

**ECE 290 - Fall 2007**

**Wireless Sensor Networks**

**Project Specifications**

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## **Introduction and overview:**

Today, wireless sensor networks are found in a variety of fields. However, they are usually used in low-bandwidth telemetry applications. The lack of wireless sensors which provide audio and video transmission is certainly not due to a lack of desire for them. The usefulness of the sensor itself is affected largely by the ease of which it can be accessed. A portable receiver device would allow the sensor to be accessed from various locations without being constrained by the distance to a non-mobile receiver station. This becomes especially important when the wireless sensor's transmission power is very low.

In order for the receiver to be useful, the most important requirement is that it is portable. In addition, the device's output must be visible in a variety of operating environments (indoors, outdoors, and under different lighting conditions). Audio output should have adjustable volume. Further, the device should use rechargeable batteries, which should last for at least five hours. The device should have an easy to use user interface. Also, it should offer enough functionality to make use of all features provided by the wireless sensor.

## **Description:**

The receiver device will provide output of both audio and video from multiple wireless sensors. In order to conserve battery life on individual wireless sensors, the receiver will be capable of controlling whether each sensor should encode and transmit audio and video ("sleep mode"). It will be capable of viewing the video from all available sensors by subdividing the available screen area. Additionally, it will be able to selectively view the video output of a particular sensor in full-screen mode. When this mode is chosen, the receiver should automatically set all other sensors to sleep mode.

Audio output should be able to be selectively enabled or disabled on a per-sensor basis. The receiver should allow multiple audio channels to be simultaneously enabled, when desired.

## **Specifications:**

**Budget:** \$1000

**Battery life:** 5 hours

**Screen size:** 5" to 9" diagonal

**Overall size:** 11" x 8" x 2"

**Illumination:** Dimmable CCFL (visible in sunlight, tolerable in low light)

**Weight:** 5 lbs

**Decoding:** Dedicated ASIC

**Transceiver:** XBee