INTRODUCTION

- Smart homes and smart home technologies are designed to enhance the overall living experience.
- Solar smart houses are designed and built to operate in an effective and energy-efficient way.
- Virginia Tech competes in the Department of Energy’s 2009 Solar Decathlon (LumenHaus project).
- The project aims to use smart mobile devices technology to provide a unique user experience and integrated monitoring and control of the solar house.
- The idea is that the iPhone will be the ultimate master control device to the home.

PROPOSED APPROACH

- The LumenHaus has multiple control and monitoring features.
- It would be far too cumbersome to use multiple control mediums for the Smart Home.
- We hypothesize that the iPhone can be used as a universal control device.
- Our research project consisted of three phases:
  - A preparatory phase (getting familiar with the Objective-C programming language)
  - A design phase (designing the UI to be used)
  - An implementation phase (physically constructing the UI for our application).

IMPLEMENTATION/RESULTS

- Initially, the application simply connected to wunderground.com and tailored the personalized forecast for iPhone presentation.
- The revised application code uses peer-to-peer based approach to create a Bluetooth data bridge between the host iPhone and a Bluetooth enabled device (i.e., another iPhone or Bluetooth capable device).
- This is used to transmit the weather data from wunderground.com to the host phone without that device being physically connected to the internet.
- The result is our LumenWæther application, which provides a web based weather service to the LumenHaus users.

USER STUDY

- Users comments were crucial to this project.
- We tested our application on six different users.
- Many users commented that the purpose of the application was not clear while they were using it.
- It became apparent that the UI needed to be re-designed due to lack of informational clarity.

FUTURE WORK

- We would like to extend this concept to other services within the LumenHaus, i.e. home temperature controls, home appliance controls, power level management, etc.
- We would also like to integrate all control/monitor/information services into a single application.
- More usability testing for fine tuning of the interface design.

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