



THE XIAMEN ENERGY MASTERPLAN MODEL

PROJECT: The Xiamen Energy Masterplan Model
CLIENT: CHORA
DATE: 26 May 2010
DURATION:



PROJECT DETAILS

The Xiamen Energy Masterplan Model was developed with CHORA as part of their scheme for the Taiwan Strait Incubator project. This portion of the scheme looks to establish Xiamen as the first "Green" or Energy Efficient City in China. To achieve this the city commissioned an overall "Energy Masterplan" from CHORA which addresses this goal at a large scale through large infrastructure and building projects, as well as local interventions by residents. The model looked to address the need to visualize individual projects in the context of the overall scheme to both educate the public and act as a planning tool for developers, designers, and city officials. This is achieved by combining unique animations in conjunction with detailed screen-based information to both understand the current proposal and serve as a mechanism for developing it further.

Visualization

The concept of an Energy Masterplan is fairly new so one of the basic tasks was to develop a method that would allow the different schemes to be visualized spatially and with detailed information. To do this, the city was modeled at 1:10,000 and printed as 122 rapid prototype SLS prints. The tiles are stitched together to form a 4MX4M model of the city. The energy information is then overlaid onto the model via 620 leds which backlight the SLS tiles, using them as a diffuser.

Typologies / Color / Interaction

The Masterplan is divided into 4 typologies and each of these are represented by a different color LED in the model:

Energy Networks-Blue, Energy Efficiency-Yellow, Renewable Energy-Red, and Pilot Projects-Green. Each of these categories were divided into 5 areas:

Energy Network: Clean Transportation, District Cooling, GreenTechnology, Intelligent Energy Network, Local Smart Grid

Energy Efficiency: Efficient Coal Fire Power, Grey Water Recycling, Home Improvement Kits, Low Impact Construction, Passive Building

Renewable Energy: Algae Biomass, Energy Facade, Energy Island, Energy Tower, Solar Power Plant

Pilot Projects: Commercial Building, Energy Museum, Energy Road, Industrial Headquarters, Waste Treatment

In this same way the interface to the 4 types of projects was achieved via a terminal located at each corner of the model. Each terminal has 5 simple button inputs which correspond to the 5 subtypes. If no buttons from the terminal have been pushed recently the types revert to their animations of the "musical score". This musical score acts as a passive, narrative interface to the various subtypes. Once any button on a terminal is pressed, the pressed button triggers its "active" animation sequence and the other subtypes trigger their "background" animation, which makes it easier to distinguish the subtype which has been pressed. Each subtype also has a unique pulse animation which serves as the mechanism to identify it within the overall typology. Adjacent to each of the terminals is a screen which displays detailed information regarding the project that is active on the terminal. This sets up a complimentary relationship between the spatial information overlaid onto the model and the detailed data displayed on the screen.

The main developments with the model lie in the enhancement of the "local interactivity" and the "global connectivity" of the model. Though intentionally simple at the moment - the button press input could be extended to allow users to interact with a capacitive surface which could also act as a display mechanism as the model changes modes. The other major development area will focus on the "global connectivity" of the model. At the moment, the model relies on predefined animations and presentations to visualize the various components of the masterplan. Future developments will link the model to live data over the internet such as current energy prices or local pollution conditions, link it with a corresponding project within the model and alter the display of the lighting patterns and screen information. In this way the model could be adapted to each of the cities venues it visits by comparing local conditions with that of Xiamen, and would become an active display and planning tool which learned more information as it travelled.

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