2017

Sinatra Living: American Institute of Architects Presentation

University of Nevada, Las Vegas. Solar Decathlon Team.

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solar decathlon 2017
**What is the Solar Decathlon?**

The U.S. Department of Energy Solar Decathlon showcases innovative solar powered houses that are designed, built, and operated by collegiate teams. The winner of the competition is the team that best blends technology, market potential, and design excellence with smart energy production and maximum efficiency.

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**design**

The design must be formed to combine knowledge from multiple disciplines, in order to address the market and competition objectives.

**build**

The next challenge begins with reinforcing design intent with physical form. Taking into consideration building tolerances as well as structural viability, form and function marry.

**transport**

Moving on, the design and building of the project must now consider moving to. The built home must also incorporate mobile capability as part of the final objective.

**compete**

Team Las Vegas will compete against 16 teams, all with the same objective, to win. This time all sixteen houses will find a sense of place in Denver, Colorado.
Contests

architecture  water

engineering  health & comfort

market potential  appliances

communications  home life

innovation  energy
In the past...
Quick Facts:
Currently Resides at the Springs Preserve
Quick Facts:

- 2013: 2nd Place Internationally
- 1st Place Market Appeal
- 2nd Place Communications
- 3rd Place Engineering
Interior environments constitute a multi-sensory experience from which the brain acquires and uses new and retained information to direct behaviors (Albright, Salk Institute, 2009)
90% of what we experience everyday is the designed environment
A person on average will spend 90% of their life in the interior environment.
The need for neuroscience-informed design strategies is especially evident in states such as Nevada, where the senior citizen population grew more than 50% over the past decade and expected to make up one fourth of the state’s population by the year 2030.
A house is more than just a shelter; that it is a way of improving your way of life.

William Krisel
Way finding + Passive exercise  The home provides simple circulation paths that encourage movement, improving the health of the resident by increasing their level of physical activity. The open floor plan allows for clear lines of sight and ease of orientation.

Project Program

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Bed 194 SF</td>
</tr>
<tr>
<td>2</td>
<td>Bath 124 SF</td>
</tr>
<tr>
<td>3</td>
<td>Kitchen 296 SF</td>
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<tr>
<td>4</td>
<td>Living 141 SF</td>
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<tr>
<td>5</td>
<td>Office 97 SF</td>
</tr>
<tr>
<td>6</td>
<td>Mechanical 38 SF</td>
</tr>
</tbody>
</table>
2017 conceptual design
2013 Module Chassis

- Custom manufactured
- High cost, heavy steel
- Irregular shape
2017 Chassis Option

- Pre-manufactured mobile-home chassis
- Low Cost
- 1 week production, 1 week shipping
Project Process

Modules
GOALS

1. AGING
2. AUTOMATION
3. SUSTAINABILITY
The design of the interior environment and architecture consists of several principles in which evidence-based design research comes to fruition. Environments which integrate proper orientation for the user, operate autonomously in daily activities, provide intellectual and sensory stimulation, security, and balance private and social spaces are ideal for the aging individual. These principles create interior environments for true independent living and successful aging.

1. **facilitating orientation**
   Priming the user with appropriate visibility through fenestrations of the building is a primary component to facilitate orientation.

2. **autonomy**
   The project allows for autonomy in spaces where mobility may be most difficult for an older person, such as the kitchen, bath, and living space.

3. **intellectual + sensory stimulation**
   The design provides spaces for multipurpose activities and consequently a sense of novelty and variety throughout the day. It is a high priority to create variety in multipurpose spaces, as it is a form of intellectual and sensory stimulation.

4. **providing a safe and secure environment**
   The interior environment is nestled within a sequence of transparent and opaque partitions to create a comfortable enclosure for privacy and security. The sequence of partitions allow for transparency and privacy in appropriate spaces.

5. **between private + social**
   The home is divided into social and private modules. Both modules allow for generous outdoor exposure and semi-visibility to the adjacent spaces to retain way-finding abilities.

01 master security system
- centralized hub for smart lock control

02 automated smart locks
- added security
- ease of access control

03 learning thermostat
- central location
- adjusts to users patterns

04 floor/roof sensors
- sense occupant activity
- fall detection

05 health monitoring
- blood pressure
- blood sugar

06 smart TV
- family communication
- control center

07 smart appliances
- energy savings
- communicate with home

08 sleep monitoring
- track respiration and sleep cycles
Project Process

Redundancy
Project Process

Integrated Mechanical Unit
2017 Concept
Social Space
2017 Concept
Dining Space
Contests

architecture

engineering

market potential

communications

innovation

water

health & comfort

appliances

home life

energy
WATER

1. CONSERVATION
• How does the home conserve water?
• How does the design encourage the end user to conserve water?
• How is water conservation employed in other elements of the design?

2. RECLAMATION & REUSE
• How successful and impactful are the strategies used?
• Does the team consider health and safety in their approach to reclamation and reuse?

3. LANDSCAPING
• To what extent does the team consider target site?
• How successful is the landscape design in terms of water runoff, energy efficiency, maintenance, irrigation, and planting palette?
Community Outreach
-Las Ventanas Retirement Community
-Lou Ruvo Center for Brain Health
-Osher Lifelong Learning Institute
Community Outreach
Q + A