

# BUSINESS DESIGN COMPETITION



## KINESONIC EXECUTIVE SUMMARY



KINESONIC aims to provide gesture-sensitive effect controllers that interface universally with existing audio effect devices.

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**Opportunity:** The current market provides musicians with few options for controlling their audio effects. The most popular types of devices for effects control are expression pedals. Pedals limit the musician's mobility because they are stationary devices. These pedals also rely on minute movements by the musician that do not provide a visual representation of effect manipulation for the audience.

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**Unique Solution:** The *Wave*, from KINESONIC will allow musicians to control the effects they already own in a way that is both mobile and affordable. The Wave utilizes ultrasound technology to translate the user's gestures into a corresponding change in the effect chosen. The Wave can be used with any instrument and will interface with existing MIDI compatible audio devices. The Wave allows on-stage mobility for the musician while also providing a unique visualization of the effect being changed in real time.

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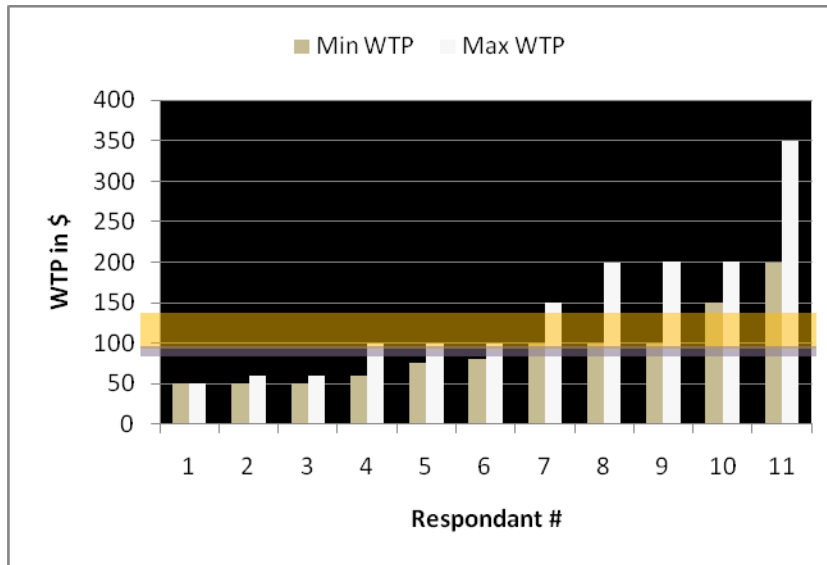
**Market Potential:** While the KINESONIC *Wave* can be used by any musician using effects, there are three segments of the effect user market in particular for which the *Wave* is designed: electric guitar/bass players, MIDI keyboardists, and electronic musicians. These groups were chosen for two reasons; the first being effects pedals and controllers are used disproportionately by guitarists, keyboardists, and electronic musicians. Since these musicians already use electricity to shape and amplify their tone, they can implement effects with relative ease compared to acoustic musicians. The second reason these market segments were targeted is because they have shown consistent growth in either retail value, or popularity over the last decade (see graphs in Appendix I).

The market research we conducted at the premier of the Wave at Union Grove Music fully supports these findings. Guitarists in particular were very receptive of the device, highlighting the necessity of functionality for guitar pedals through controlled voltage (see "Technology"). The average price people were willing to pay for our product was around \$92-\$142. Given the low production costs of the Wave (see "Cost Analysis") Kinesonic is in a position to take over the gesture-sensitive effect controller market, as similar offerings from our competitors fall far outside this price range (see "Competitors Summary").

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## Union Grove Market Research Summary:

# of Respondents: 14



Average Age: 22.6 years old



Median Age: 20 years old

Note: Purple and Gray lines show average and median WTP (respectively).

The Average Estimated Value of the Product was between \$92 and \$142 (the reason we have two prices is because some respondents claimed a price range instead of a single price).

The Median Estimated Value of the Product was between \$80 and \$100 (range for same reasons as above). 78% of respondents played guitar, 50% of respondents claimed they would buy the product. Everyone who claimed to want to buy the product played guitar, most also performed on a semi-weekly basis.

## Competitive Summary:



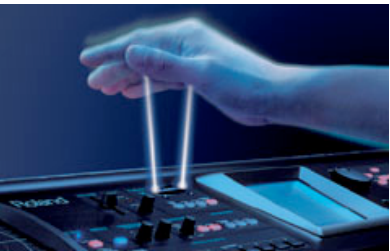
Name	Pros	Cons	Price
<p>Moog Etherwave Plus<sup>1</sup></p> 	<ul style="list-style-type: none"> <li>-Gesture Sensing</li> <li>-CV Output</li> </ul>	<ul style="list-style-type: none"> <li>-Stationary</li> <li>-Bulky</li> <li>-No MIDI Output</li> </ul>	<p>\$519.00</p>
<p>The Moog Etherwave Plus is a Theremin with the additional function of outputting in CV, which means it can be used control guitar pedals. However, due to its relatively high price and the existence of better alternatives for controlling effects, this product tends to be more popular among synth hobbyists than guitar players.<sup>2</sup></p>			
<p>Moog MP-201<sup>3</sup></p> 	<ul style="list-style-type: none"> <li>-MIDI output</li> <li>-CV output</li> <li>Offers large amount</li> </ul>	<ul style="list-style-type: none"> <li>-Stationary</li> <li>-Expensive</li> </ul>	<p>\$499.00</p>
<p>The Moog MP-201 provides the largest degree of control for guitar players (CV) and electronic musicians (MIDI) of any expression pedal. According to a review on musicradar.com “If you're a performer using CV and MIDI gear, whether it's analogue and digital synths or guitar with rackmount effects and Moogerfooger pedals, this is the best (and only) [controller] by a long mile. It may not be cheap but it has no direct competition”<sup>4</sup>. This also points to the feasibility of both MIDI and CV being implemented in the same device.</p>			

<sup>1</sup> <http://www.moogmusic.com/products/controllers/etherwave-plus>

<sup>2</sup> We came to this conclusion mainly due to the fact that the Etherwave plus was only reviewed in synth player magazines, not marketed to guitarists

<sup>3</sup> <http://www.moogmusic.com/products/controllers/mp-201-multi-pedal>

<sup>4</sup> <http://www.musicradar.com/gear/all/computers-software/peripherals/input-devices/midi-controllers/controllers/mp-201-multi-pedal-197862/review/2>

<p>Xpresence WAG<sup>5</sup></p> 	<ul style="list-style-type: none"> <li>-Gesture Sensing</li> <li>-CV Output</li> <li>-MIDI Output</li> </ul>	<ul style="list-style-type: none"> <li>-Has been in development for last 4 years</li> <li>-Requires user to wear a ring</li> <li>-WAG is always on</li> </ul>	<p>TBA</p>
<p>Source Audio Hot Hand MIDI-EXP Controller<sup>6</sup></p> 	<ul style="list-style-type: none"> <li>-Gesture Sensing</li> <li>-MIDI Output</li> <li>-CV Output</li> </ul>	<ul style="list-style-type: none"> <li>-Ring requires user to always be playing effect when pedal engaged</li> </ul>	<p>349.00 w/ sensor</p>
<p>The Xpresence WAG and Hot-Hand MIDI-EXP controller both offer a very similar experience to the KINESONIC <i>Wave</i> in that they translate musician's movements into a change in their effects. However, both products require the user to wear a ring which is always active; thus users may accidentally change their effects while playing.</p>			
<p>Roland D-Beam<sup>7</sup></p> 	<ul style="list-style-type: none"> <li>-Gesture Sensing</li> <li>-MIDI Output</li> </ul>	<ul style="list-style-type: none"> <li>-Only used in conjunction with other Roland products; not offered as standalone</li> </ul>	<p>3,499.00<sup>8</sup> for D-beam equipped synthesizer</p>
<p>The Roland D-Beam is a gesture-sensing infrared controller, which Roland integrates into their products (usually synthesizers). While the D-beam uses a similar method to <i>the Wave</i> for musicians to control their effects, the actual sensor being used is different. Also, since the D-Beam is not offered as a standalone controller, and does not output in CV, it has very little practical application for guitar players.</p>			

<sup>5</sup> <http://www.xpresence.com/>

<sup>6</sup> [http://www.sourceaudio.net/products/hotand/midi\\_exp.php](http://www.sourceaudio.net/products/hotand/midi_exp.php)

<sup>7</sup> [http://www.roland.com/products/en/\\_support/faq.cfm?PRODUCT=V-SYNTH&iRcId=1831585&dsp=1](http://www.roland.com/products/en/_support/faq.cfm?PRODUCT=V-SYNTH&iRcId=1831585&dsp=1)

**Unique Selling Proposition:** KINESONIC will provide an innovative effect controller at a price point lower than existing alternatives. *The Wave* leverages musicians' existing effects, allowing the unit to sell at a low cost while simultaneously retaining and expanding upon the abilities of the musicians' pre-existing effects. KINESONIC is a sustainable platform because our products are low-cost, universal solutions for the musicians' needs as a performer. Just as *the Wave* is designed to interpret movement, KINESONIC will continue to interpret the needs of our customers, providing innovative control interfaces for performing musicians that reveal the untapped value lying within the effects they already own.

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**Technology:** The KINESONIC *Wave* senses movement by the user, then translates that signal into a corresponding output that can be read by audio effect processors. Currently *the Wave* employs an ultrasound sensor for its input. The ultrasound sensor has the benefit of being both consistent in reading and unaffected by light; these characteristics are crucial for many performance situations. KINESONIC has developed software to accommodate other inputs that read changes in parameters that include, but are not at all limited to, pressure, acceleration, knob position, and brightness. The development team will employ this capacity for various sensors in future incarnations of *the Wave*, and in other products to come.

*The Wave* converts this information to MIDI, a data language with the power to control computer programs, keyboards, and some existing effect units. This language's integration with multiple devices is a key factor to *the Wave*'s market potential. In particular, MIDI implementation allows the *Wave* to reach the growing keyboard and computer music markets. The next step in *the Wave*'s development will be support for controlled voltage, or CV for short. CV is a fluctuation in voltage, which is then sent through a cord connected to the device and interpreted by that device. This method is currently being used in existing expression pedals. Support for CV will allow KINESONIC to target the guitarist/bassist market by giving users the ability to control guitar pedals, devices that overwhelmingly use controlled voltage rather than MIDI.

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**Patent Information:** Intellectual Property and a patent for the KINESONIC *Wave* is crucial aspect of the sustainability of the company. In order to secure a patent, KINESONIC will need to be unique and differentiated from existing patents. The Roland D Beam patent describes an invention whose "purpose (is) to provide an optical apparatus which is adapted to produce, in response to dynamic stimuli, control signals for generating sounds or musical notes." This differs from KINESONIC *Wave* in that *the Wave* uses an ultrasound sensor rather than the "optical sensor" described in the D Beam patent. KINESONIC's next step would be to consult a lawyer and draft and file a patent for *the Wave*.

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<sup>8</sup> <http://keyboards-midi.musiciansfriend.com/product/Roland-V-Synth-GT-Elastic-Audio-Synthesizer-Keyboard?sku=700941>

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**Cost Analysis:** The current *Wave* prototype was produced at a cost of \$60.48. By creating a fixed microcontroller design, compact casing, custom-made ultrasound sensor and standardized circuit, we aim to cut the materials costs to as low as \$16.11 per unit at a rate of 100 units produced, with assembly labor costs amounting to about \$4 per unit (see below). The low-cost design of *the Wave* as compared to the upper bound of the consumer's average willingness to pay of \$142 illuminates the potential for profitable sale of the product.

Potential High-Volume KINESONIC Unit Cost(@100x)

- ~PIC Chip: \$1.43 (Microchip PIC24F04KA200)
- ~Ultrasound: \$11.90 (DH Gate HC-SR04)
- ~MIDI jack: \$1.25
- ~Wire: \$.06 ( Solid, 12" @ \$36.06/500')
- ~Plexi: \$1.20 (36.5" @ \$4.80/12x12)
- ~Battery Clip: \$.17 (50x lot of 20 @ \$3.40/lot)
- ~Resistor: \$.10 (@ \$9.99 /100)

**Total: \$16.11**

*Wave* Domestic Labor Cost Estimation

- ~Current California minimum wage: \$8.00/ hour
- ~Estimated assembly time: 30 minutes
- **Total per unit: \$4.00**

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**Business Strategy:** For the *Wave*, KINESONIC plans to first undergo extensive market research to ensure our investments in time and energy are directed properly, so as to create the highest possible value for our end user, the performing musician. We will do this by continuing to conduct *Wave* focus groups and general surveys that identify unique issues musicians experience when using effect controllers live.

Once our marketing team has created a clear picture of all features necessary for users, KINESONIC will recruit hardware engineers to add or improve these features in the current prototype. The engineers and the improvements they make are crucial for reducing product costs (by undertaking implementation of inexpensive microcontrollers) and enhancing usability (by developing reliable and functional sensor/ processing technology).

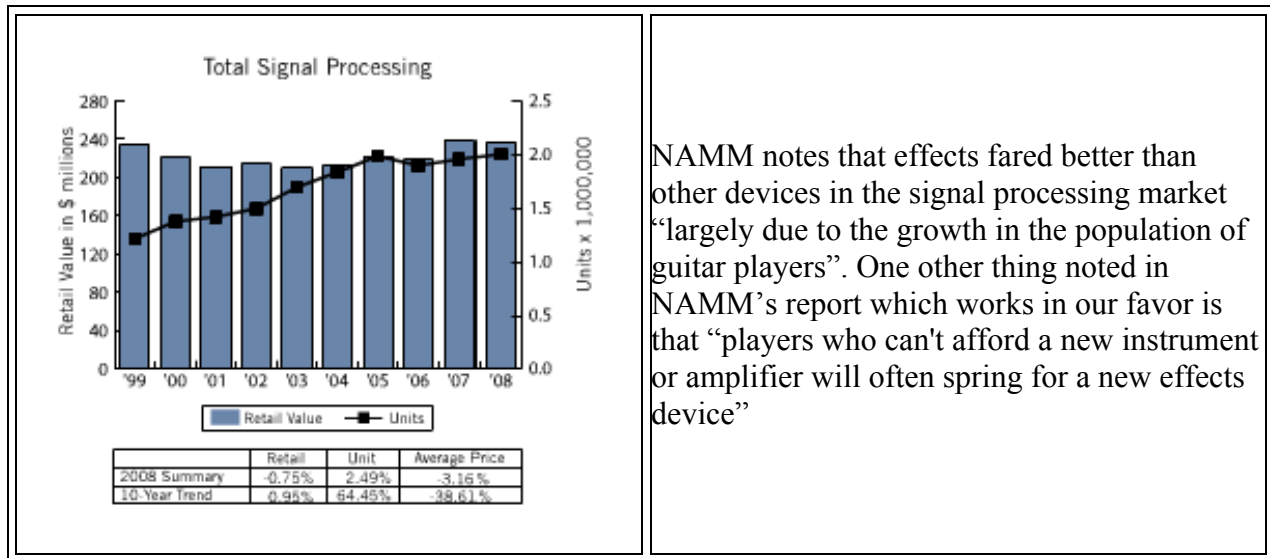
Upon reaching a final design that is both optimally useable and low-cost, KINESONIC will seek intellectual property protection for the *Wave's* design. This step is imperative, as our innovative technology must not be introduced to the market without protection against imitation from competitors. Patenting will be the largest cost incurred in KINESONIC's infancy, but will give it the power to license the technology should a substantial offer be made, or continue on to production with significant control of the market. The possibility of partnership with larger effect and wireless companies may yield itself and will be considered as a way to quickly penetrate the market.

KINESONIC will continue to provide a variety of options for controlling audio effects by utilizing the algorithms, capital, and experience gained through development of the *Wave* for future projects. By building off of these existing resources in the focused audio control arena, KINESONIC can continue to create value for its customers while keeping additional costs at a minimum.

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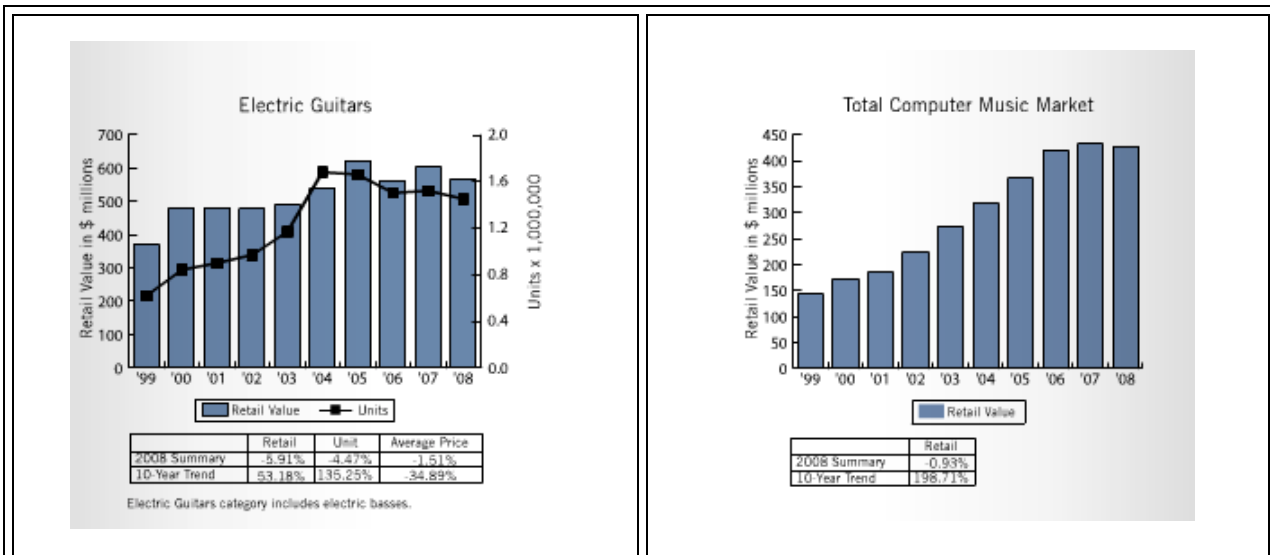
## Appendix I: National Association of Music Merchants (NAMM) Market Info<sup>9</sup>

### Status of our market:



NAMM notes that effects fared better than other devices in the signal processing market “largely due to the growth in the population of guitar players”. One other thing noted in NAMM’s report which works in our favor is that “players who can’t afford a new instrument or amplifier will often spring for a new effects device”

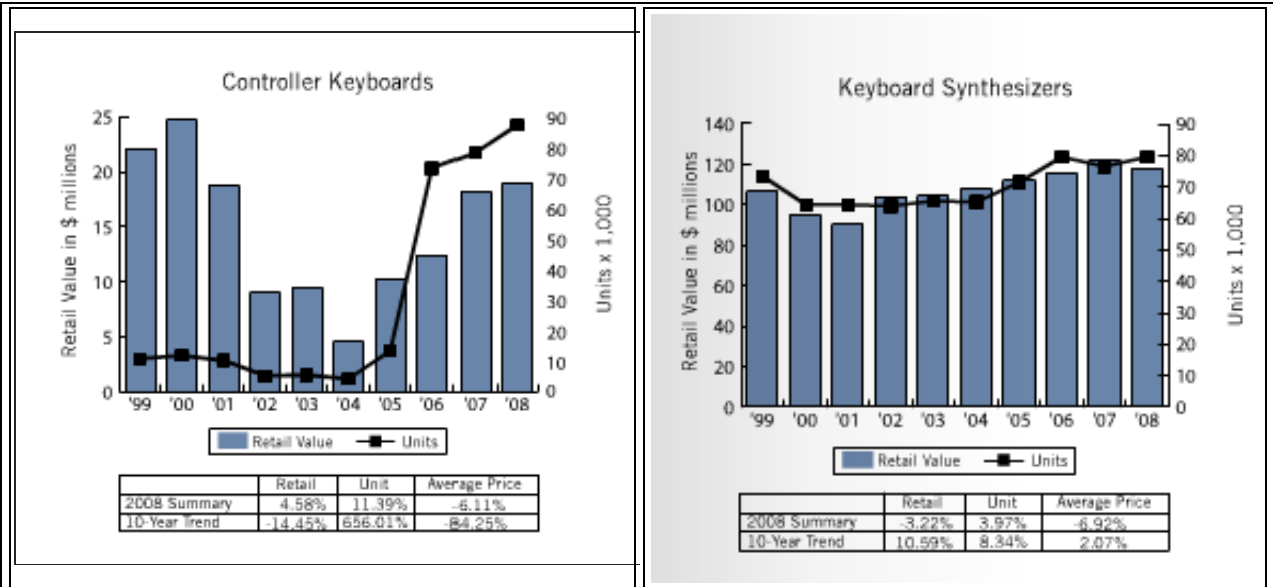
### Status of markets we leverage:



According to NAMM, “although the (economic) decline has caused consternation throughout the music industry...the numbers reveal a still-vibrant fretted instrument market”.

NAMM claims that “new technology is the best source of sales growth” in this market. Moreover, market quadrupled in value from ’99 to ’08

<sup>9</sup> "2009 Music USA NAMM Global Report." <<http://www.nxtbook.com/nxtbooks/namm/2009musicusa/>>.



Both of these figures characterize the keyboard market. While less lucrative than the guitar and computer music markets, we still notice a large rise in units sold of controller keyboards (used mainly to control computer music programs), and an overall consistent popularity in traditional synthesizers.

The graphs above were taken from the National Association of Music Merchant's most recent global report(c.2009).



**Alessandro Voto: CEO**

- Economics student at UCSC
- Active musician for 6 years
- Knowledgeable in the field of audio effects



**Robert Logan: Marketing Executive**

- Economics major at UCSC
- Active musician for 8 years
- Training in marketing strategies



**Robert Culpi: CFO**

- Business Management Economics major at UCSC
- Background in accounting and financial planning
- Training in marketing strategies



**Todd Siefke: Design**

- Active musician for 8 years
- Independent business background (assistance with family-run business)
- Knowledge of music market and needs of musicians



**Jimmy Aveningo: COO**

- Business Management Economics major at UCSC
  - Background in marketing and sales
  - Extensive background in quality control
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## KINESONIC SWOT ANALYSIS

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- Team knowledgeable in business and music fields
  - Leverages investments in existing pedals and effects in the market
  - Technology is an adaptable platform upon which new products can be based (algorithms, inputs, and designs)
  - Integration with MIDI technology allows for a large base market
  - Capitalizes upon market momentum towards touch, proximity, and gesture controlled technology
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- Lack of engineering experience
  - Branding will be difficult in brand loyal music community
  - No set production facility or plan
  - No controlled voltage (CV) functionality
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- Innovative design patentable for market protection and product differentiation
  - Partnership with effect companies, wireless tech companies could provide swift market penetration as well as improved product lines
  - Few low-cost controller options on the market
  - NAMM membership will allow for better market data
  - Established venues for sale of product (Guitar Center, local mom and pop, etc)
  - Sponsorship of high profile music clients as marketing tool
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- Companies could replicate concept of mobile gesture control
  - Effect must be experienced to be truly understood
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