Inner Space

By Ken Armstead

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Executive Summary

My business plan is to create a fun learning environment online that will educate users about the Mariana Trench. During our research and competitive analysis, data revealed a limited sector on the web that taught users about the life of deep sea creatures. Also, we found a large market for this type of information; the goal was to tap into this market. We will be able to get the information needed in a fun and interactive way with our plan.

In order to accomplish this goal over the next 2 quarters, we will need two (2) essential keys to success.

- Research
- Media

The project will hinge on these two essential keys, both of which will be carried out “in-house”. Accurate information will come from our research. Research is paramount because Inner Space at its core is an educational tool. Moreover, media will shadow the completion of research. Media is a key to success because Inner Space will also entertain while educating the user, thus putting the site in a market some may call “edutainment”.

Introduction

Inner Space is a website that specializes in educating users 13 years of age and older, with a general knowledge about the sea, the Mariana Trench and its deep sea life.

There are many websites that specialize in providing this sort of information and target the same market. They are either poorly designed or affiliated with some show/movie.

The Inner Space website provides users with rich information in the form of text, pictures, and video. It is also designed in a matter that's user-friendly, promotes interaction, and is educational.

I found this project to be a great challenge due to the responsibilities involved, such as; gathering the content, the site creation from the ground up and creation of the site in Macromedia Flash.

By creating this site, it was taking a step toward my career goal of creating an interactive/educational site in Macromedia Flash.

Objective

1. Enter into the “edutainment” market.

2. Provide an alternative way of providing sea life information.

3. Create an appealing website by using Macromedia Flash.

3. Challenge myself in the web field.

Background Research

As, I stated previously the project hinged on its research. The research involved in a project like this is critical. Since my budget does not allow for deep sea diving. The media for Inner Space will have to come from other sources. Three of my sources are covered below in my Competition and Benchmarks section, but the main source of research came from “Blue Planet” series that was filmed by Discovery/BBC.

Other notable websites that provided a great resource were:

- http://library.thinkquest.org/CR0212089/trench.htm
- http://www.conceptart.org/forums/showthread.php?t=19383
- http://www.smarterscience.com/marianatrench.html#deep
- http://www.fishbase.org/search.php

Below is the research data for each section of the Inner Space site.

Included are the Mariana Trench, submersible, and sea creatures chosen.

Mariana Trench

The **Mariana Trench** (or **Marianas Trench**) is the deepest known submarine trench, and the deepest location in the Earth's crust itself. It is located in the floor of the western North Pacific Ocean, to the east and south of the Mariana Islands at 11°21□N 142°12□E, near Guam.

The trench has a maximum depth of 10,911 meters (35,798 ft) below sea level. Taking into account its latitude and the Earth's equatorial bulge, this puts it at 6,366,400 meters (3,955.9 mi) from the center of the Earth. The Arctic Ocean, on the other hand, is about 4,500 meters (14,800 ft) deep, which would put its floor at 6,353 kilometers (3,947 mi) from the Earth's center, some 13 kilometers (8.5 mi) closer.

In 1957, the Russian vessel *Vityas* reported a depth of 11,034 meters (36,201 ft), dubbed the *Mariana Hollow*. In 1962, the M.V. *Spencer F. Baird* recorded a greatest depth of 10,915 meters (35,810 ft). In 1984, the Japanese sent the *Takuyo*, a highly specialized survey vessel out to the Mariana Trench and collected data using a narrow, multi-beam echo sounder; they reported a maximum depth of 11,040.4 meters (this is also reported as 10,920±10 meters). The most accurate measurement on record was taken by another Japanese probe, *Kaiko* , on March 24, 1995: 10,911 meters (35,798 ft).

At the bottom of the Mariana Trench, water exerts a pressure of 1,086 bar (108.6 MPa or 15,751 psi), over 1,000 times the standard atmospheric pressure at sea level.

Vessels + Submersibles (to be used in future version)

The first vessel to survey the trench was called Challenger, in 1951 it surveyed the trench near Guam. It was at this point that it identified the deepest known part in the oceans, measuring 35,797 feet in depth. As a result this point of the trench was named “Challenger Deep”.

The deepest part of the Mariana Trench was reached by an American submersible named Treiste. It reached a depth of 35, 800 ft, the floor of the Mariana Trench.

Phronima:

Is a small, translucent deep-sea amphipod of the family Phronimidae. It resembles a shrimp with a head, eyes, jaws and clawed arms. *Phronima* are only seen in the wild at great depths, usually by submarine crews, and are usually only about 2.5 cm (1 inch) long. *Phronima* are carnivorous; they eat small plankton.

Special Information

One of the creatures in the “Aliens” movie was inspired by the Phronima.

Hatchet Fish

Like the freshwater varieties, marine hatchet fish are named for their laterally compressed and deeply keeled bodies, somewhat resembling a hatchet blade. Species of the genus *Polyipnus* are more rounded in outline. Their bodies are covered in delicate silvery scales which abrade easily. In some species, such as the highlight hatchet fish (*Sternoptyx pseudobscura*), large sections of the body at the base of the anal fin and/or caudal (tail) fin are transparent.

Their large, tubular eyes collect the faintest of light and focus well on targets both close and far. However, the eyes are permanently fixed gazing upwards (although less so in *Sternoptyx* species): This is an indication that hatchet fish look for the silhouettes of prey moving overhead in the gloom. Other animals do the same, so the hatchet fish has developed a clever strategy to combat predators: *counter illumination*.

Counter illumination (or counter-lighting) involves the production of light by the fish for the purpose of camouflaging its silhouette from predators lurking below. Hatchet fish produce this light with organs called photophores: the fish have a number of them on their bellies and lower flanks (see *bioluminescence*). The intensity of the light produced is controlled by the hatchet fish, an appropriate

brightness chosen according to how much light reaches the eyes from above. The patterns of light created by the photophores are also unique to each species, probably playing a role in courtship.

Hatchet fish undertake nightly migrations en masse, from depths of 11,811 feet to the upper 164-328 feet of the starlit water column. There they feed throughout the night, returning to the depths by daybreak

What little is known of their life cycle suggests some species of hatchet fish lead brief lives, no longer than a year. The fry are morphologically different from the adults, appearing more or less like the elongate pearl sides.

Fang tooth fish

While understandably named for their disproportionately large, fang-like teeth and unapproachable visage, fang tooth's are actually quite small and harmless to humans: the larger of the two species, the common fang tooth, reaches a maximum length of just 6 inches; the short thorn fang tooth is about half this size.

In adults, the largest two fangs of the lower jaw are so long that the fang tooths have evolved a pair of opposing sockets on either side of the brain to accommodate the teeth when the mouth is closed. The juveniles are morphologically quite different - unlike the adults, they possess long spines on the head and preoperculum, larger eyes, a functional gas bladder, long and

slender gill rakers, much smaller and depressible teeth, and are a light gray in color.

The pelagic fangtooths are among the deepest-living fish, found as far as 16,400 feet down. They are more commonly found between 660 - 6,560 feet however, and juveniles apparently stay within the upper reaches of this range. They may undergo migrations as is common with many deep-sea fish: by day these fish remain in the gloomy depths and towards evening they rise to the upper layers of the water column to feed by starlight, returning to deep water by daybreak. Fang tooths may form small schools or go it alone; they are thought to use contact chemoreception to find prey, relying on luck to bump into something edible.

Hairy Angler

The Hairy Angler gets its name because it is able to detect prey with tiny tentacles on its body that resemble hair.

Gulper Eel

Gulper Eel's are an order of unusual ray-finned fish superficially similar to eels, but with many internal differences. Most of the fish in this order are deep-sea types known from only a handful of specimens.

They lack several bones, such as the symplectic bone, the bones of the opercle, and ribs. They also have no scales, pelvic fins, or swim bladder. The jaws are quite large, and several types are notable for being able to consume fish larger than themselves.

Special Information

The gulper eel eats fish, copepods, shrimp, and plankton. It uses its mouth like a net by opening its large mouth and swimming at its prey.

Competition & Benchmarks

There are an abundance of sites on the internet that specialize in providing the same information that Inner Space will provide. One of these sites is IMAX's Deep Sea 3D (http://www.imax.com/deepsea/), which uses Flash, but doesn't deliver the information that I would like to deliver. This site does not inform users of the information about the deep sea in comparison to Inner Space. Nonetheless, I have drawn inspiration from the interactivity from the site and the transition from above the sea to below it. Another site that Inner Space will directly compete with is NOVA's Into the Abyss

(http://www.pbs.org/wgbh/nova/abyss/life/bestiary.html); this site is affiliated with the PBS network. This site is not very user-friendly and the pictures are not very aesthetically pleasing either. The last site I utilized as a benchmark was NASA's S.T.E.R.E.O mission. I found it useful in developing the knowledge about the type of submersibles travel to the deep sea.

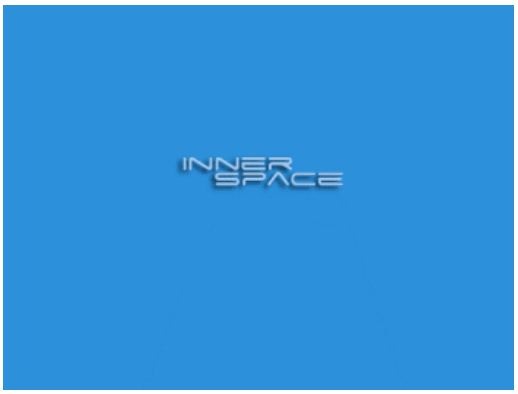
NASA had a great segment informing users about the spacecraft used to carry out the STEREO mission; I found it interesting and implemented the same idea on Inner Space.

Of the three sites, I will be drawing inspiration from IMAX's because it utilizes the same program (Flash) to deliver their content.

Brand Concept

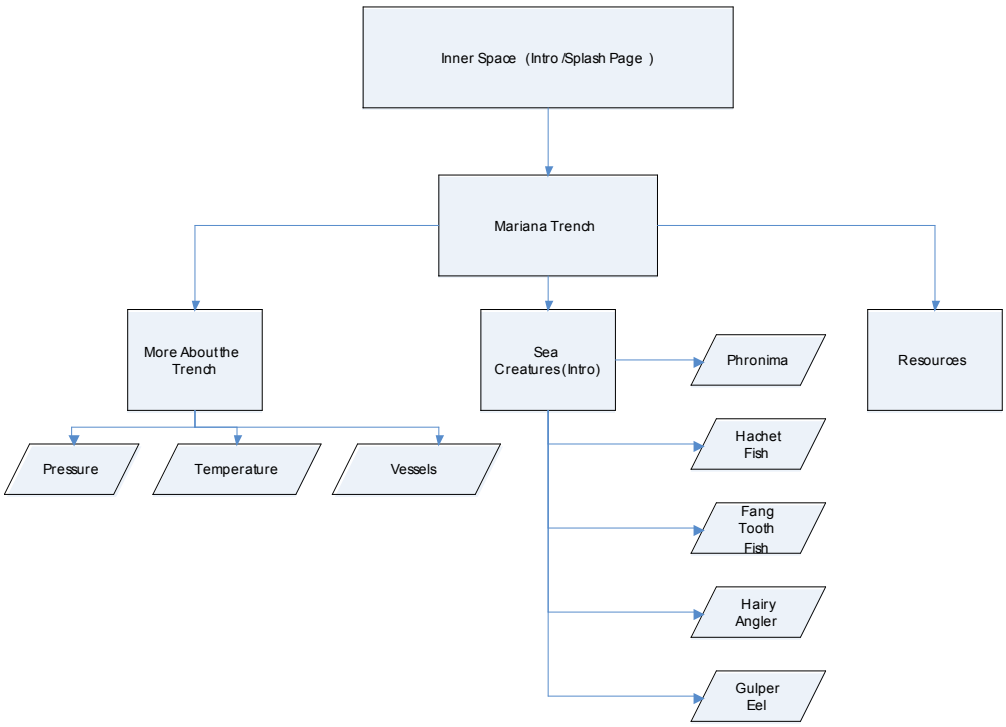
In creating a brand (logo) for this site, I wanted something that would give the feel of science fiction. A logo that would also play off of the metaphor of Outer Space, doing so will draw users in with the belief they are interacting with something with Outer Space, not the deep sea.

Here are two early version logos and the finalized logo that was used on the site.



Sitemap

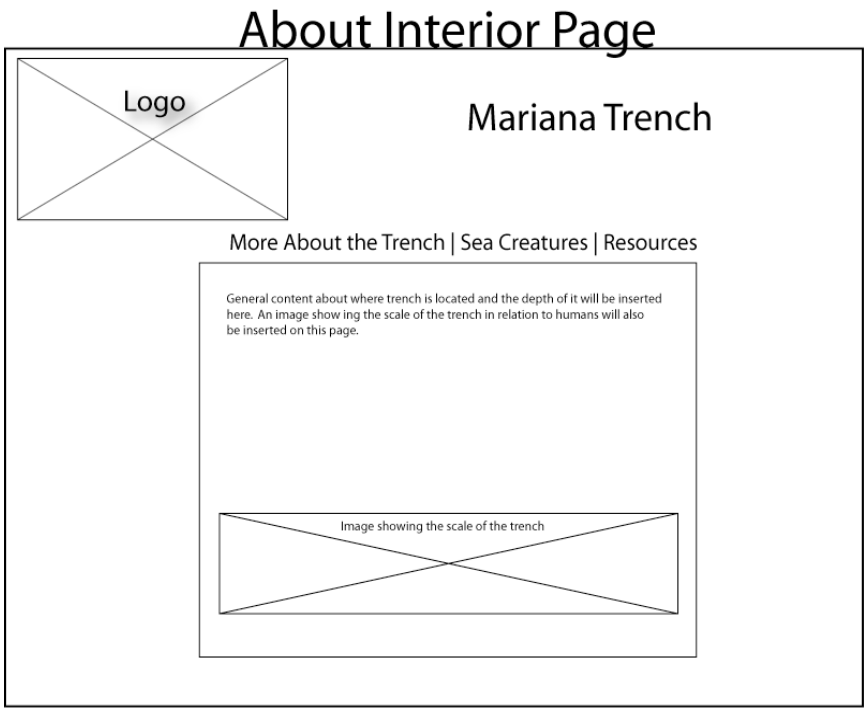
The sitemap illustrates the overall information architecture for the Inner Space site. The first page is the splash; it will have an animation that “plays off” of the metaphor of space. The next page puts users on the Mariana Trench. Users will learn general information and location. There are three links on the main page that will take users to gain more knowledge of the trench, explore the abyss (where the sea creatures are), or resource page. The resource page has links to outside sites like Discovery.com or Nationalgeographic.com, where users can gain more knowledge of the deep sea.



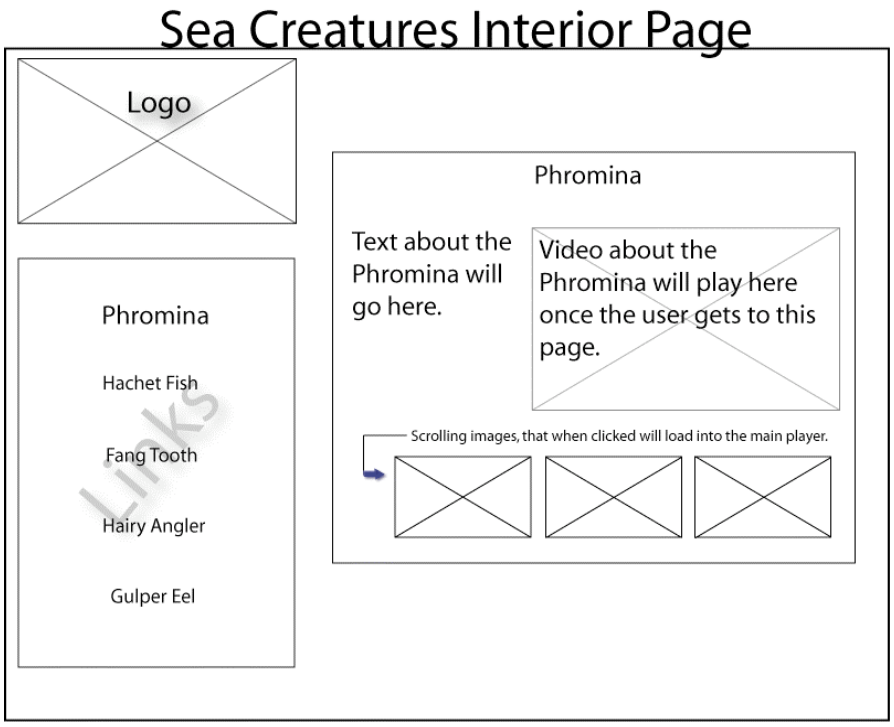
Wireframes

Wireframes give the user a sense for not only the layout of the site, but also how information will be organized. Below is the main page that users will be on after viewing or skipping through the introduction page. The wireframe below is the sea creatures' page. The layout will be slightly different because this is the section user's will be able to interact with the creatures. However, the information architecture will remain the same.

Wireframe One

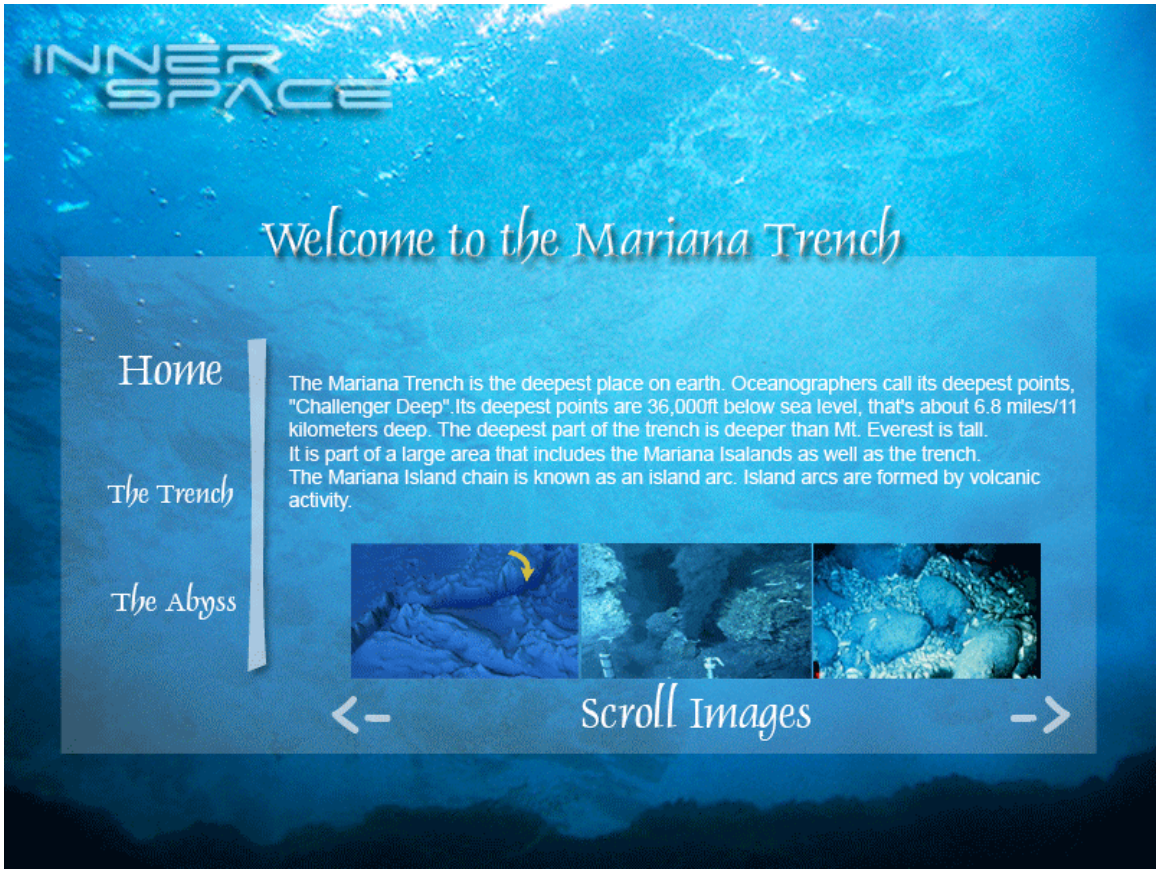


Wireframe Two



Communication Design

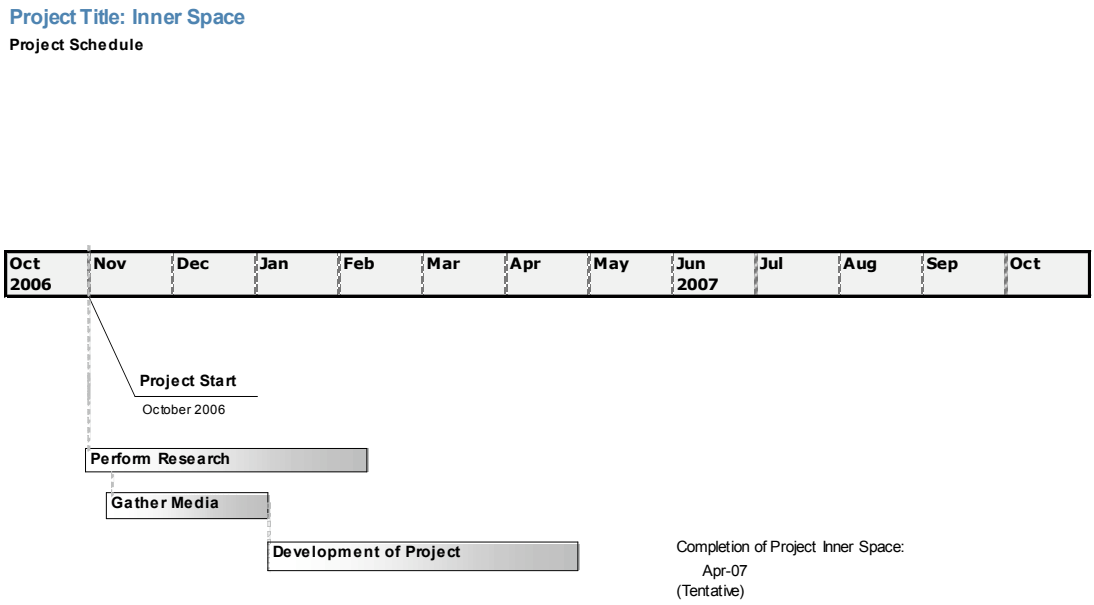
Below are two comps used to show the visual layout and design for Inner Space; color choices and navigation are subject to change upon development.



Communication Design (Cont'd)

Completion schedule (Gant Chart)

Below is a simple timeline of the project and completion of the development stage.



Project Completion Plan

The concept of Inner Space is an interactive and education application (Flash based) that informs users' about the Mariana Trench and the deep sea creatures that live there. Extensive research was utilized in the design. I chose what area and creatures will be in the project. However, I have more media to gather while in the process of production. The substance of my media gathering will come from Discovery Channel's "Blue Planet" DVD. Last quarter, I unsuccessfully attempted to get authorization to use certain elements of the DVD on my project. Below is the projected completion plan to have Inner Space up and running by the end of Winter Quarter 2007.

Number	Date	Task	Comments
1	1-21-07	Meet with resource to assist me with Actionscript for site.	Will be at the school on Sunday the 21st of January to start laying foundation of building Inner Space
2	Week of January 22nd-26th	Pull video media from "Blue Planet" DVD that will be used on site. Have Alpha version ready for presentation.	Under the assumption that obtaining a key for room 418 will be easy and that I have received email from my Discovery Channel resource.
3	1-31-07	Meet with instructor to discuss progress	Meet to discuss any suggestions for the site at the stage that it is at.
4	2-1-07 through 2-7-07	Continue with alpha version; possibly meet with resource that helped with Actionscript early on in the production stage.	Any final touches needed for the beta version will be looked over by resource and instructor prior to beta version presentation.
5	2-14-07	Meet with instructor again to discuss feedback received at the beta version presentation.	At this point in the project I would like any revisions to be minimal. This will allow more time to prepare for final presentation to expert panel.
6	Between 2-14-07 and 2-21-07	Project will be close to or at launch status	Will be preparing to launch project,

			practicing for dry run presentation and final presentation.
7	3-7-07	Expert Panel Presentation	Good Luck!!!
8	3-14-07	Project report	

Usability Research

The purpose of this document is to provide feedback received on the beta version of Inner Space. This feedback is vital and will be implemented into the final version of the site.

Restate the purpose of Inner Space:

Inner Space will be a website that specializes in educating users 13 years of age and older, and with a general knowledge about the sea, deep-sea life and creatures.

The Inner Space website will provide users with rich information in the form of text, pictures, and video. It will also be designed in a matter that's user-friendly, promotes interaction, and is educational.

Series of questions:

Below are the series of questions that I provided each tester of the site; Five (5) testers' total.

1. How does the site make you feel when you first come to it?
2. Does the site “draw” you in for more?
3. Tell me a little about the color choices, what you like or don’t like.
4. Do you like the font choices? If so, why? If not, what do you recommend the font look like?
5. What changes (if any) would you make to the site?

Vast Array of Feedback:

The feedback I received from the small questionnaire was vast and very helpful. I will go into detail about what every tester stated, but first I will touch on the most frequent feedback received. I found most of the testers stated that the introduction needed to be slower. This aspect of the project was discussed frequently during class, and was something I had done from alpha version to beta version. However, the eyes of my testers are the eyes of my soon-to-be users, so this is something that will be done prior to the final project.

Tester One:

Female

Age: 23

Occupation: Physical Education Teacher

The feedback received from this tester was essential because it came from someone who's always around kids. Thus, her input was basically to see if the site was kid-friendly. An overview of her feedback:

- Site makes me want to find out more.
- Introduction text goes too fast.
- Gives off a sci-fi like feel.
- Great choice of colors, they make me feel like I'm out to sea.
- Font choices for the intro are okay, but the title of the page and the links font really don't keep the sci-fi feel.
- The changes I would make to the site would be small, something that gives off noise when someone rolls over the links. Some "sea-like", this is something kids like.

Tester Two:

Male

Age: 25

Occupation: Student / Kroger Employee

Feedback from this tester was nice because it came from someone who's an artist (will be starting the Art Institute in the spring), so what I received came from someone that fits my user personas. An overview of his feedback:

- Music on introduction page is eerie, had me wanting to learn more.

- Introduction text goes too fast.
- The moving water takes too long to load onto the page.
- I would not change the color of anything.
- Not big on font choices so I can't speak on your choice of fonts.
- I would slow down the intro text, and fix the time it takes for moving water to load in. Also add more fish when you get more information about others.

Tester Three:

Female

Age: 49

Occupation: Registered Nurse-Insurance Company

I chose this tester more for the reason of convenience more than anything; she didn't necessarily fit the user that I designed the site for, but feedback from her turned out to be more in depth.

- Site feels like it's something about aliens at first.
- Introduction text goes too fast.
- Your logo text and introduction text looks clean and readable.
- Text for your links doesn't fit.

- I would add a different background, keep the same type of color (dark), but the pattern doesn't match deep sea life.
- Things I would change would be the speed of your intro text; I had to refresh the page to get what you were saying. Also small things like the text and a different pattern for a background.

Tester Four:

Male

Age: 49

Occupation: Recruiter / Sci – Fi buff

This tester was chosen to see if my design was staying "true" to the sci fi feel, his feedback:

- I really like the introduction, the transition was nice.
- I would slow the speed of the text a little.
- Text for links doesn't feel deep sea.
- Add a little more music or eerie sounds when you are on the abyss page.
- Add more sound to the pages; the main pages have a nice wave sound in the background. Abyss page needs eerie music and transition noises to let me know that I'm going to the deep.

Tester Five:

Female

Age: 24

Occupation: Student

This feedback was received from a fellow student here at AIA; she was chosen to make sure that I'm paying attention to as much detail as I can.

- The site makes me feel like something bad is going to happen when I first come to it.
- It definitely draws me in for more.
- The background color really makes the rest of the site stick out, I like the pattern also.
- Your choices of fonts are nice; I would work a little more with your links though.
- I wouldn't change too much about your site; just a different font for your navigation would be a nice change. Also put a pre-loader on the site.

Conclusion (Usability Testing):

Stated above, I received a vast array of feedback from the 5 testers. The reoccurring theme that I will be looking at for final design will be slowing down the introduction text and the font for my navigation. In conclusion, with the information I received from the testers and the professors. I feel I have a project that will succeed when it is time to launch the final design.

Summary

When I decided to take on a project of this magnitude, I knew that there was going to be an enormous amount of research to pull it off. In doing a project like this I am solely motivated by educating users about something they may not know exists. From the location of the Mariana Trench, to the creatures that live in it's dangerous environments. I want to produce an experience as well as educate with Inner Space. In doing the research, I found myself wanting to learn more as I dove deeper into the subject (no pun intended). My hope with Inner Space is the same feeling overcomes the users. The aspect of interaction with the creatures will also draw users into the experience I hope to build.

Future Plans

What I have learned with this project can be applied across life, and that is "things don't always go as planned". There were many aspects of Inner Space that didn't go as planned. Such as, attempting to gather the media and rendering out the video. Small things like this take time away from other aspects of the project.

But there's always room for improvement, Inner Space will become a better project over time. I plan to implement some of the feedback received from students and faculty over the pass two quarters. Adding to the experience is one of many aspects that will be implemented into the project.

Things that have changed

A list of things that have changed due to time constraints or design changes:

- Splash page was changed to create an experience.

- Music on splash page was changed to better fit the mood of new introduction.

- Visuals of the site changed due to the implementation of water video.

- Resources page was not added due to time constraints, but will be added in the immediate future.

Skills (Before Project)
Web Technology:

5 stars = expert

Flash	***
Actionscript	**
XHTML	****
CSS	***
Adobe Photoshop/Illustrator	*****

Skills (After Project)
Web Technology:

5 stars = expert

Flash	****
Actionscript	***
XHTML	****
CSS	***
Adobe Photoshop/Illustrator	*****