



DYIM

(Discover Your Inner Musician)

Submitted in partial fulfillment of the requirements for
the degree of Master of Science in Interactive Design and Media

School of Design and Engineering

Philadelphia University

Robert Hardcastle

May 13, 2014



Foreword

Music is an interesting word. Just say the word. “Music.” The word evokes such a wide range of emotional, and physical reactions because it represents something, for some, that is almost spiritual. Many people love music. They listen and enjoy this experience constantly. How come more people don’t try to make music though? There is the old saying - “Some people have it, some people don’t”. Do most people think that they can’t make music?

Musicians aren’t the only ones that have musical thoughts and emotions. The environment of learning and pre-existing physical abilities, however, have a huge impact on either “having it” or not “having it”. This project will present a unique opportunity for people that think they “don’t have it”. It will allow users to overcome obstacles to their inner musician and express the musical ideas they have within.



Table of Contents

I.0 Design and Process...	1
I.1 What is DYIM?...2	2
I.2 Project Strategy...3	3
I.3 Team Roster...3	3
I.4 Functional Specifications...4	4
I.5 Users...5	5
I.5.1 Target Users...5	5
I.5.2 User Needs...6	6
I.5.3 Personas...7	7
I.6 The Space...10	10
I.7 Inspiration...11	11
I.8 General Design...13	13
I.8.1 Who are we?...13	13
I.8.2 Aesthetic...14	14
I.9 Exhibit Design...15	15
I.9.1 DYIM Exhibit – Explained...15	15
I.9.2 DYIM Exhibit - Top View...16	16
I.9.3 DYIM Exhibit - Side View...17	17
I.9.4 DYIM Exhibit – Interaction...18	18
I.9.5 DYIM Exhibit - Signal Flow...19	19
I.10 The Build Process...20	20
I.10.1 User Research...20	20
I.10.2 Electronics...22	22
I.10.3 Structure...23	23
I.10.4 Finishing...24	24
I.11 Technology...25	25
I.11.1 Moving Parts...25	25
I.11.2 Arduino...26	26
I.11.3 Reason...29	29
I.12 Timeline...30	30



Table of Contents (continued)

2.0 DYIM in Action...	31
2.1 Qualifying Success Metrics...	32
2.2 Preparing for Commercialization and Future Phases...	33
2.2.1 Preparing for Commercialization and Future Phases...	33
2.2.2 Official Patent Application Document...	34
2.2.3 Official Patent Application Technical Illustrations...	37
2.3 Appearances and Showings...	38
2.3.1 The PhillyTech Week Signature Event...	38
2.3.2 Philly Tech Week Signature Event Content...	39
2.3.3 The Verizon Philadelphia University Innovation Gala...	40
2.4 On the Web...	41
3.0 Future Steps...	42
3.1 Steps to Commercialization...	43
3.1.1 Patent Next Steps...	43
3.1.2 Investors and Advanced Prototyping...	43
3.1.3 Commercialized Functionality...	44
3.1.4 Commercial SWOT Analysis...	45



I.0 Design and Process



1.1 What is DYIM?

DYIM is a truly unique musical experience. At the core of this experience is an interactive musical exhibit. This exhibit allows users to make music without having to master the technical skills that one would normally have to learn to be successful in playing a traditional musical instrument.

The interface of this device features arcade buttons that the user plays by tapping or pressing with hands. Three users will play this instrument at once, keeping to the notes in their “sector”. Each sector will also feature performance shaping elements that will increase interactivity within the group. The performance will be output in realtime by an on-board sound system and feature a hardware visualizer.





1.2 Project Strategy

Product: DYIM Exhibit

This project presents a unique opportunity for people that think they can't make music on their own by allowing users to overcome obstacles to their inner musician and express the musical ideas they have within. DYIM (Discover Your Inner Musician) is an interactive experience manifested in exhibit form, that allows non-musicians to make music in a social environment. Users interact with a simple to use interface to create music and feel their inner musician come alive.

Product Objectives and Goals

To deliver an interactive experience that will:

1. Allow multiple users to make music together by utilizing an easy to use interface in a fun and social environment
2. Give users immediate feedback in the form of audio and an on-board visualizer
3. Coerce users to work together in creating music
4. Impress upon users that music can be fun and easy if approached the right way

1.3 Team Roster

Robert Hardcastle
Project Lead – Design/Construction
Philadelphia University M.S. Interactive Design & Media
Candidate
hardcastle5805@students.philau.edu

Phillip Sorrentino
Adjunct Professor
Project Advisor – Industrial Design
sorrentinop@philau.edu

Neil Harner
Interim Director, Interactive Design & Media and
Animation
harnern@philau.edu

Halsted Larson
Adjunct Professor
General Project Advisor
larsonh@philau.edu



I.4 Functional Specifications

Brief Overview

- 3 sector performance interface
- Each sector features 15 arcade buttons that can be played either by pushing and holding, or by drumming on them like a hand drum
- Each sector features an array of rhythmic loops, sound effects, and pitched loops
- All pitched sounds played have the same tonal center so they can be layered easily
- All loops and rhythms are automatically synced in time, so users are free to experiment without the need for pre-existing rhythmic skills
- A computer control system is stored in the heart of the exhibit. This allows for processing the data from the input sectors and turning it into audio feedback
- A sound system outputs audio sent from the computer control system. This system is set to be environment appropriate and will not be changeable by users.
- A pre-built visualizer takes audio input from the environment and turns it into visual feedback in real time
- This exhibit is durable enough to take abuse from heavy use in an exhibit/museum type of environment and from over-zealous users



1.5.1 Target Users



Who is DYIM for?

DYIM's target user dreams of being able to play music but doesn't think that they can. They listen to, and are interested in music but have not been able to achieve the technical skill necessary to be successful in their attempts to play a traditional musical instrument. DYIM eliminates this technical element and gives users the ability to express the rich musical ideas that they have within.

The target demographic for users of this exhibit will be men and women ages 20-30. These users will be comfortable in social settings, and will generally have moderate or less musical experience. It is important to note that this demographic is just the target user group for this project. Users of all ages, and musical ability levels can benefit from and enjoy this project.

In terms of musical learning DYIM's goal is to present persons with little musical experience, that believe "I can't play music", the idea that they in fact, have an inner musician waiting to come forth. By presenting a user friendly and intuitive social music-making device, users will be able to see their musical thoughts bubble to the surface, and have fun with friends or complete strangers while doing it!



1.5.2 User Needs



Our users have a specific set of needs that must be met for success

1. To be able to play music through an easy to use interface
2. To express their musical ideas without the hassle of having to master the technical skills necessary
3. To experience music in a social environment
4. To interact with the device casually, but the result is an engaging and exciting experience



1.5.3 Personas



Sara

Age: 30 Years Old

Occupation: Designer

Income: \$42,000 per year

Interests: Social gatherings, art, music, being with friends

Sara is a 30 year old office worker who lives in the city. She frequents social gatherings, and museums and loves trying new things. Sara often goes to concerts and constantly listens to music although she has never played a musical instrument. She was always of the belief that only “some people” can play music, and thus she would just have to enjoy it from the sidelines.

Seeing something like D.Y.I.M. would be very exciting for a target user like Sara. She could finally play music with an easy to use interface and while at a fun social gathering. Being in the social element and incorporating this instrument that “anyone can play” would allow her to open up a world of self discovery and see that she actually has an inner musician waiting to come out.



1.5.3 Personas (continued)



Scott

Age: 25 years old

Occupation: Server

Income: \$20,000 per year

Interests: Listening to music, going to concerts, hanging with friends

Scott is a 25 year old server. He uses technology regularly and is quite adept at learning new forms. He has played music casually for years and can play a few instruments at a fair level. Mostly, he plays music for fun and will play with friends in his spare time or at get togethers such as camp fires, and parties. Scott would love other ways to play music socially in an easy to use format, where he can show off his current skills such as rhythm and tonality.

Scott would enjoy D.Y.I.M. because he could interact casually with both friends and strangers in an active social/museum setting. He would welcome the chance to try this new technology and would be curious about the results that would be produced.



1.5.3 Personas (continued)



Tommy

Age: 21 years old

Occupation: Student

Income: \$12,000 per year

Interests: Going to bars, going to concerts, playing video games

Tommy is a senior in college focusing on game design. He loves music and goes to concerts frequently with friends, or if worse comes to worse, by himself. Music of all genres dominates his conversations with friends. Although he is passionate about music he never pursued it because his early attempts at guitar and drums were extremely unsuccessful.

DYIM would appeal to Tommy as he would finally be able to feel like a musician. He could take his love for music one step further to making music himself. Being a gamer, the technology involved with DYIM, as well as the interesting interface, would appeal to Tommy.



1.6 The Space

Interactive Exhibits

Interactive exhibits in a social setting afford a very unique experience for users. This experience can be one of self discovery as users can experiment within their environment; in this case the exhibit, the other users who are participating, and the hall or museum that the exhibit appears in. Technology and interactivity introducing new knowledge can create a fun learning experience.

Generally it is apparent that when learning becomes fun, it becomes powerful, rapid, and memorable. This could be one reason that interactive exhibits are becoming more widespread, not only in museum type environments but also at trade shows, conventions, and many other social settings. It is the goal of this project to add to this space through an easy to use interactive music experience.

Although interactive exhibits are increasing in popularity and scope, the idea of fun and interactivity in learning is not new. The Franklin Institute, which dates back to 1824, employs interactive exhibits quite successfully. In this environment people, mostly children, are encouraged to touch and play with exhibits. This play creates a powerful learning experience that is not soon forgotten.



(images via: <http://theinteractivemuseum.com> December 2013)



1.7 Inspiration

Behind the Concept

Although DYIM draws inspiration from the concept of interactive exhibits in general, two music specific exhibits stand out. Both of these exhibits exemplify the core goal of DYIM: allowing users with little musical background the ability to make music through an easy to use interface.

Music Mixer – Sony Wonder Technology Lab

Music mixer is an interactive exhibit featured at Sony Wonder Technology Lab in Manhattan. This exhibit allows users to mix and re-mix an Alicia Keys song by manipulating 3D interfaces on a long interactive table. Users experience their changes real time through audio as well as feedback visuals that appear on the interactive table. An experience like this allows users to feel like they are making the music through simple interaction.



(images via: <https://www.sonywondertechlab.com/about-us/exhibits> May 2014)



1.7 Inspiration (continued)

Reactable

Reactable, much like DYIM, encourages users to create music through interaction in a social setting. This exhibit features a round table where users place and move cubes and squares to generate and manipulate sound. Users can also tap directly on the table itself to create music and shape their performance. The table, much like DYIM and Music Maker, provides real-time feedback through both audio and table top visuals.



(images via: <http://www.reactable.com/products/experience/experience-for-museums/> May 2014)



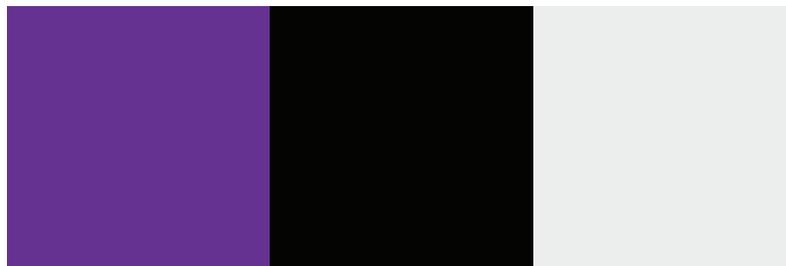
1.8.1 Who are we?

DYIM is about self-discovery in a social setting. The exhibit, and logo is a simple representation of this idea.



DYIM Logo

DYIM's signature logo is the embodiment of what this project is about. Three users will use the exhibit as one in this social atmosphere to achieve a simple goal. That goal is to make music like a musician without needing the technical skills required to play the instrument in a fun atmosphere. Our logo, is 3 music notes (a triplet) inside of a speech balloon. This represents the social aspect that users will experience while playing DYIM.



DYIM Print Color Swatches

Purple is considered to represent many things. Discovery and mystery are among the things that it represents. As DYIM is a project of discovery into the mysterious emotion that is music, this has a logical place. Purple is also known to stimulate imagination and inspire high ideals. Black and off-white will be secondary colors to purple.



1.8.2 Aesthetic

The exhibit itself will pull from multiple aesthetics. Overall the instrument will have an industrial feel (think Blue Man Group) combined with an 80's arcade machine. The architectural lines of the instrument will be angular, yet sleek and futuristic in a nod to these influences.

For the web and any promotion type materials, the design will follow a flat and friendly design mentality. Colors and graphics will be simple, one color where possible, and flat. This will help present a friendly atmosphere and hopefully entice users to join in the fun!



(image via: <http://www.bluman.com> May 2014)



(image via: www.electrictheatrearcade.com May 2014)



I.9.1 DYIM Exhibit – Explained

Input Deck

The DYIM exhibit features a unique interface capable of delivering a powerful experience. The input deck is a round table top measuring two feet in diameter. This table top is split into three sections or “sectors”, allowing three users to play the exhibit at one time. When a user steps up to the exhibit they will see their sector features fifteen arcade buttons that make up the key input system of the device. These buttons can be played by either tapping or pressing. Users will also see that they have a large rectangular button or “option key”. This key will enable different functions depending on the exhibit’s set up.

Visualizer

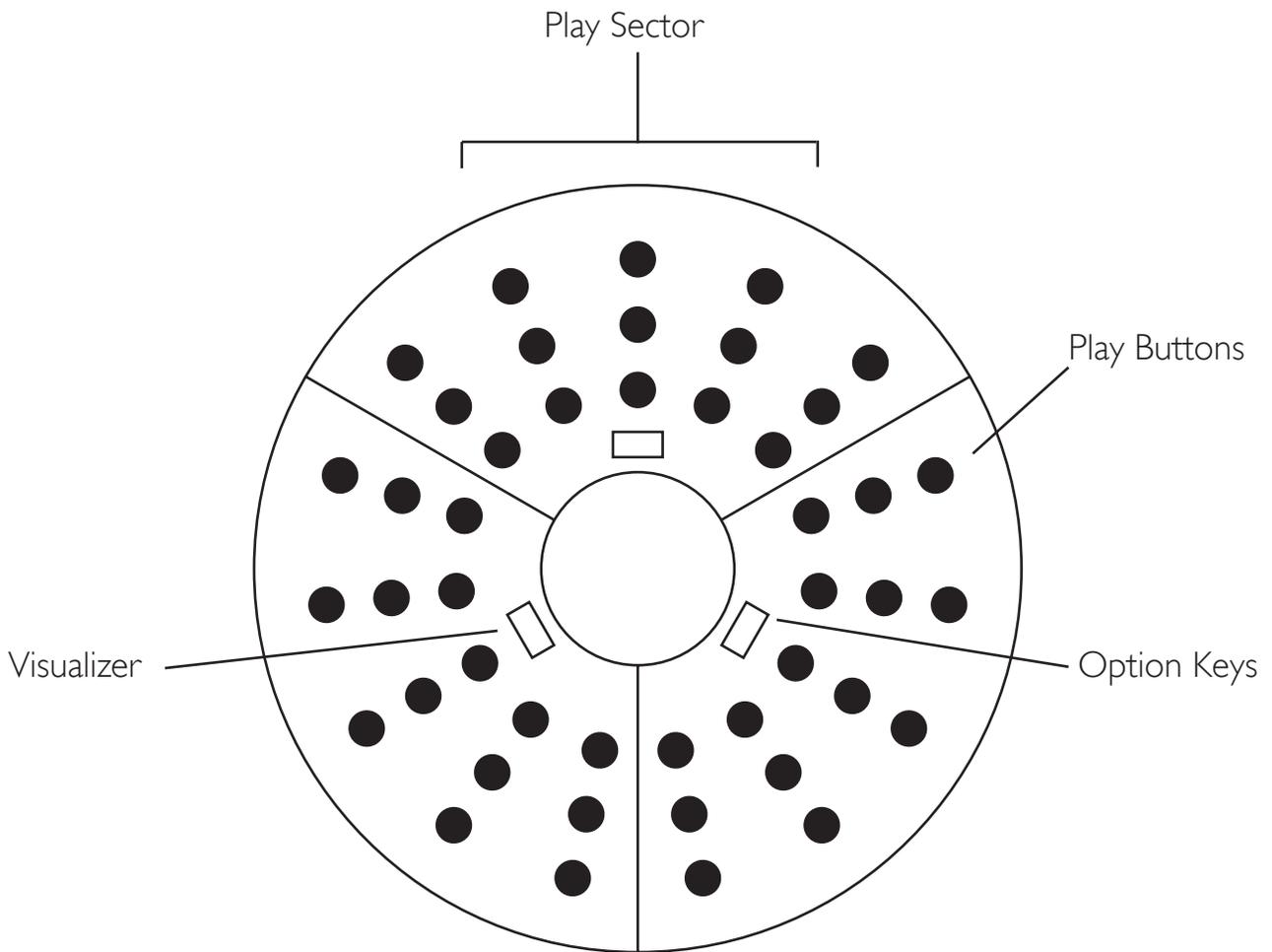
Audio will not be the only feedback that users receive while playing DYIM. Featured on the exhibit is a pre-made visualizer that takes audio from the environment and produces a beautiful visual in real time. In this way each user will receive specific visual feedback about the global performance as well as their own.

CPU Tower

The input deck and on board visualizer will be mounted on a cylindrical base that also serves as the exhibit’s CPU tower. Housed in the tower will be the central brain computer. This system will be solely responsible in turning input from the users into audio output.

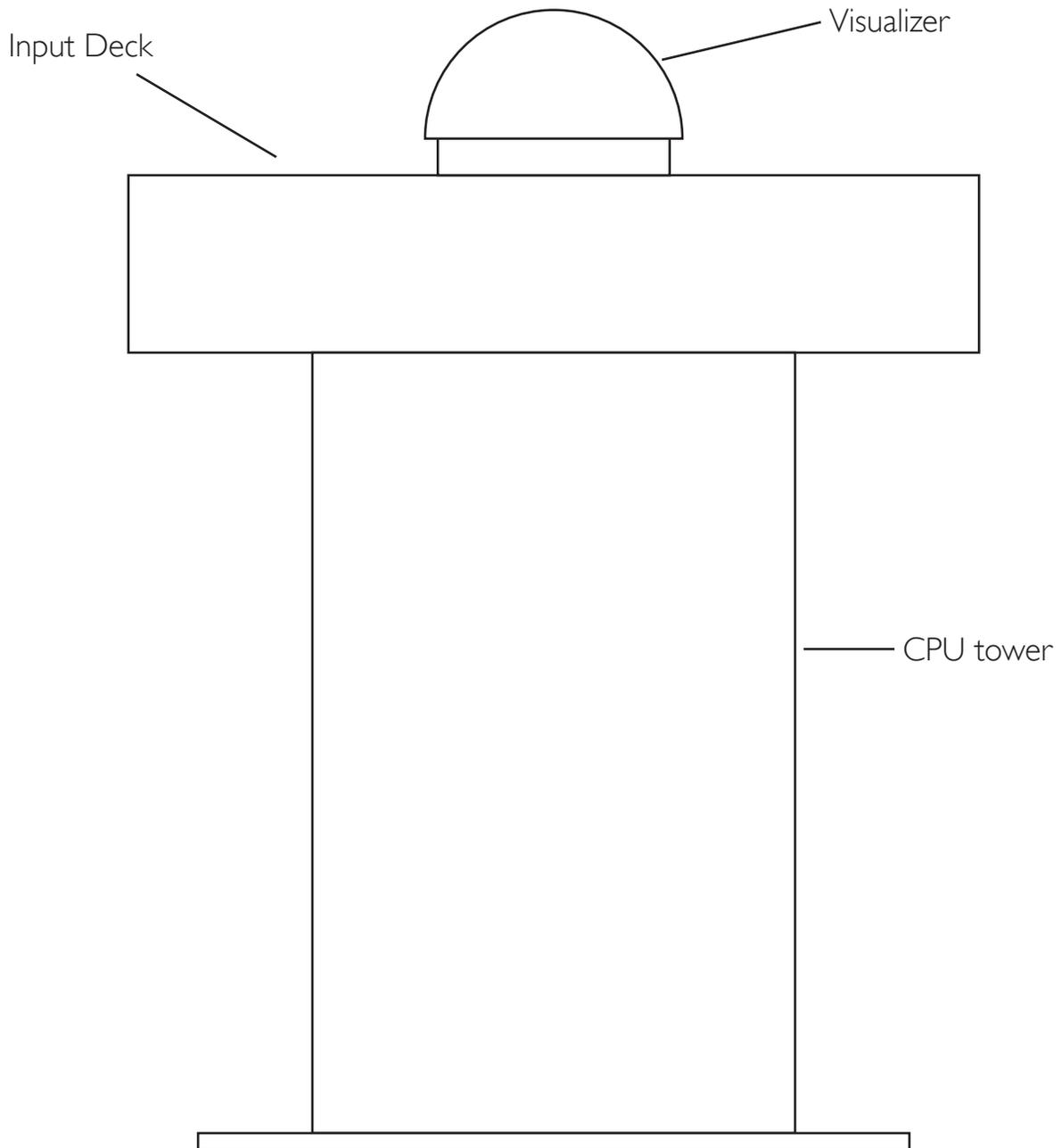


1.9.2 DYIM Exhibit - Top View





1.9.3 DYIM Exhibit - Side View





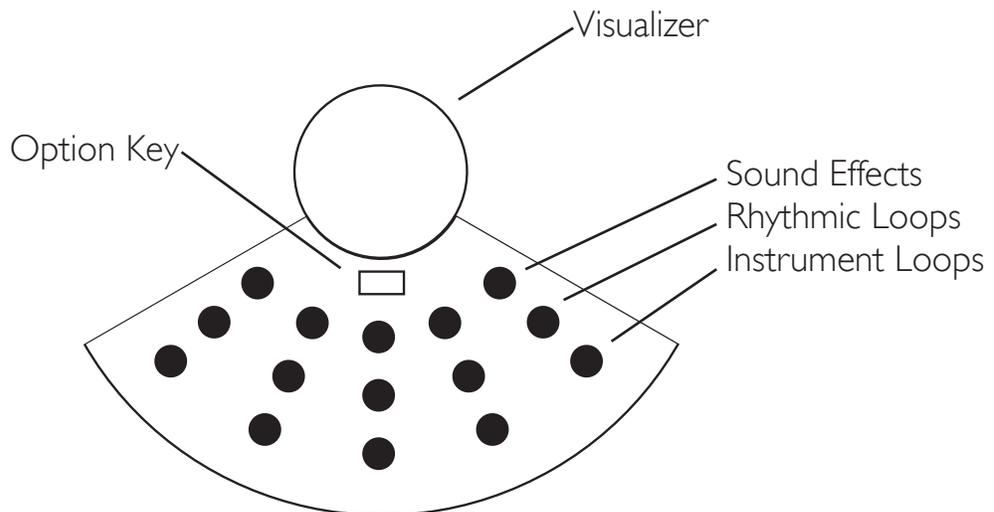
I.9.4 DYIM Exhibit – Interaction

User Interaction

Simple interaction is paramount to DYIM's goal of allowing non-musicians to express musical thoughts. To accomplish this DYIM's input deck is a unique and simple to use interface. Users will be greeted by fifteen play buttons in three rows of five. The top row of each sector will play assorted samples, the middle row of each sector will play rhythmic loops, and the outer row will play select instrument loops (drums, bass, or melody). By using sound samples that blend effortlessly, and a rhythmic matching system, there will be virtually no combinations of notes that sound bad together thus allowing users to make music together easily.

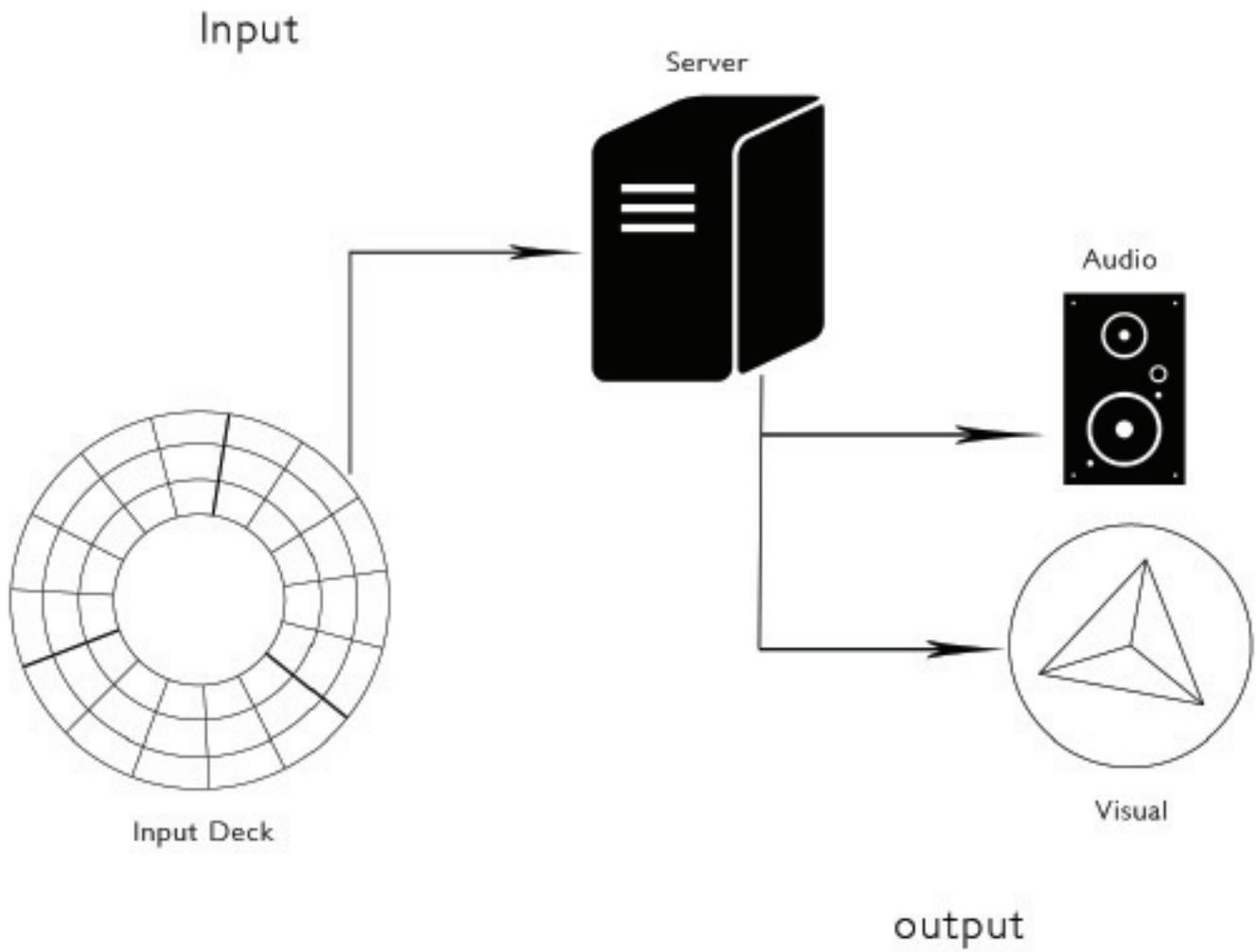
Social Interaction

Because DYIM is a group experience, it will be necessary to add an element that coerces interaction between users of the exhibit. Each sector of the input deck will feature an option key. This option key will allow the user to change one element of the global experience (such as tempo, key, etc.).





I.9.5 DYIM Exhibit - Signal Flow





I.10 The Build Process

I.10.1 User Research

The Build Phase began with user testing. Initially this test phase used a device that produced a similar interaction to the one sought in DYIM. Eventually, a paper prototype replaced this device so that users could get a feel for the real size and layout of the interface.

User Research Session #1



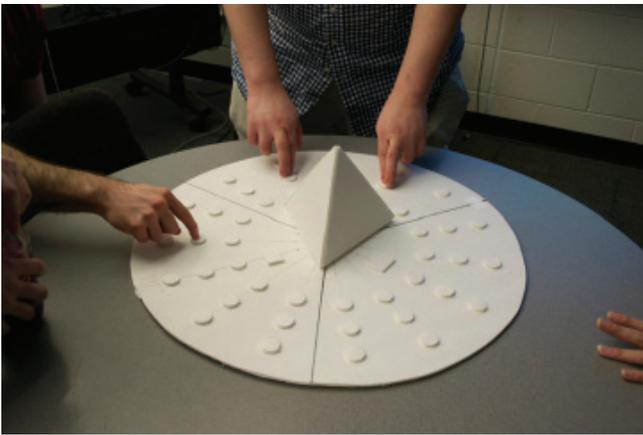
User test session one included a music toy where users play sounds by tapping with their fingers. The results of this test session led to a refinement in terms of instrument size and the method of interaction.



1.10 The Build Process (Continued)

User Research Session #2

User test session two included a paper prototype that allowed user to get a feel for the exhibit's interface.



After our initial user testing sessions, a series of surveys was published. Data from all user test sessions and surveying was used to further solidify the concept and direction of this project.

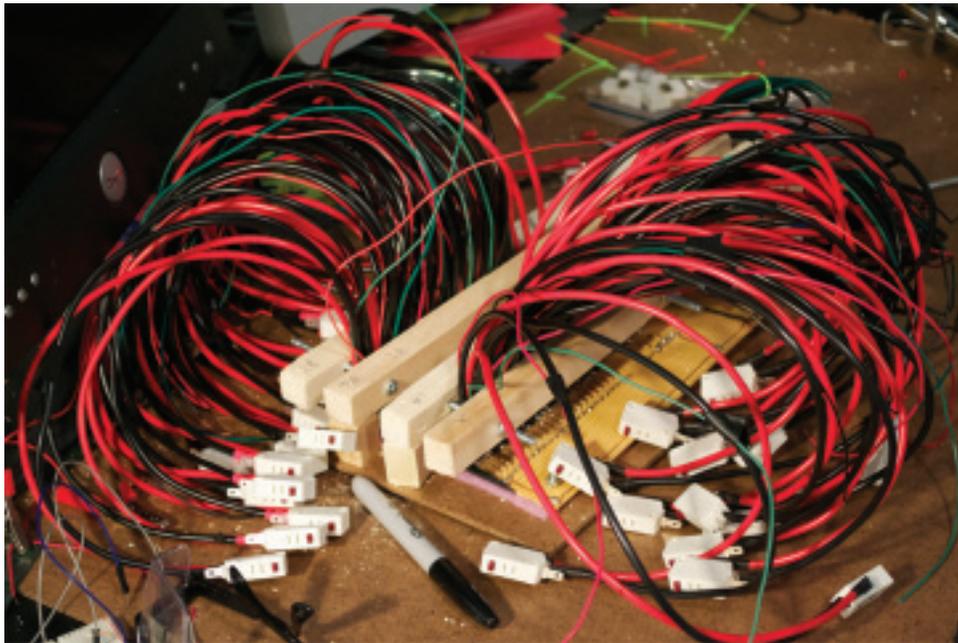


I.10 The Build Process (Continued)

I.10.2 Electronics

The physical exhibit can be broken into two major parts. The electronics, and the structure.

For the electronics, an Arduino Mega is utilized to take user input and send it to the server computer as note data. Each station has fifteen buttons for playing notes and one option key to enhance the global performance. This makes for 48 total inputs.





I.10 The Build Process (Continued)

I.10.3 Structure

The structure had to be durable and functional. A birch top and supporting rib structure adds strength to the play area. A door allows for easy access to the server system.

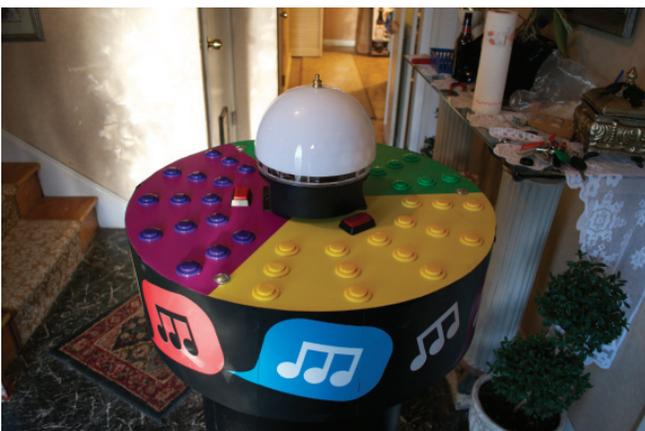




I.10 The Build Process (Continued)

I.10.4 Finishing

To finish, the entire exhibit was wrapped professionally in a printed poly carbonate wrap by a local company that specialized in industrial prints and custom car wraps.





1.1 | Technology

1.1.1 Moving Parts

The hardware portion of DYIM interacts with an array of technology to produce the desired audio output and thus the targeted experience. At a glance, one could think of the hardware portion as an array of on/off switches, that when paired with Arduino, produce a desired MIDI output. A DAW (digital audio workstation) suite called Reason by Propellerhead receives this data and acts to produce the desired final audio output.

It is important to note, that a commercialized version of DYIM would have to utilize different methods for a similar experience. This would have to be investigated and developed in future phases. Here is a more in depth look at how the pieces currently work together.



(Arduino Logo, intellectual property of Arduino <http://arduino.cc>)

(Reason Logo, intellectual property of Propellerhead: <https://www.propellerheads.se>)



1.11 Technology (continued)

1.11.2 Arduino

The Arduino Mega uses its own proprietary programming language for logic control when accepting data from electrical circuits or physical devices. In the case of DYIM, an array of electrical circuits produces either an on or off message when a button is pressed. The Arduino uses each targeted port's info to locate MIDI note data and instructions that are housed in a multi-dimensional array. Then based on this array data, it sends a specific MIDI note message through a connected MIDI/USB interface.

Within DYIM's note array, there are two different types of notes. One type of note, sends a simple MIDI note-on message when a button is pressed, and sends a separate MIDI note-off message when that button is released. These buttons are responsible for playing "one-shot" samples and sound effects.

The second type of note within DYIM's note array, has to send four MIDI note messages for each button event. When a button is pressed, a MIDI note-on message is sent, quickly followed by a MIDI note-off message. When this same button is released, again a MIDI note-on message is sent, quickly followed by a MIDI note-off message. These buttons are responsible for playing continuous loops.





1.1 | Technology (continued)

Arduino Sample Code (Note Matrices)

```
//NOTE MATRICES
```

```
//Purple
```

```
int notePurple[16][3] = {
```

```
{2, 1, 0},
```

```
{3, 2, 0},
```

```
{4, 3, 0},
```

```
{5, 4, 0},
```

```
{6, 5, 0},
```

```
{7, 6, 0},
```

```
{8, 7, 0},
```

```
{9, 8, 0},
```

```
{10, 9, 0},
```

```
{11, 10, 0},
```

```
{12, 11, 2},
```

```
{13, 12, 2},
```

```
{14, 13, 2},
```

```
{15, 14, 2},
```

```
{16, 15, 0},
```

```
{17, 16, 2}
```

```
};
```



1.1 | Technology (continued)

Arduino Sample Code (Construct and Send Note Messages)

```
//CONSTRUCT MIDI MESSAGES
void MIDImessage(int command, int MIDInote, int MIDlvelocity) {
  Serial.write(command);
  Serial.write(MIDInote);
  Serial.write(MIDlvelocity);
}
```

```
//TAKES BUTTONS/NOTES AS PARAMETERS TO SLIM CODE
```

```
void PlayKey(int note[2][3], int count){
  if(digitalRead(note[count][BUTTON]) == 1){
    if(note[count][BUTTON_STATE] == 0){
      MIDImessage(noteON, note[count][NOTE], velocity);
      MIDImessage(noteOFF, note[count][NOTE], velocity);
      note[count][BUTTON_STATE] = 1;
    };
    if(note[count][BUTTON_STATE] == 2){
      MIDImessage(noteON, note[count][NOTE], velocity);
      note[count][BUTTON_STATE] = 3;
    };
  }else {
    if(note[count][BUTTON_STATE] == 1){
      MIDImessage(noteON, note[count][NOTE], velocity);
      MIDImessage(noteOFF, note[count][NOTE], velocity);
      note[count][BUTTON_STATE] = 0;
    };
    if(note[count][BUTTON_STATE] == 3){
      MIDImessage(noteOFF, note[count][NOTE], velocity);
      note[count][BUTTON_STATE] = 2;
    };
  }
}
```



1.1 | Technology (continued)

1.1.1.3 Reason

For all intensive purposes, DYIM's hardware interface could actually be considered a programmable MIDI controller. It is a plug and play device that can send MIDI messages to any hardware or software that is capable of processing these messages.

Reason is used on the back end of DYIM because of it's versatility, power, and customization features. Reason houses a pre-built MIDI song file for this project. Within this song-file, there are a number of samples, loops, sound effects and custom synthesizers. When a sound effect button is played there is a simple interaction. A midi-note message is sent and Reason then plays a sample or sound effect that is programmed as assigned to the specific note message.

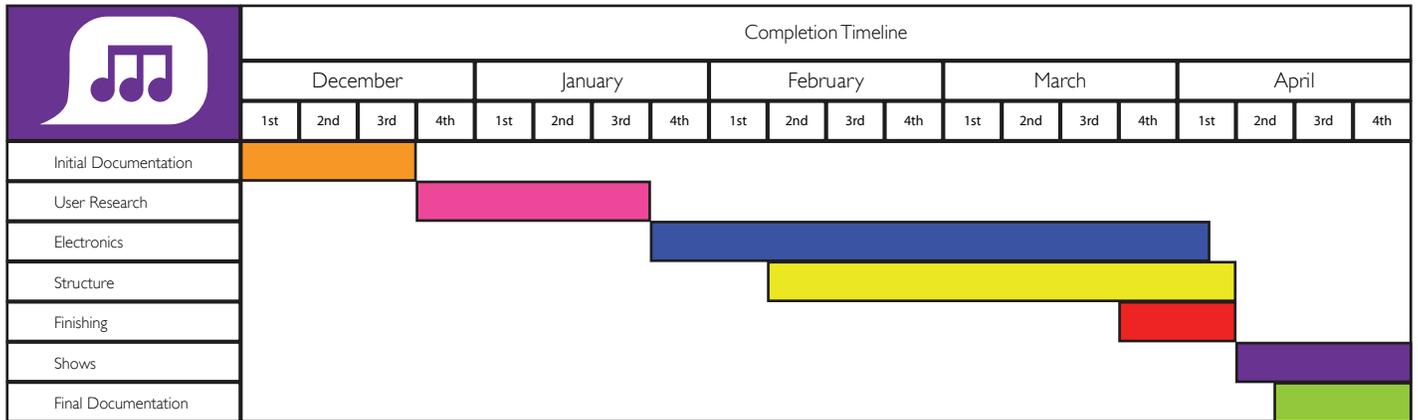
Loops, which form the underpinning of the common rhythm felt during a performance, are a little more complex. Our Reason song file is always playing as long as the exhibit is running. This means that our loops are always playing, but are muted so that no sound is heard through audio output. When a loop or rhythmic sample's button is pressed on the interface, the corresponding track is un-muted and can be heard through audio output. When this same button is released, the track is returned to it's muted state and audio output from that track is stopped.

A combination of button presses, with different timing and rhythms can produce an almost unlimited number of combinations with this configuration, and since every facet is programmable, you could run unlimited types of song files, genres, etc.





I.12 Timeline





2.0 DYIM in Action



2.1 Qualifying Success Metrics

Initially DYIM had, what we considered, to be four metrics to gauge success. These were as follows:

1. Feature the exhibit at a minimum of 2 venues
2. Receive overall positive reviews and impressions at these events
3. Receive at least 100 Facebook Likes
4. Receive at least 100 unique website hits

In terms of reaching these goals, DYIM had varied success. The strength of the design was afforded invites to two major events: The Philly Tech Week Signature Event, and The Verizon Philadelphia University Innovation Gala. At these events, the reviews and impressions of the exhibit were overwhelmingly positive, however we failed to reach 100 likes on Facebook and the website was downsized as targeting on social media seemed to be more effective in this space.

This begs a different question: "What are good success Metrics?". The failure to reach intended stats on Facebook is not because of a failure with delivery of the exhibit, but rather a failed attempt at choosing that as a success Metric. DYIM is a physical exhibit in the physical space, the experience is very much an embodied and emotional experience instead of a virtualized experience. Many people in these spaces were captivated by the tangible experience, but this, as we have seen, does not translate to a captured Facebook like.

The take away from this? Let's turn back to the most asked question by users at these events: "Where can I buy this?". This question was almost always followed up by the statement: "I want this now!". The potential for commercialization of this idea is the most powerful confirmation of success possible.



2.2.1 Preparing for Commercialization and Future Phases.

During testing and development, it became clear that DYIM had the potential to be a commercially viable social music device. Because of this we took steps to attain a provisional patent on the interface of this instrument. The idea of a single instrument to be used by multiple people in a space of social discovery is an interesting one. DYIM's interface allows users to remain facing each other and interact to produce music in this space. The provisional patent was applied to the interface instead of the entire exhibit, because this allows us to mold and change the experience as the project is further developed, without being bound to a specific function.

The process of applying for a provisional patent was simple. After searching the internet it became clear that a provisional patent would allow us the opportunity to protect the idea, and show it in the public space, as well as market to companies and investors. There are multiple online companies that deal specifically with patenting and using their own process and forms to help inventors achieve these goals in a cost and time effective manner.

We chose a company called Thoughts to Paper, as their fees were low, they had an A+ BBB rating and do not retain any percentage of ownership in the patent (some companies do own part of the patent). This process was simple, forms were filled out (after non-disclosure agreements were signed) and then a series of technical drawings were included with a write up of the idea intended to be protected. Then a team of specialists in patent law, modify the write-up to be as effective in protecting the idea from a legal standpoint as possible.



2.2.2 Official Patent Application Document

FIELD OF THE INVENTION

The present invention relates generally to an apparatus for social music making. More specifically, the present invention is a circular, multi-person musical interface comprising three musical “stations”, a plurality of “play-keys” (split evenly between stations), a plurality of “option-keys”, capability to control either: any software-synthesizer, hardware synthesizer, sampling device, etc.

BACKGROUND OF THE INVENTION

Collaborating with friends to make music can be very rewarding. New rhythms and beats that fuse the personalities of those involved may arise. This can be true both for professional musicians and amateurs alike.

The present invention is a circular, multi-person musical interface comprising three musical “stations”, a plurality of “play-keys” (split evenly between stations), a plurality of “option-keys”, capability to control either: any software-synthesizer, hardware synthesizer, sampling device, etc. Using the present invention, three individuals can create music together in a collaborative style.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view computer illustration of the present invention

FIG. 2 is a top view computer illustration of the present invention with components numbered



2.2.2 Official Patent Application Document (continued)

DETAIL DESCRIPTIONS OF THE INVENTION

All illustrations of the drawings are for the purpose of describing selected versions of the present invention and are not intended to limit the scope of the present invention.

The present invention is a circular, multi-person musical interface comprising three musical “stations”, a plurality of “play-keys” (split evenly between stations), a plurality of “option-keys”, capability to control either: any software-synthesizer, hardware synthesizer, sampling device, etc.

The present invention is geared towards social music making. It allows three musicians to play music on a circular interface split into three separate “stations.” Each station would feature a plurality of “play keys” used to play sounds as well as a plurality of “option-keys” that can be used to affect the global performance.

This interface could be used in a number of different configurations to sketch or perform music. These configurations could include but are not limited to:

- 1. Controlling a software based synthesizer*
- 2. Controlling a separate hardware based synthesizer*
- 3. Controlling an onboard synthesizer*
- 4. Controlling a software based music sampler*
- 5. Controlling a hardware based music sampler*
- 6. Controlling an onboard music sampler.*



2.2.2 Official Patent Application Document (continued)

In reference FIG. 2:

1. The interface is shown to have a circular shape, allowing a plurality of users or performers to face each other as they use the device.

2. This interface is then broken down in to separate stations.

3. "Play-keys" are shown and will be the main form of input for users.

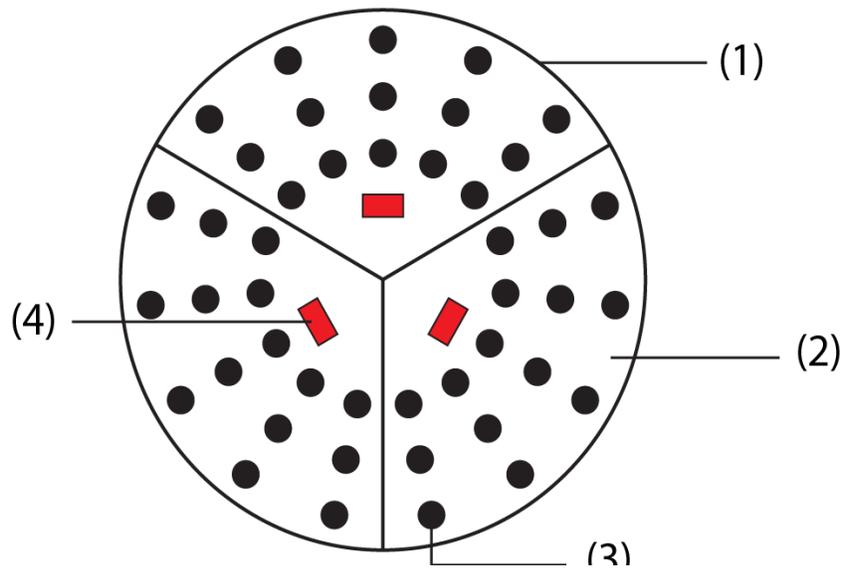
4. "Option-keys" are shown that will be used to affect the global performance.

Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention.

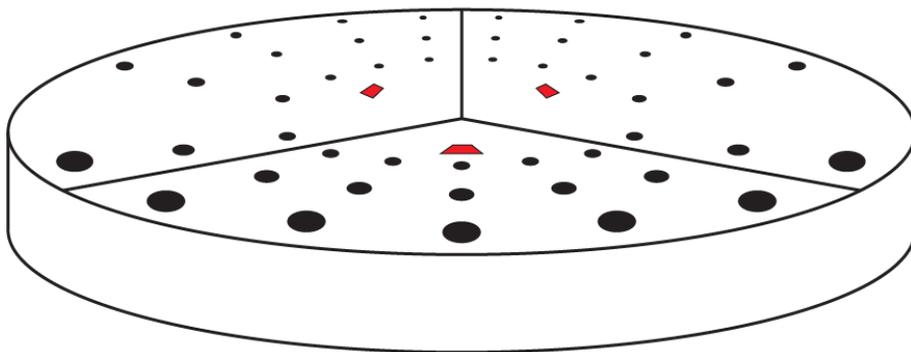


2.2.3 Official Patent Application Technical Illustrations

Top View



Perspective View





2.3 Appearances and Showings

DYIM was exhibited at two prestigious events and garnered web interest on different platforms as a result.

2.3.1 The Philly Tech Week Signature Event

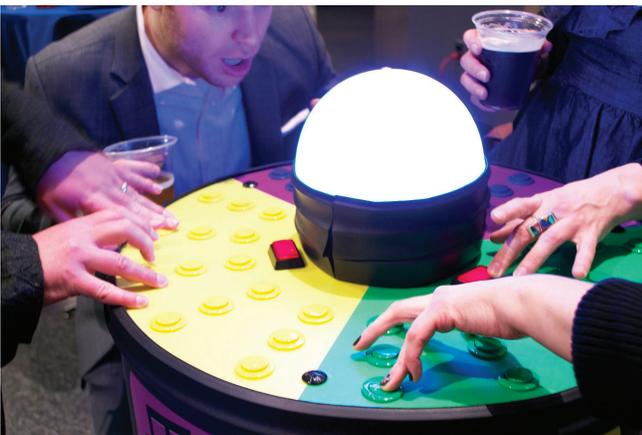
The first event that DYIM was featured at was The Philly Tech Week Signature Event. This event took place on Friday April 11th at the Comcast Building in Philadelphia. The event had a cocktail party atmosphere, as the featured closing party event of Philly Tech Wee. It featured great tech exhibits and representatives from the Philadelphia technology scene.





2.3 Appearances and Showings (continued)

2.3.2 Philly Tech Week Signature Event Content





2.3 Appearances and Showings (cont'd)

2.3.3 The Verizon Philadelphia University Innovation Gala

DYIM was also asked to participate in a very prestigious university event. The Verizon Philadelphia University Innovation Gala is a black-tie event with proceeds going to provide scholarship for university students. 12 students were displayed along with Innovation honorees from professional industry, on April 26th at the Bellevue in Philadelphia, PA.





2.4 On the Web

DYIM is also very active on both Facebook and Twitter. Primarily this was used as a promotion tool for fans of the exhibit. In the future, we will use these platforms to help launch DYIM into the commercial space!





3.0 Future Steps



3.1 Steps to Commercialization

3.1.1 Patent Next Steps

The process of commercialization will begin with progressing a patent through a series of next steps. First we will have a global patent search executed. This will find any patents that could be considered similar to ours and allows us to make changes if needed and target the elements that will be most effective in the commercial space. Once completed we will start the process of gaining a full patent. This Process is lengthy, and costly, but necessary in terms of having the most concrete and specific intellectual property protection. While this process is in progress, we will still be able to shop our idea to investors and companies, thus enabling a commercialized project to take shape.

3.1.2 Investors and Advanced Prototyping

Investors will be needed to make this dream a reality. There are multiple venues that are being considered and will need to be further refined. A large possibility will be taking DYIM to Kickstarter in conjunction with a focused social media campaign to garner interest. Kickstarter would be a great option because it would allow us to gain crowd funding without having to give up percentage or rights in a possible future company.

An advanced prototype will also need to be developed during this time. It will be necessary to have something to show closer to the finished functionality, and size of the commercial instrument. A commercialized version of DYIM would most likely be a table-top version, and have less technical requirements to launch and play. Having this would also give a better idea of cost to manufacture.



3.1 Steps to Commercialization (continued)

3.1.3 Commercialized Functionality

So what will the next phase of functionality bring? There are many interesting directions that could be taken in this regard. The most essential tool in deciding this would be mass user testing and research. Some interesting questions raised during the production of the DYIM exhibit will play a large part in guiding these test and productions phases. We have to ask things like: “What are the obstacles that people encounter while trying to play music?”, and “What will make people want to play?”. At a first glance the answers seem to be simple: build something where the required user commitment is casual, and the output is exciting and engaging.





3.1 Steps to Commercialization (continued)

3.1.4 Commercial SWOT Analysis

Strengths

- Successful public space testing of the DYIM concept
- Provisional patent protection of device interface
- Apparent public interest in this type of device

Weaknesses

- Need to build an advanced commercial prototype
- Business plan needs to be further developed
- Lack of manufacturing connections

Opportunities

- This is a new space
- No commercial devices of this type
- User feedback suggests this is an unfilled need

Threats

- Intellectual property protection may not protect the entire concept
- Competing devices by existing companies with manufacturing base



[facebook.com/dyimexhibit](https://www.facebook.com/dyimexhibit)
<https://twitter.com/DYIMexhibit>
<http://dyimexhibit.com>