustable color temperature via Tunable White: 2,700...6,500 K
- Dimmable via LIGHTIFY

Electrical data

Nominal wattage	18.0 W
Nominal voltage	220...240 V
Mains frequency	50/60 Hz

Photometrical data

Color temperature	2700...6500 K
Luminous flux	839 lm
Light color (designation)	RGBW
Range of adjustable color temperature	2700...6500 K

Light technical data

Beam angle	120 °
Light color management	RGB color control / Adjustable color temperature

Additional product data

Number of lighting outlets	120
Appropriate disposal acc. to WEEE	Yes

Capabilities

LIGHTIFY technology	Yes
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Certificates & standards

Type of protection	IP20
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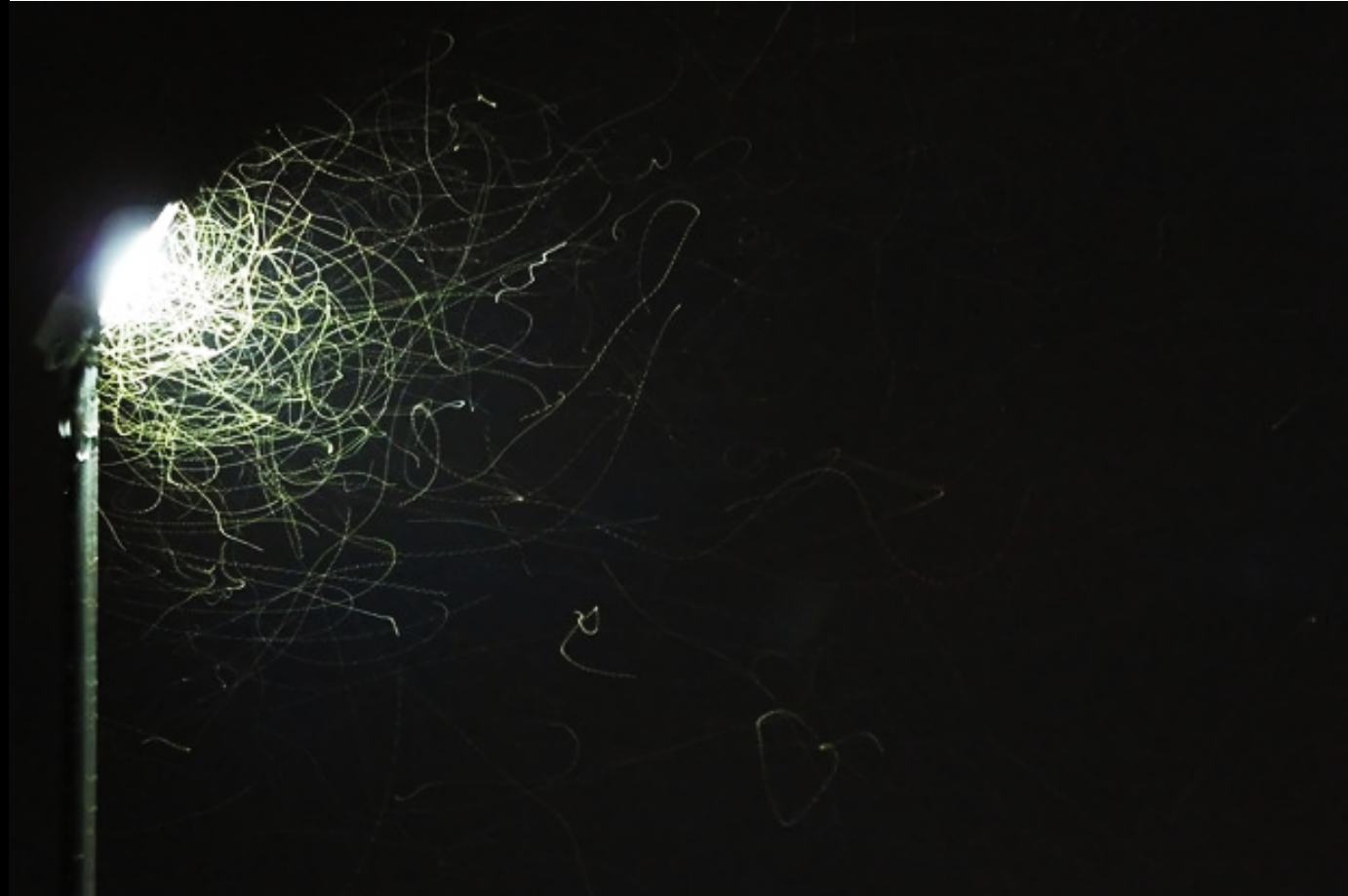
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 - * **Skyglow**
 - * Biodiversity
 - * Human health
- Conclusion



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 - Compliance to the standards
 - Comfortable and safe climbing experience
 - Better use of the outdoor area
 - Reduction of the yearly energy consumption by 20%
 - Reduction of the light pollution

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