**Web Compliant Digital Storytelling**

**with a Reusable Data Model   
By Mike Maether**

**1 Introduction**

Storytelling has been prominent throughout history, its own progression running parallel with the development of the human language. The earliest known form is oral storytelling; this relied heavily on expressions and gestures as the storytellers would either narrate or perform in front of others (Parkinson, 2001). People would share their own stories and stories they’ve heard, some based in reality, others being work of fiction.

As mankind developed intellectually, their methods of storytelling became more complex. The inventions of various writing utensils postdate verbal storytelling and drastically altered how stories are told. Many more technologies have been invented that has changed the way stories are told, and as such different forms of storytelling were created. A brief list includes novels, operas, musicals, television programs, films, and video games.

The personal computer is a relatively new invention that has a seemingly infinite potential for what it can accomplish. Most of the popular storytelling formats have been repurposed to work digitally: audio has been converted to MP3s; films are converted to AVIs, MKVs, and countless others; books are converted to EPUB and MOBI, which are popular eBook formats. While these mediums are made specifically for digital consumption, they don’t necessarily take advantage of certain elements accessible via the personal computer, most in particular the Internet and Web based technologies.

**2 Problem**

**2.1 Problem statement**

There are few tools to utilize unique storytelling over the Internet.

**2.2 Motivation to study and/or significance of problem**

There has been a large push in Web technologies to reduce the use of external plugins. The development of HTML5 has made programming for the Web much simpler, especially when the elements are device independent. The creation of jQuery has also made it simpler for developers to write JavaScript code quickly. Considering how much simpler it is to code for developers, it still isn’t entirely accessible for people who aren’t practicing in the field. These are very powerful tools that, if put in the hands of more people, could create some truly distinguished works.

**2.2.1 Project Goals**

Create a digital storytelling model that is platform independent.

Make unique digital storytelling relevant for digital consumers.

Make it easier for novice users to code for storytelling on websites.

**2.2.2 Project Objectives**

Use Web technologies such as HTML, CSS, and JavaScript to create platform independent websites.

Use new front-end Web technologies for the purpose of storytelling.

Use an XML template so less experienced users only need to worry about entering their content. Make the software do most of the work by limiting the users’ choices and with the use of autocompletes.

**2.3 Potential benefits**

Storytelling can be a lucrative business from an economic stance. The film industry’s annual global revenue is roughly $90 billion (InformationIsBeautiful.net, 2012); the book publishing industry has net sales of $27 billion (Kelley, 2011). Considering how much money these industries make, it should come as no surprise that it would only be beneficial to expand the different methods of delivering storytelling to the masses.

This also has the potential of finding a different market for storytellers. This could help content creators who, rather than work through a publishing company, can publish their own works digitally. If they felt so inclined, they could also set up their own business model, putting them in complete control of their product.

Finances aside, a unique aspect of storytelling is that the stories are only bounded by the storyteller’s creativity. Although this project is expected to be used as a storytelling tool, its actual uses are unpredictable and only limited by the user. Rather than using it solely for stories, the user might find other uses for it, such as educational purposes. Perhaps it could be used to blend a story with the fundamentals of computer use to deliver a unique learning experience, or even as a therapeutic tool to benefit geriatrics (Mitty, 2010).

This is being developed solely with Web technologies because digital storytelling has been used more frequently with other software, such as Flash. Web sites are relatively simple to setup, so this is an effort to make it as simple as possible for people who want to share their visions rather than worry about the technology behind it.

**3 Prior Work**

The history of storytelling reflects mankind’s development of technology. The earliest form of storytelling, rather unsurprisingly, is oral storytelling. Predating writing utensils, people from ancient civilizations would travel great lengths in the course of their lifetime, bringing with them any tales that they’ve heard in their travels. They would tell these stories to people they meet, who in turn would re-tell it to others, perpetually passing the story from person to person (Parkinson, 2001).

The significance of oral storytelling is to understand storytelling’s roots. In its most basic form, it was a method of communicating ideas to others. Going further, oral storytelling was perhaps the earliest form of creatively sharing ideas between people. Many of the oral stories that are present today have a blend of entertainment, actual events, and lyricism that transcends the story into works of art.

Storytelling has adapted with the development of technology (Czarnecki, 2009). Some of the more popular methods that have developed include novels, operas, musicals, television programs, films, and video games. These advances in storytelling have shaped how people express themselves and their stories so as to suit their visions.

Our civilization has become deeply invested in consuming storytelling. There were roughly 1.2 billion in attendance at movie theaters in 2011 (MPAA, 2011), 226 million American adults have read a printed book throughout 2012, while 65 million Americans read eBooks (Rainie et al., 2012).

However, these forms of storytelling aren’t designed uniquely for computer use. Although consumed on computers, such as purchasing songs on iTunes or watching movies on Netflix, they are only the digital representation of media produced for other formats. Movies were created because of the invention of film; songs were first recorded on vinyl tracks; books were designed for hard copies, but were then converted into eBooks.

Perhaps the closest we can come to an exclusive storytelling element on computers is with digital storytelling. Digital storytelling is a relatively new branch in storytelling where, at the most basic level, it is defined as the use of any digital tool to create a story. This is a relatively vague definition considering how many digital tools are available. Digital storytelling includes “video games, entertainment content for the Internet, and even intelligent toy systems and electronic kiosks” (Miller, 2008). For the purpose of this project, the focus will remain primarily on entertainment content for the Internet, which includes multiple formats. These forms include the juxtaposition of video, photographs, animation, sound, and text. This ranges from editing digital video to making an interactive Flash website.

One of the difficulties of digital storytelling is its scattered concepts. Whereas books follow a certain structure of being text and films are videos, digital storytelling can incorporate all of these concepts, including interaction, which can create a potentially complex design. Although difficult to implement to its fullest, it also has a lot of depth and possibilities towards creating a new work.

An example of a unique digital storytelling experience would be The Silent House, published by Ying, Horowitz & Quinn. The Silent House is a digital story created solely for iOS devices. The story is split up into two sections: testimonials and field reports. The testimonial section is the main story itself that is available to everywhere with chapters released weekly throughout the year, while the field reports are site-specific accounts that further progress the story, although aren’t required to understand the story (Deahl, 2012).

The Silent History serves as a good example of a creative design that fragments the user base. A large portion of the users won’t be able to access all of the content simply because they don’t have physical means to reach the field reports, although it’s a creative idea to implement the environment in storytelling. Their decision to release solely for iOS allows them to strictly control their business model, although leaves out users without iOS devices.

Although digital storytelling can often benefit by being device specific, it leaves out a lot of possible consumers. A fundamental concept of storytelling is sharing the story, just like with the ancient civilizations. Considering how widely used the Internet is, it would make sense to focus on the integration of HTML and storytelling, making the story as device independent as possible.

Using HTML for storytelling isn’t new on its own, but with the development of newer Web technologies, it can evolve. The combination of HTML5, CSS3, JavaScript, and numerous jQuery plugins can create almost a limitless potential for digital storytelling, focusing mostly on front-end animations that would be impossible only a few years ago.

SuperScrollorama is a jQuery plugin that focuses solely on scroll animation effects. The user scrolls through the page. As elements scroll in the center of the browser, the plugin triggers an animation effect (Polacek, 2012). Some of these effects include text fades, moving elements, and parallax scrolling. The parallax effect is often seen in animations, giving the illusion of depth. As the user scrolls in the browser from side to side, the objects in the background move slower than the objects closer to the camera. This plugin has a lot of potential for storytelling, as it is a great tool for making the multimedia elements of the story more dynamic.

However, it’s imperative to create a reusable tool for digital storytelling for others to share their stories. A solution would be to create a DTD that would put limitations on an XML file that content creators could work with. Rather than focusing on the how to make the animations work, it would be easiest to tell the software which animations to perform, then enter the content into the file.

With the combination of evolving Web technologies, it is possible to create some interesting and unique ways of creating and sharing digital stories.

**4 Solution Approach**

**4.1 Plan**

I propose creating a storytelling experience that is unique for computer use, and in particular, for use within browsers. This will be an HTML5 compliant digital storytelling experience, taking full advantage of new animations that work with HTML5, CSS3, and JavaScript. One of the fundamental elements of storytelling is that anyone can share their own stories. There are many people who want to express themselves creatively but don’t have the prior knowledge of Web technologies.

To solve this problem, I will create a data model using DTD and XML files. This way other users can create their own stories using my guidelines. It would be simple to parse the XML file so its contents will automatically be generated within the HTML file. I will then create my own digital story based off this model to serve as an example.

The XML file will restrain the users’ choices slightly so it fits my format. The purpose of this model is to separate the story elements from the front-end development sections so users will work mostly on their creativity rather than worrying about technical issues. It is important to find the right balance so the data model isn’t too open or closed; the purpose of the tool is not to limit the user, but to support their creativity.

I will use the SuperScrollorama plugin mentioned above to create numerous animation effects such as parallax scrolling. The purpose of this is so that the user has control to progress the stories at their own pace, with the story reacting to the user’s scrolling.

I will then create my own story from this XML template. The finished product will incorporate multiple multimedia elements including graphics, animations, and a text narrative. My story will demonstrate how to use the tools I’ve established while also creating a narrative. Every multimedia element will be created by me. This includes the graphics, the story itself, and the use of animations.

**4.2 Challenges or barriers**

A challenge with multimedia elements in browsers is making sure that it is sized properly on the monitor, especially when everyone’s browsing experiences are different due to their monitor resolutions. It would be preferable if all the graphics were scalable vector graphics so it would scale properly and seamlessly, although it isn’t practical to assume novice computer users would know how to use SVGs. I will need to ensure that each graphic element will be properly displayed by adjusting the style sheet accordingly. There are certain plugins that focus entirely on Web adaptability, such as Boilerplate. Regardless, there are plenty of methods for ensuring that every element is properly displayed.

Perhaps the toughest challenge is making sure to develop a data model that will work with the user’s creativity, rather than limit the user. To do so, I’ll need to enforce a model with a lot of storytelling possibilities, while still limiting certain effects that could dampen the experience, such as having too many parallax elements and how these elements are spaced apart.

**4.3 Limitations**

The amount of parallax levels a user can create needs to be limited. If it were unlimited, it would have the potential to slow down the website. Using local videos could also slow down the website due to so many multimedia elements, so if any videos are being implemented, they need to be hosted somewhere else and embedded.

**4.4 Deliverables**

The final deliverable will be a Web-based storytelling platform that uses an XML file as a reusable data model. There will be an XML file for the user to create their own story, a DTD file to put restrictions on the XML file, the sample website itself, which includes the multimedia elements, the HTML, CSS, and JavaScript files, a text document explaining how it works, and the capstone documentation.

**5 Timeline**

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| **Task** | **Due Date** | **Notes** |
| Complete the capstone proposal. | February 22 | Multiple drafts have been created, but it needs final approval. |
| Write up original story and create a graphical draft. | March 4 – March 25 | This will be written as I piece together the data model. |
| Code the data model | March 4 – March 31 | This includes creating the DTD and sample XML files to work from. |
| Create the multimedia elements | April 1 – April 12 | This can be started as soon as I finish writing the story and lay out its design. These are the graphics of the story. |
| Combine all these elements to create my finished story. | April 13 – April 30 | This will simply be combining everything I’ve worked on (data model, multimedia elements, and story) to create my final project. |
| Write a text document to explain how to use it | April 13 – April 30 | This will be simple and won’t take more than an afternoon to do. This document is for any potential user to understand how it works. |
| Write the capstone documentation | May 1 – May 8 | This is a reflection on my experience, so it will be the last completed section. I will be working on this until the defense. |
| Defend the capstone project | May | This needs to be scheduled with faculty members, so as of now I can’t schedule a solid date. It’s expected to be in May. |

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