

Ambient Displays and Desktop
Awareness of Energy
Consumption in the Office
Space

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Our Mission

To provide a solution
for the interior space
of 407 South Craig St.
that educates its
inhabitants about
energy consumption and
production practices

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Our Process

Exploration of the space

- Exterior (solar array)
- Interior (inverter system, controls, possible locations for solutions)

Scenarios and Personas

- Considered the different types of users of the space and their needs

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Our Process

Brainstorming

Supporting Research

- Sunny Boy inverter manual
- Energy measurement methods
- Lighting solutions
- Building statistics

Prototyping

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Users

Temporary inhabitants

- Friends or family of inhabitants, other CMU students, delivery people etc.
- Need to be engaged in their short visits
- Have a limited amount of time to interact with the system

Permanent Inhabitants

- Students, professors and other staff stationed there
- Need something that fits into their work practice
- Need to be an individual, but relate self to the larger environment
- Need an activity awareness of their surroundings

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System Needs

Must provide an initial draw for users

Must be dynamic to encourage users to engage it

Must not be intrusive or distracting but...

Should be consistently present

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Gathering Energy Information

Data from Sunny Boy

- Current
- Total
- Daily (as far back as a year)
- Average

Data from external devices

- Meters and Sub meters - energy usage of building/sections
- Automatic Meter Reading - constantly poll meters
- Power measurement tools - energy used by specific devices
- Software for managing energy consumption of networked computers

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Solutions

An ambient display for general awareness

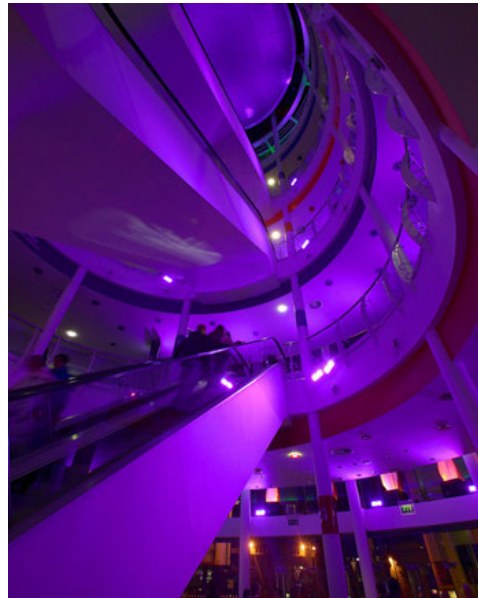
A personalized display that affords rich information gain and promotes deeper understanding

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What if you could dynamically **light** an environment?



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What if you could dynamically **light** an environment?

Using Ambient Solid State lighting to Promote Green Awareness

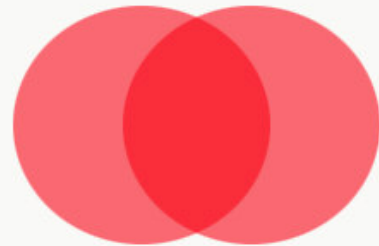
- Color as information visualization
- Humans are naturally drawn to color
- Can vary the color on a number of factors

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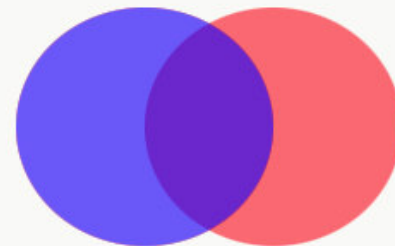
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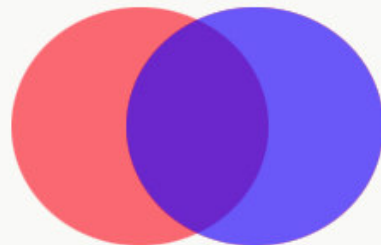
So how would it work?



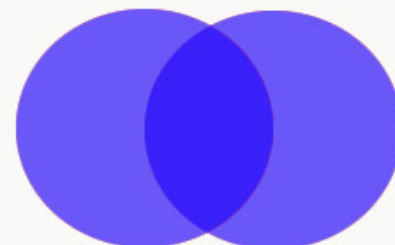
Low Production, High Consumption



High Production, High Consumption



Low Production, Low Consumption



High Production, Low Consumption

What are the benefits?

Unique lighting atmosphere attracts users who can then read about it via signage

The LED lighting is low in energy consumption

The value of the light gives a picture of the state of the building at-a-glance

Permanent inhabitants can see trends over time

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Demo

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What can we give **people** to walk away with?

A dashboard widget!



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How would it work?

Energy consumption data gathered from meter reading devices and networked socket power measurement tools

Read the data at constant intervals and translate into different visualizations on the widget

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Just what would it show?

Personal energy consumption

- Comparative energy consumption at the group/floor/building level
- Rooftop garden visualization

Display random factoids about green practices

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What are the benefits?

Feeling of being an individual with responsibility over consumption practices and competition in the space

Understanding of relative power usage of different devices and practices

Users can become informed consumers when purchasing devices

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Questions?

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