

# *Virtual reality physio monitor*

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In order to simulate a real-world clinical environment for training purposes, a dynamic virtual monitor display system must be improved for the 3D CAVE. The monitor should display dynamic EKG's, respiration rate, blood pressure and SpO<sub>2</sub> levels that respond to changing physiological conditions in the virtual ER trauma bay. The virtual display must sound an alarm if it detects that the avatar patient's vitals are passing a dangerous threshold.

Client requirements:

- Compatible with current virtual reality ER bay trauma room in CAVE
- Respond to a changing virtual physiological environment
- Clear and legible display
  - Display dynamic, realistic graphical readings for heart rate, respiration rate and SpO<sub>2</sub>
  - Display dynamic, realistic digital readings for blood pressure, heart rate, respiration rate and SpO<sub>2</sub>
- Sound an alarm if vitals cross a dangerous threshold
- Expandable to accommodate physiological scenarios that aren't already built in

Design requirements:

## 1. Physical and Operational Characteristics

- a. Performance requirements: The monitor should display dynamic EKG's, respiration rate, blood pressure and SpO<sub>2</sub> levels that respond to changing physiological conditions and user actions in the virtual ER trauma bay.

- b. Safety: The safety hazards are minimal as the environment in question is virtual.
- c. Accuracy and Reliability: Blood pressure, SpO<sub>2</sub>, respiration rate and heart rate should be accurate to the single digit.
- d. Life in Service: The virtual monitor should last as long as the CAVE is in service.
- e. Shelf Life: There are no shelf-life requirements.
- f. Operating Environment: The virtual monitor must be compatible with Windows XP and CaveLib.
- g. Ergonomics: All users must be able to understand and interact with the CAVE virtual monitor. The virtual device must be easy to use and see from the virtual distance of the user.
- h. Size: The virtual monitor should be 49cm x 38cm.
- i. Weight: This is not applicable.
- j. Materials: Google SketchUp, Java, CaveLib, CAVE.
- k. Aesthetics: The virtual monitor must appear as a real monitor does in an ER trauma bay. The monitor must be labeled clearly and concisely.

## 2. Production Characteristics

- a. Quantity: 1
- b. Target Product Cost: \$0.00

## 3. Miscellaneous

- a. Standards and Specifications: Not applicable
- b. Customer: Our client requires software that responds to changing physiological conditions and be expandable to accommodate physiological scenarios that aren't already built in.
- c. Patient-related concerns: Not applicable

d. Competition: Similar scenarios have been designed. However, the software is not available on the market