Digital Wayfinding

A research & design project for a modular architectural lighting system applied for adaptive wayfinding in a park environment and on to buildings of architectural heritage.

The project researches the implementation and integration of media technologies for communication purposes in architectural and natural environments. These technologies give designers new tools to create spaces which can be more responsive, functional and communicative and adapt in realtime. By creating a network of light landscapes, shapes and screens, the Blades concept improves the wayfinding capabilities of the case-study location: Cultuurpark Westergasfabriek. Besides dynamic route signalling, the lights and screens can be used to advertise activities and events in the park, to turn to an art canvas at night blending in with the natural surroundings.

In the graduation research the integration, communicative properties, and interaction possibilities of several media technologies on an architectural scale were investigated. The communication chapter addressed scale of communication, ambient information and message and meaning of these communications.

The case study location Cultuurpark Westerpark is an intensively used park hosting many different events, businesses and festivals besides the common recreational activities of an inner city park. The use of the park varies based on the activities, daytime, day of the week and the season. The wayfinding infrastructure is static and confusing.

Adaptive Routes

In response to the daily change of activities, climate and traffic, the Blades concept improves the wayfinding capabilities of the case-study location: Cultuurpark Westergasfabriek. Besides dynamic route signalling, the lights and screens can be used to advertise activities and events in the park, to turn to an art canvas at night blending in with the natural surroundings.
Blades

A product design for a modular architectural lighting system combining demands of form freedom, industrial production and requirements for an outdoor environment.

The development of a modular architectural lighting system enables designers to create a variety of screens, shapes and landscapes which fit the existing context precisely. Its modular design allows for form freedom, while maintaining a cost-advantage over custom made objects. Made from aluminium, the blades are light but strong enough to stand freely as self supported ‘blades’. In the production process, aluminium profiles offer more advantages including having multiple joining techniques and contoured slots within the same profile.

To meet the demands for a modular outdoor LED line system which is easy to install and repair, a new aluminium profile was designed.

The modular design allows for form freedom, while maintaining a cost-advantage over custom made objects. The system is developed to fit onto buildings as screens or signs, as freestanding landscape and as shapes on a support structure. Several different fittings and fixings are developed to work with the modular system.

Quick and easy design of the compositions of blades while maintaining control over the shape of is realised by a parametric design script. A geometry which is easily modified or refined is created with only three sets of control curves. In addition to the design, the model can inform the manufacturing process.

Several fixing systems have been developed to install the Blades in the natural environment and onto existing buildings with an architectural heritage status. Besides traditional fixing options there is a cable fixing for trees and a clamp mount for windows.

Freeform
polygon approximate shapes

Easy to install
fast to install, maintenance / repair

Freestanding
self supporting: no need for large substructures

Modular
mass production to reduce costs

Slim design
very thin front view of the profile

design goals

aluminium extrusion profile

modularity

parametric shaping

architectural details

To install Blades:
1) by the barrow or crane to the roof
2) take the most convenient tree and hold the net in position
3) screw M10 nut & bolts with bracket
4) click the BLADES profile into the steel clip

Blades snapclick
Fluid curved shapes can be achieved by bending individual blades profiles in the factory or constructed in a F2F process.

Grasshopper script designed to draw ‘screens’ from 4 control curves.

TOP - XY control curve

AXE - YZ control curve

FRONT - ZX control curve

Draw ‘screens’ by clicking:

Draw cross section curves (3 & 4)

Draw front view outlines

Draw ‘screen’ by clicking:

TOP - XY control curve

AXE - YZ control curve

FRONT - ZX control curve

3 click the BLADES profile into the steel clip

6mm rubber layer

self supporting: no need for large substructures

cost-advantage over custom

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