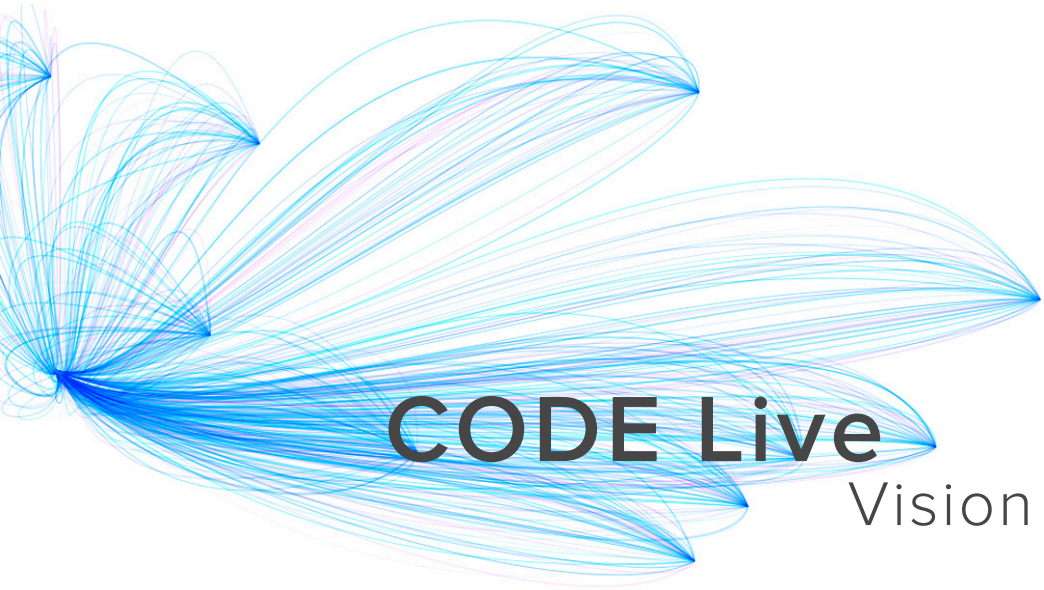

CODE Live
Vision

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overview

CODE Live intends to create a compelling artistic and substantive experience for visitors. As the real world manifestation of the online platform, CODE Live distinguishes itself from the online experience in its collaborative nature and methods of interaction. It is not designed to simply relay information, webpages are better at that; it is designed to engage and emote intrigue and entertain. The goal is to create something playful and artistic.

With this underlying notion, our design of CODE Live strives to capture the connectedness between the content and the individuals consuming and creating it. Additionally, alternative forms of interaction were incorporated to add nuance, collaboration and playfullness to the experience.

Our current design features two major components. The first is the composition of the geographic space of Canada as it emerges from the underlying patterns of origin of the content that of CODE Online. As visitors interact with the exhibit, lines of origin emerge from the geographic starting point of an image and move to Vancouver, the point of collaboration and shared experience. At this stage, the on screen animation consists of animated lines of origin which fill the screen in a form that suggests the geographic space of Canada. It is only when visitors move through the installation does their movement trigger the images at their points of origin. The physical space roughly parallels the on screen geographic space in the regions of motion capture. Concurrently, the text of CODE Online scrolls along the bottom of the screen.

At this point of the development process, we have built a very raw prototype, described above, that tests our design concepts. From this prototype we have learned what works and what needs to be refined and tweaked. There is still a lot of work to do in both the backend and the front-end design and construction of the project. We are confident that the concept and vision are compelling and the tools we have in place are the right ones to execute to a level where the vision and experience are synthesized by visitors.

This document outlines what, in our opinion, needs to happen next to achieve that.

This document is divided into two self explanatory sections, The Experience and The Tools. The document serves as the guidelines for the team that sees this project through to fruition. It is both an analysis of what is and a vision of what needs to be.

The original concept document for the installation is included as an addendum for further reference.

the experience

We believe in our design and oncept. The underlying idea is compelling, the experience is unique and the visuals are engaging. What is missing at this stage are the details which synthesize the idea and the experience. These points of refinement got lost in our technical limitations and were sacrificed in order to achieve the most basic functionality. Here is an outline of what we think will complete the experience.

Geographic Space

The design and structure of the geographic space needs to be revisited. Currently, the system works by randomly placing the points of origin within the boundary of a province and then drawing a curved line from that point to the coordinates for Vancouver. From testing it is clear that the geographic space represented by the lines of origin is too abstract to create the feeling we are trying to convey. To make this more effective we propose to use coordinates for recognizable cities within the provinces instead of random points within the provincial boundaries. Furthermore, we would also like to add a visual anchor which immediately informs the viewer of the context of the experience - the geographic space of Canada. To achieve this, a faint outline of the country would appear on screen at the genesis of the experience with a point at Vancouver with the text ‘We are here’. As the lines of origin are drawn and the images activated the outline of the country will incrementally fade away.

This visual cue not only anchors the aesthetic experience but also reinforces the metaphor that the country is emerging from the

content and the connections between the content. This element also adds a stronger story and overall experiential structure to the experience.

Motion Capture

We still like the notion of motion capture as it creates a playful and nuanced environment for interaction in addition to the collaborative relationship between the VJ at the kiosk and the visitors moving through the space. However, in our prototype there were a few elements lacking. Namely, the relationship between the on screen geographic space and the physical motion capture area. This can be bettered by camera placement and creating more hot spots of a smaller size. The current prototype only has four hotspots which roughly correspond to the four points on a compass. This can be easily refined on the fly while testing.

A further element which was lacking was a feedback system. The connection between movement and the images appearing on screen is not strong enough. Perhaps, creating a stronger relationship between the motion capture area and the on screen geographic space will make this more effective but we think something else is needed. Having a second projector mounted on the ceiling which temporarily displays on the physical ground the images being triggered on screen could reinforce the relationship. Visitors walk through hotspots, the image suddenly appears on the ground then on screen at the point of origin.

Text

There were two suggestions on how to incorporate text into the experience. The first was to place text on screen in the same way as images. However, this proved problematic because it would have been aesthetically difficult to display the text in a legible fashion while maintaining the same dimensions as the images. It would have looked interesting but the content would have been lost. The alternative which he tested in our prototype was a scrolling bar of text at the bottom of the screen. This accomplished the goal of relaying the content but sacrificed the experience, or rather the aesthetic. Alternative methods of incorporating text need to be considered which could include animations on the floor that react to the movement of visitors in the space.

Closing

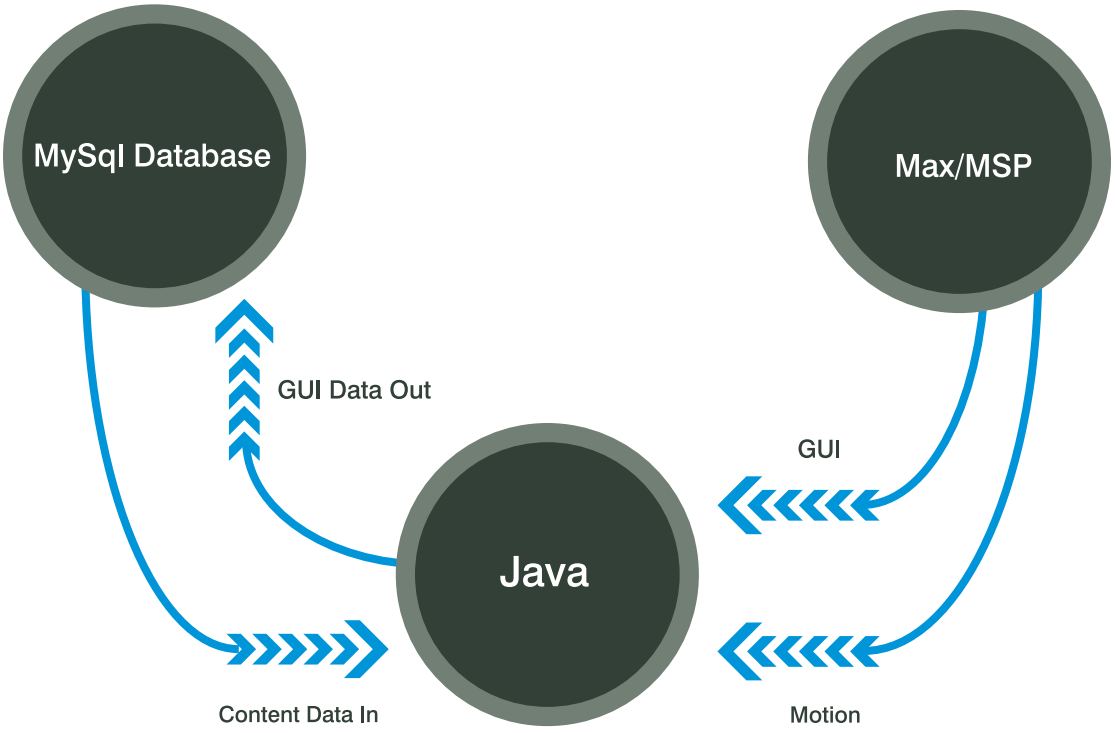
We would like to create a conclusion to the experience. This would occur when the screen is filled with a specified number of images. The conclusion would most likely include an animated clearing of the screen followed by a a graphical interlude which would consist of the CODE logo, reference to the website and possibly the incorporation of some of the images which were used in the experience.

Sound

Convolution between multiple pre-configured sound samples will be controlled by visitors. This feature will be controlled simultaneously via a visitor's choices at the kiosk, paralleling changes in the visuals. The visitor's ability to change this component of the space is essential to completing the intended immersive effect of the complete experience.

the tools

The current prototype exists in three different programming environments, Java (Processing), MySql, Max/MSP. Java is the language and environment that controls everything. It is the bridge between the database and the user interface, it draws the on screen animations, it loads the images, it draws the images. Both Max/MSP and MySql are connected to and through Java. Max/MSP is the point of interaction. The Graphical User Interface is constructed in Max/MSP and linked to Java. The motion capture system is built in Max/MSP and also connected to Java. Java takes the information from the GUI in Max/MSP and then communicates with the MySql database. We have used elements of the Java based Processing library in addition to straight Java. Additionally, Max/MSP will be used for the sound component. Currently, the sound experience is set up to act in parallel with the visual experience with input from the GUI.



We believe this overall structure is flexible and scalable enough for the final version of the project. However, there are certain elements that need to be reexamined with more experienced eyes. The technology environments we have implemented are fast and efficient and because we have divided the tasks between Java, MySql and Max/MSP the performance issues are negligible as the scale increases. Note, however, that although the system was tested with over 1,000 images in the database with no noticeable change in performance, it was not left running for a lengthy period of time. This will be an important step in the testing process for the next stage to make sure there are no memory leak issues. Generally, what is needed is a review of our front-end code and restructuring of our back-end functionality.

The fundamental question we must ask is whether the technology we are using is the right stuff to achieve our vision and to ensure that we are not compromising the vision for the technology. We are confident that we are using the right stuff. In fact there is much more we could do with these tools with the right resources and skills. Our challenge this semester was one of implementation without sufficient resources.

Database Structure

The structure of the database, specifically how images are indexed and searched needs to be re-architectured. The current structure is not designed to fluidly facilitate the retrieval of images from the database and take information with which the images are tagged and transfer that to Java to be used in a meaningful way. This needs to be revisited by a database specialist. The most important aspect of the database and its relationship with the content is the ability to

use the information with which the images are tagged in the visual expression.

Motion Capture System

The fundamental elements of the motion capture system are solid. What needs to be refined is the implementation in the actual space. This is a lighting and setup related issue. Adding more hotspots is a simple process which can be refined on the fly in realtime. Additionally, the system has a threshold sensitivity variable that can be adjusted according to lighting conditions.

GUI

The graphical user interface is easy to implement and change depending on design decisions. Max/MSP's graphical programming language is ideal for the construction of the GUI as opposed to hard coding the GUI in Java. The connection between Max/MSP and Java is fast and fluid. There are no technical issues there. Our fantasy for the user interface involves a old fashioned industrial set of knobs and dials. We have not done enough research yet to assess the viability of this vision but it is on our radar. From some very preliminary research it seems feasible using the Arduino micro-controller connected to Processing.

Java

From a technical perspective using Java in conjunction with the Processing library we are able to achieve our goals. The technical limitations in implementing our vision were simply a matter of not having the programming expertise to execute within the given time frame. It was not a limitation of the technology. In fact, using a combination of straight Java and Processing enables fast iteration

of ideas programmatically which can then be incorporated in to the larger body of code. This process of parallel modular development is ideal for our project especially because much changes when you move from design on paper to design on screen to installation in the real world; the structure we have established allows for fluid transitions and tweaking on the fly.

Addendum

Concept Brief

Concept Brief 3.1

CANADA CODE ON THE GROUND

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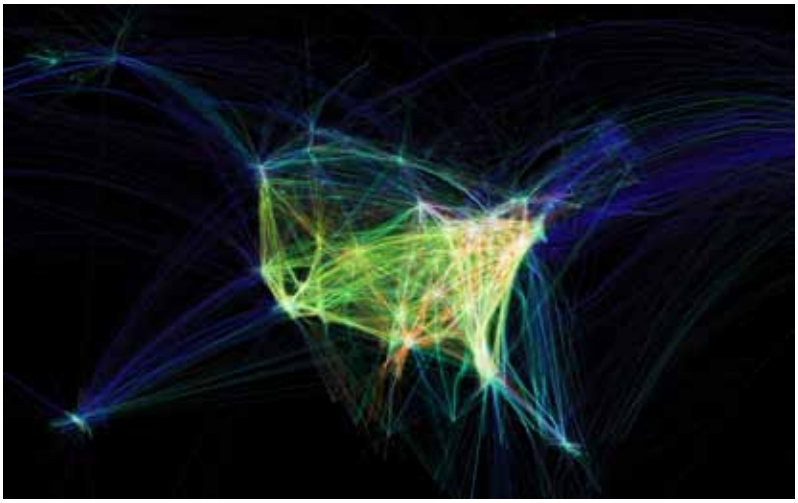
March 19, 2009

Our third iteration of CANADA CODE on the GROUND synthesizes many of the concepts we have discussed since our first meeting. This iteration grounds the abstract artistic experience in the visual language of geography and speaks to the collaborative national encounter of CODE. The visitors interact with the content of CODE through artistic mechanisms and reveal the patterns of origin that emerge from the content through their exploration. Throughout, the visitors maintain a clear connection to the origins of the content and the underlying vision of CODE.

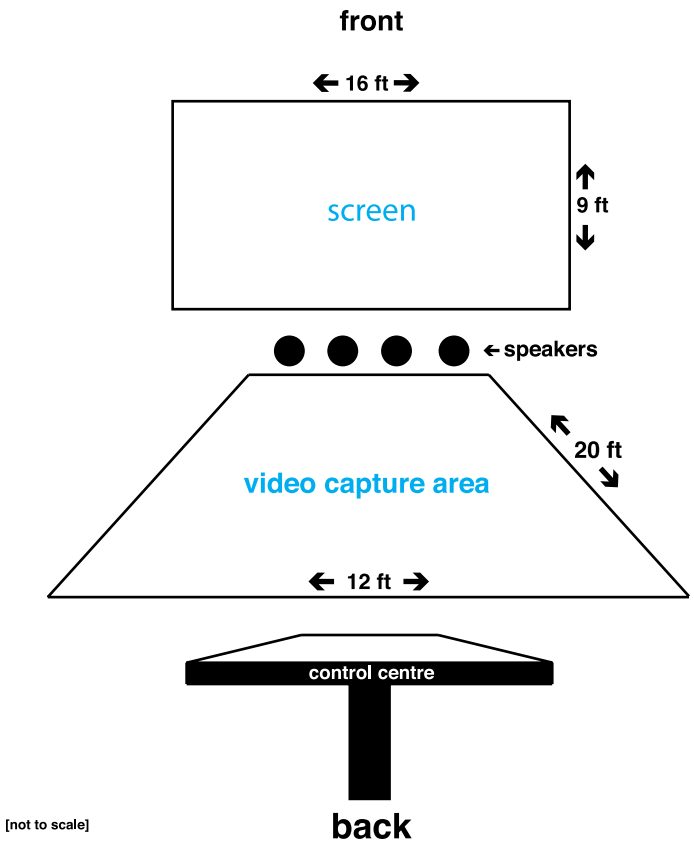
The visual style of Aaron Koblin's 'Flight Patterns' is a good point of reference.



Koblin visualizes the flight patterns over the United States and from that data the geography of the country emerges. The visual experience of CODE on the GROUND is similar to Flight Patterns in that the data itself constructs the geographic reference. In our case, however, the data moves in one direction, from the point of origin to the users on the ground. Naturally, the geographic landscape of the country will emerge from the patters of origin.

The visual metaphor of the content journeying to the user on the ground is especially compelling and the connection between the visitors on the ground and the creators of the content is notably strong.

The user experience incorporates features from Concept Brief 2. The physical layout of the space will be the same as described in Concept Brief 2 except the screen will be 16x9 (as opposed to 9x16) in order to better reflect the layout of the country. As was the case in Concept Brief 2, a touch-screen kiosk stands at the back of the space as a control centre and the area between the kiosk and the large screen at the front is the video capture area incorporating multiple visitors in the experience.



The visitor at the kiosk will have four variables to manipulate: colour, density, sound, and stroke weight:

Colour

Colour determines the colour of the lines connecting the point of origin of the image to the user on the ground. This selection also acts as the search parameter for the images in the database.

Density

The density variable controls how many images are called from the database and how many points and lines are drawn on the screen. If the visitor were to select a density of 20, 20 points will be selected corresponding to the colour choice. Naturally, we will build in a minimum and maximum for the number images that will be loaded. This will be determined both by aesthetic and technical considerations.

Sound

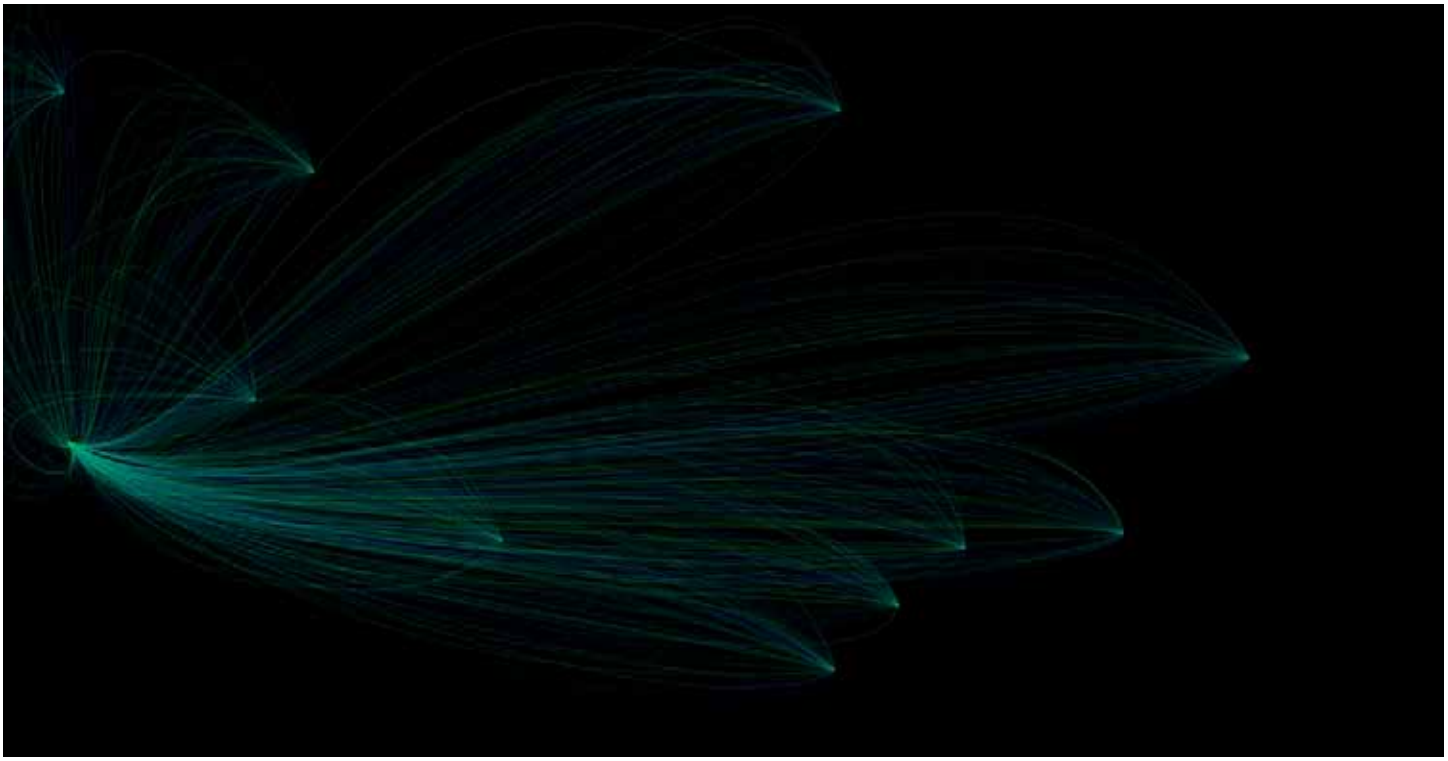
A step sequencer interface will provide real-time control over audio samples, effectively providing the user with time and pitch-based pattern control.

Stroke Weight

Using the same interface as the sound, the user will control stroke weight of the pattern lines, creating a direct audio-visual relationship.

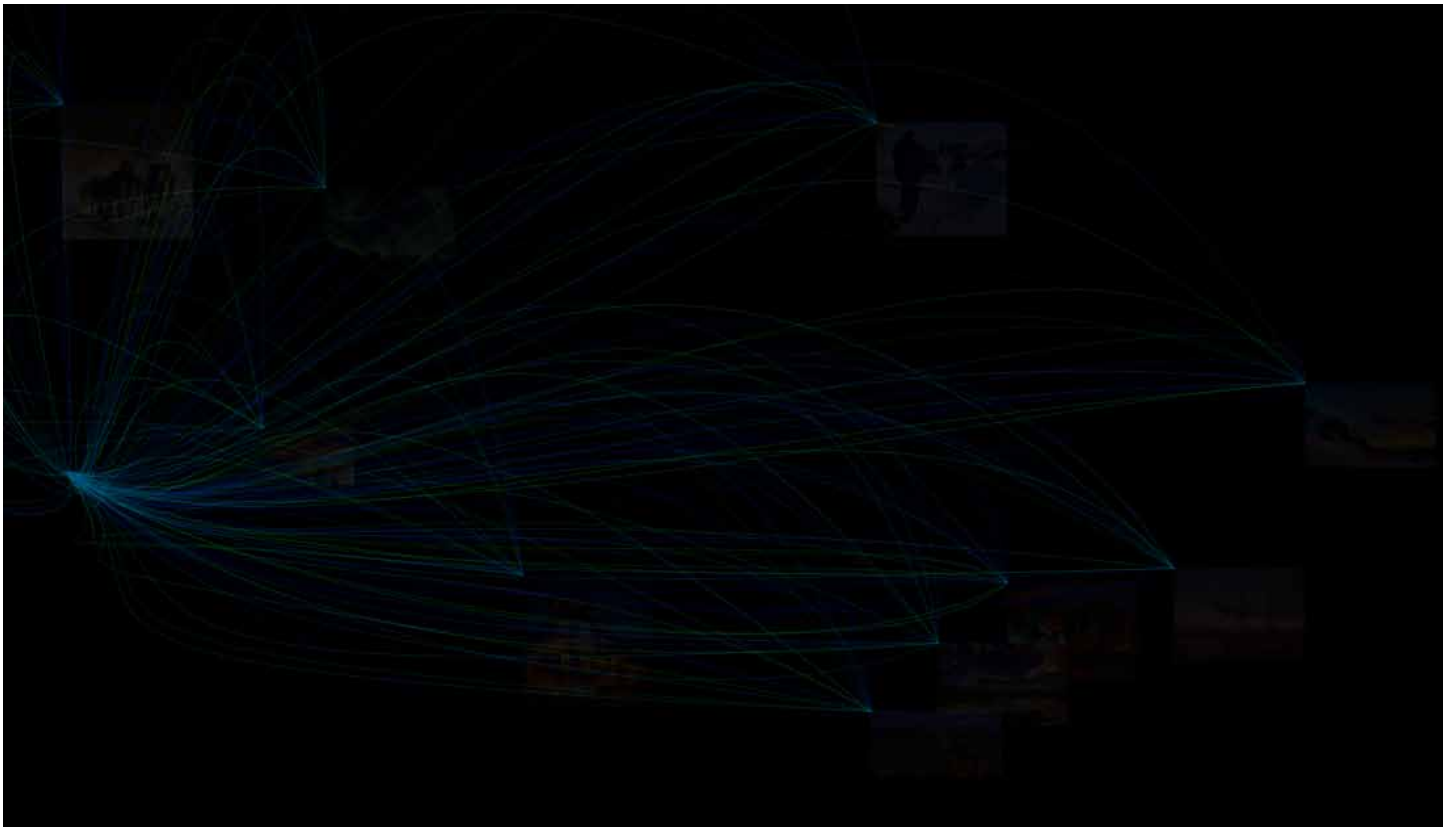
The visitor at the kiosk interacts with the touch-screen populating the large screen at the front of the exhibit with the animated patterns of origin. As selections of colour and density are made the patterns of origin are drawn.

All illustrations were created in Processing and were not altered in post production. The images used in the prototype are from flickr and were tagged with the locations of the cities to which they correspond. For photographs of the prototype projected on a large screen please see Appendix.

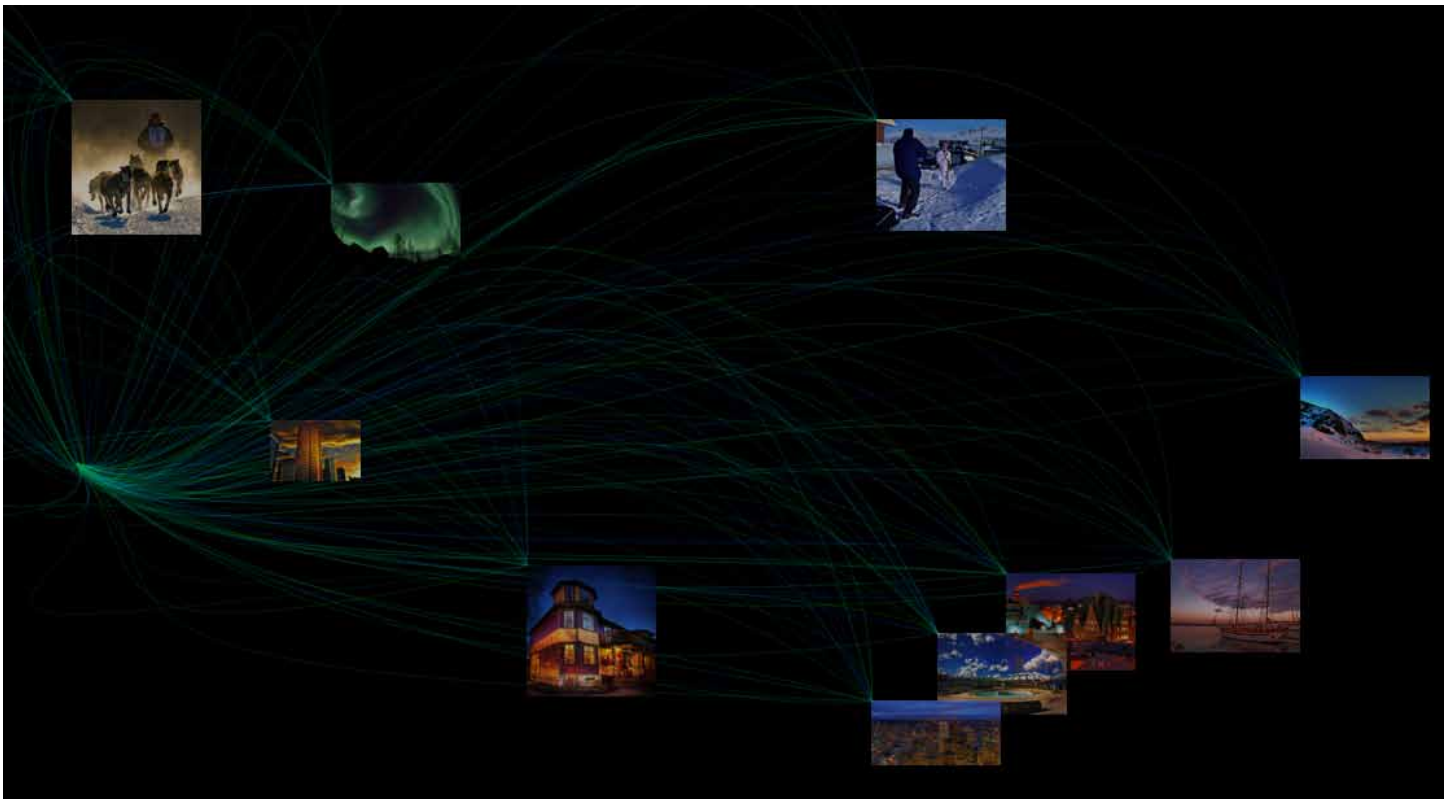


The visitor at the touchscreen generates the patterns of origins - determining the density of lines and stroke colour. The images do not appear until revealed by visitors moving through the space, see illustrations 1 and 3.

At this stage, the points of origin act as ‘map pins’ making up the patterns of origin. The visitors moving through the space reveal the images that correspond to the points of origin. When a visitor in the capture area hits a hot spot, a corresponding image is revealed on the large screen for a set period of time before fading out. Multiple visitors moving through the space will reveal images as they move throughout. This experience is intended to create a strong element of discovery and play and a meaningful relationship between the visitor at the kiosk, the ‘VJ/DJ’, and the visitors in the space.



The images from the CODE database fade in when triggered by visitors moving through the space.



At full opacity the images from the CODE database remain on screen for a predetermined period of time before fading out and the next cycle begins.

APPENDIX

Pictured here are live photographs of our prototype on a big screen using a ceiling mounted projector. The screen pictured here is approximately 12ft by 12ft.

A side shot of the screen from upclose with the patterns of origin and images at full opacity.

The patterns of origin with the images at full opacity taken from approximately 20 feet away.

Ryan stands next to the big screen to provide some perspective and scale. He is 6”1 (actually 6”2 with those Blundstone boots on) standing directly in front of the screen. The photo was taken approximately 20 feet from the screen.