



## framework f5x5x1

see also f5x5x3 + f5x5x5

### LAB[au], laboratory for architecture + urbanism

Manuel Abendroth, Jérôme Decock, Alexandre Plennevaux, Els Vermang

The f5x5x5 sculpture is a kinetic and luminous framework conceived and realised by LAB[au]. In software development, a framework is a methodological tool based on re-usable chunks of code, code libraries or other software pieces to assist, develop and glue together the different components of a software project. In regards to the f5x5x5 installation the term 'framework' refers to the installation's constituting elements, a raster of 125 fix and 250 kinetic aluminium frames, and to the multiple operating modes of the installation, from a low resolution display to a generative and interactive sculpture. Consequently the term 'framework' can be understood as a way to manage conceptually and technically the sculpture's sequential operating modes and the rules by which they switch from one mode to another.

The f5x5x5 installation is part of the '16n!' project cycle confronting architectural concepts (congestion, flows...) with spatial sensing technologies (electromagnetism, infra-red ...) and its constructs (signal propagation, field theories...) ...through the means of programmed 'lumino-kinetic' devices. The cycle title 16n, n! = factorial number, refers to number theory (probability and combinatorial) and the hexadecimal number system used in information technology which, due to its easy permutation to the binary system, is at the core of information theory. Consequently the 16n cycle explores new architectural and urban objects based on system and number aesthetics, in this case the hexadecimal, by taking advantage of spatial sensing technologies.

The 375 aluminium "frames" constitute the framework, a space built up by five modules of 2x2m each, divided in 5x5 regular elements, establishing a matrix of  $5 \times 5 \times 5 = 125$  main frames. Each of the 125 main frames contains a middle frame, rotating around its central vertical axis, which itself contains a central filled frame, a square, turning around its central horizontal axis; as such, it is an encapsulating principle of a frame in a frame in a frame. These 125 main frames and the 250 kinetic aluminium frames, each having a 180° vertical and horizontal rotation freedom, form the 10m long and 2m high installation, which by its size forms an architectural element, a 20 square meter kinetic sculpture.

Each of the 250 kinetic elements is driven by a servo motor and can be controlled individually, having a rotation range of 180 degrees, a step precision of 0.2 degrees and a varying rotation speed of 1-50 units. According to these kinetic parameters the 250 rotating modules can present any state between open and closed with a minimum opening/closing time of one up to 35 seconds maximum. On one side the frames are lacquered white, diffusing the light, while on the other side it is lacquered black, thus absorbing light, constituting as such a binary state (0 = black and white = 1). Following these kinetic and colour principles, a black side of a middle frame can be turned on the white side of a fix main frame, as a black side of a central frame can be turned on the white side of a middle frame allowing to exploit the b/w contrast to create visual patterns and geometric signs. The 375 frames of the installation are enlightened by light-emitting diodes on their visible edges, the main frame with white light, the middle frame with red light, and the central one with white light again.



24+8 LAB[au]  
LABORATORY FOR ARCHITECTURE+URBANISM

