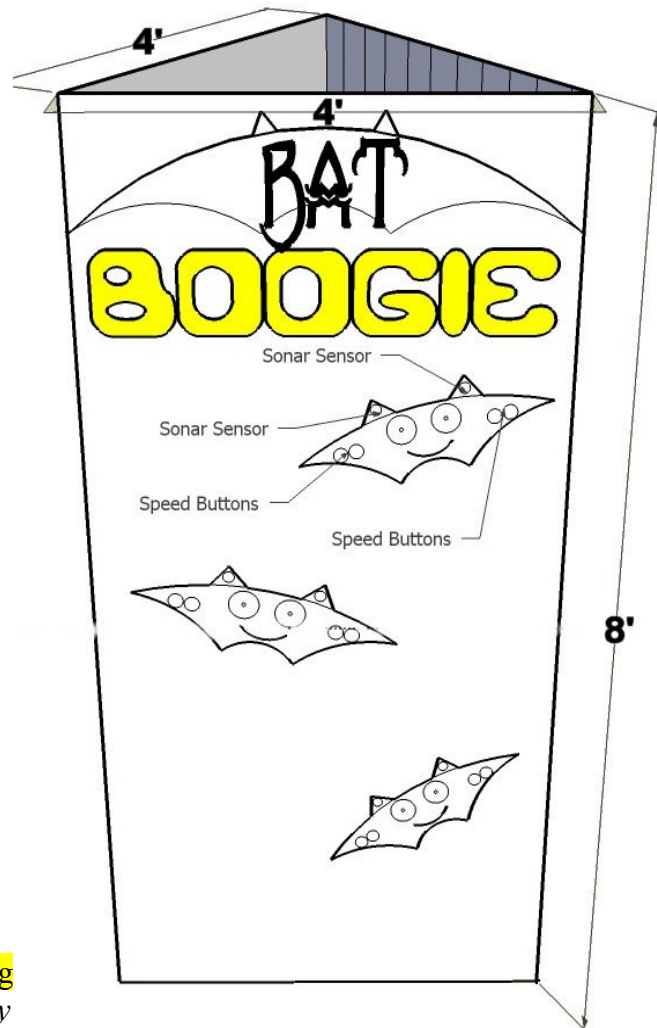




“Bat Boogie” is an interactive kiosk that uses music and lights to forge a link between audible sound (music), ultrasonic sound (sonar) and a bat's use of echo location. Visitors move in front of the sonar sensors mounted in the bats ears to cause different musical tones to be played. Each bat makes a unique sound and all the bats play together to make an entertaining musical ensemble.



Summary:

The Bat Boogie Kiosk uses proven Theraping technology (see *Theraping Technology sidebar for details*) to create an extraordinary interactive musical experience that is as educational as it is entertaining. The Bat Boogie Kiosk adapts the Theraping sound mechanism, which enables the kiosk's visitors to control all of the musical sounds that each Bat plays. Musical accompaniment plays along with the kiosk's visitors as they use the inaudible sound of sonar sensors to compose audible sound in the form of music. The Bats serve as the points of origin for the sonar signals to reinforce the concept of bats' using sonar echo location and results in a three-point educational experience that incorporates sound, ultrasound, and biology.

Features:

Interactive - Multiple sensors on each side of the kiosk encourage cooperation in creating melodies. Sensors cause the music to change its sounds in direct relation to the visitors' actions.

Accessible - Sensors located at multiple heights ensure ease of use by children, adults and those with special needs. The Bat Boogie's three-sided kiosk allows up to nine people to play together. With distance to the sensor being the only required movement to activate this exhibit, it is suitable for those with limited mobility.

Flexible Design - As shown, the kiosk consists of three panels joined into a triangular shape. Each panel is a self-contained unit; so, it is possible to affix a single panel (or multiple panels) flat on a wall or four (or more) panels into a square or pentagon for a larger kiosk.

Unique Experience- As musical notes are created in relation to the distance of the visitor from the sensor, a widely varied pallet of harmonizing sounds are generated. The notes played by each visitor are synchronized (both in tempo and in musical harmony) with all other players and with the background music. The resulting sounds can become more complex and compelling with more people playing, yet can allow a single person to play compelling musical sounds. In addition, “speed” buttons on each bat wing allow the visitor to alter the note interval (i.e. $\frac{1}{4}$ note $\frac{1}{2}$ note etc.) for even more musical expression and flexibility. Visitors can play not only using their hands, but may activate one (or more) of the bats by dancing or moving items in range of the sonar sensors.

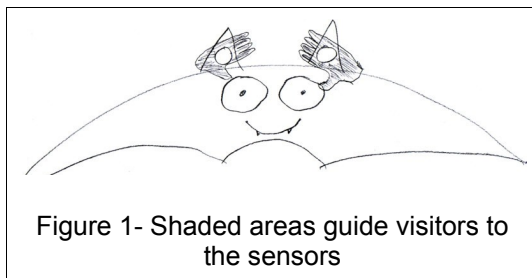


Figure 1- Shaded areas guide visitors to the sensors

Intuitive Operation - Visitors are enticed to interact with the kiosk through a graphic representation of “hand” outline that illustrates a typical way to interact with the bat (see Figure 1). Simply entering the range of any of the sonar sensors will begin the Bat Boogie experience. Visitors are further enticed to interact through a graphic representation of Hand outline that illustrates a typical way to interact with the bat (see Figure 1). Additionally, anyone observing others operating the kiosk will immediately grasp the exhibit’s operating principles.

Multi-sensory experience- As each bat plays musical notes in response to a visitors interaction, accompaniment music is played and LED lights flash in relation to the musical notes selected. Each bat has multiple LEDs that light to indicate its contribution to the music and note status.

Safe and easy to maintain- The kiosk has no small parts and no sharp edges. The panels are created

Thereping Technology

<http://www.thereping.com>

The Thereping was created in 2005 for First Night Austin. Each Thereping instrument uses micro controllers to allow multiple people to play music together. The micro controller ensures that the operator cannot choose a note that is the wrong pitch; it also ensures that the operator never plays a note at the wrong time. Since its introduction at First Night Austin 2005, the Thereping has been featured in:

- [SPIN Magazine](#)
- [Nuts and Volts magazine](#)
- [Rocket Boom](#)
- [Wired Magazine Blog](#)

Thereping performances have delighted audiences at the following venues:

- [First Night Austin](#)
- [Maker Faire](#)
- [Austin Children's Museum](#)
- [San Mateo Elementary School](#)
- [Robogames 2007](#)
- [Bob Bullock Texas State History Museum](#)



Children playing Therepings at the Austin Children's Museum

from wood, plastic and laminate. All visitor accessible surfaces may be easily wiped clean with a soft cloth and common glass cleanser. Panels have individual electronics and can be “swapped out” for repair if need be.

General Specifications- The Bat Boogie is composed of panels that are eight feet tall and four foot wide. When three panels are arranged in a triangle (as shown in figure 2) it creates a kiosk. This modular design allows versatility in that one or more panels can be wall mounted for a smaller exhibit (or to fit an otherwise difficult to use space), or up to four panels can be placed in a square to serve more visitors. The unit runs on 110v AC power requiring an estimated 40 watts of power per panel. Power may be supplied from the top or bottom of the kiosk. Each panel has speakers which play the music from each “bat” as well as the accompanying musical background. The overall volume of the display is controllable by staff members and is easily changed to allow visitors to hear and enjoy the display without intruding on surrounding exhibits. The design of the panels results in visitors standing directly in front of the speakers so their bodies act as an acoustic barrier to further contain the sound to the display area.

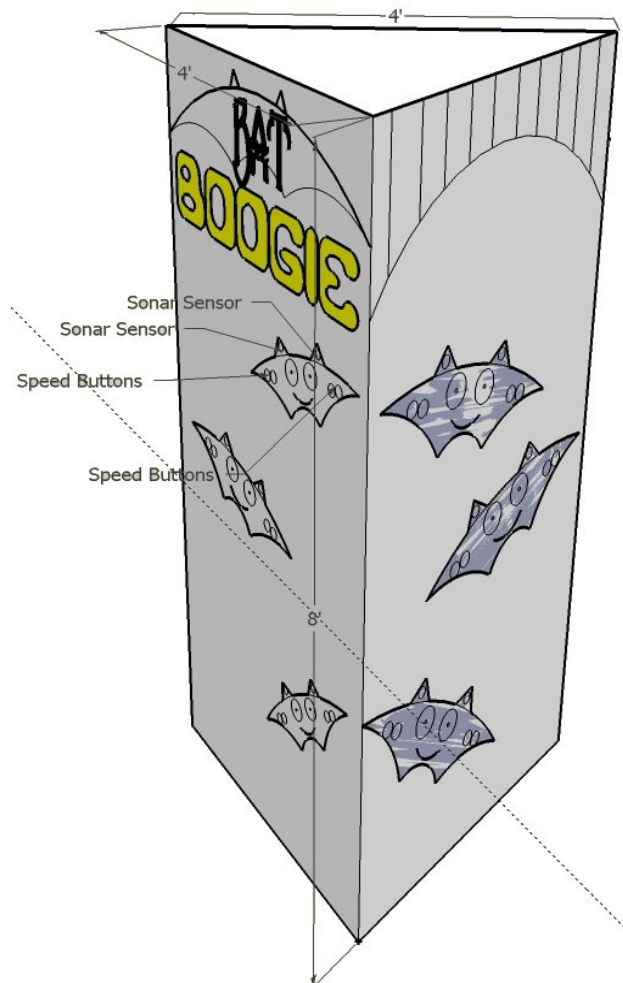


Figure 2- Multiple Bats per side at differing heights to accommodate multiple visitors

About The Artist- Currently the President of The Robot Group Inc. Vern Graner has created technological devices for many years in the Austin area. He is married with two children and lives in South Austin. He currently works for a local software company. He is very active not only with The Robot Group, but also with Dorkbot Austin, MAKE magazine, Maker Faire, First Night Austin, The Mansion Of Terror Haunted house and The Spiders Preyground haunted house among other projects and interests.

Statement of “Willingness/interest/availability”- Vern Graner is available to install, maintain and demonstrate the Bat Boogie device. He has already designed, created, set up, operated and given instructions for devices in a variety of venues including the Austin Children's Museum. He is happy to discuss, demonstrate and teach operation of the proposed Bat Boogie Kiosk (as you can see him doing recently at the [Bob Bullock Texas State History Museum](#)).

Resume of Works- Some original works designed and created by Vern Graner include:

[RoboSpinArt Machine](#)
[The Haunted Cabin](#)
[Therapings](#)
[Hauntlights](#)

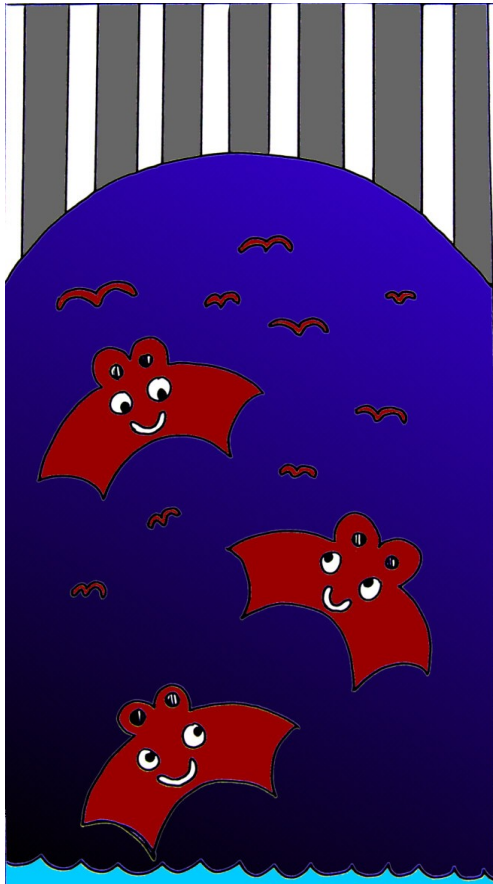
[The Trainsaver Digital Train Controller](#)
[The Boogiebot Mobile Party Platform](#)
[The Dungeon Keeper Animatronic](#)
[Digital Haunt Control Boards](#)

[Raingutter Regatta Digital Timer](#)

[Pinewood Derby Digital Start Gate](#)

Panel background layout concept art- The 3-d models used in the above presentation do not show the proposed artwork that would enhance each panel. These draft images below illustrate the type **proposed graphical design** the panels would have that would help to attract visitors to the exhibit.

Congress Bridge Design 1



Congress Bridge Design 2



The design would echo the Congress Bridge in showing bats emerging from under the bridge at dusk. Three of the bats would be outlined and clearly shown as sound generating devices.

Contact Information-

Vern Graner
3006 Bee Caves Road Suite B-160
Austin, Texas 78746-5540
vern@graner.com
512-328-8947 (wrk)
512-797-5738 (cell)

References-

- Kim White – Bob Bullock Texas State History Museum
- Ginny Sanders – First Night Austin
- Robin Lemieux – T&L Publications (publisher of SERVO and Nuts&Volts magazine)
- Sherry Huss – MAKE & CRAFT magazine

(contact information for references available on request)