





SAL (San-jose Adaptive Light-tower)

In the industrial revolution buildings became machines for production. In the ongoing digital revolution buildings are becoming devices for interaction.

Aesthetics

The project applies the sleekness of Silicon Valley product design to the historic San Jose LightTower. The expressed industrial structure of the old light tower is updated to a smooth conical form - a pure geometric object clad in semi reflective glass and contoured by 7 floating rings of light.

Technology

The facade of the conical tower functions as a LED skin that can project images and videos at night (image 1). The projected content will be controlled by an AI entity located within the central computer system. The AI will learn from user insights and will ultimately become a data driven mirror of the city's various collective moods. On days of celebration the tower might project dynamic images of happiness sourced from various media (cinema, the internet, books, etc). On somber days the tower might project words of consolation. The new tower becomes its own urban personality - SAL (San jose Adaptive Light tower), an autonomous object that communicates with the city through digital content.

Ecology

The landscape strategy is to create a "computer in the garden" scenario where the perfect abstraction of the conical tower is contrasted with a wild, Edenic landscape. The surrounding mixed riparian woodland and forest will be restored and native California grasses will be introduced instead of typical lawn grass. In addition, the glass of the tower will be coated with invisible ultraviolet stripes to prevent bird collisions. The tower will not be constantly lit up and the building AI can enforce "night mode" to reduce blue light effect and light pollution.

The tower rotates to maximize the production of clean energy from the wind and the sun. The core of the tower is lined with wind turbines and the exterior skin is covered with solar panel blinds which work in conjunction with the LED display screens (figure 5). The central AI computer in the tower uses sensors to calculate the optimal rotation angle of the tower to capture the strongest wind and the brightest sun.

Society

The new landmark functions not as a static monument, but as an active urban gathering space. An underground utility ring supplies electricity to support urban pleasures such as picnics, farmers markets, and outdoor performances (figures 1-3). The tower can be entered through two large cuts in its exterior facade. In the inside of the tower is an "observatory" where viewers can enjoy views of the city without having to take an elevator. This is achieved through a "digital periscope" - rotating cameras from the top of the tower capture sweeping views of the city and project the real time footage onto the interior facade of the tower (figure 6).

Realization

The next step is initiating a convergence between many different industries and disciplines. In addition to the conventional services of an architecture and engineering team, this project will require the expertise of programmers, researchers, and forward thinking intellectuals. The ideal result of this collaboration will not only be a traditional set of construction drawings, but also the development of new net-zero building technologies and a framework for a new building-integrated artificial intelligence program that could be universally applicable in the future.



image 1: LED display from highway



image 2: interior projection of view from ''digital periscope'' (aerial photo of San Jose downtown used under creative commons license. Original author: xAtsukex)



figure 1: urban activities - picnic tables







figure 2: urban activities - outdoor performance



figure 3: urban activities - farmer's market



figure 4: net zero solar and wind building rotation strategy

CENTER



image 3: site plan

native Californian grass area

mixed riparian woodland area

existing lawn to be replaced with

native grasses ••••••• new pedestrian path

••••••• existing pedestrian path



solar panels

figure 5: alternating solar/LED blinds



figure 6: digital periscope