



A Social Media Platform for Social Movements

By

Nathan Hughes

Liberal Arts and Engineering Studies
College of Liberal Arts
California Polytechnic State University
San Luis Obispo, California
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Abstract

Recent Social Movements have increasingly used social media as a driving component in recruiting, developing the cause, and mobilizing people to action. Chaosocial is a web application that provides a layer of organization over social media, allowing organizations traditionally limited in ability to leverage social media to use it to strengthen their social movements.

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Global Need

A community of people, aligned by a need or problem and sharing a vision for effecting change, may join together and realize that change through a social movement. Social movements highlighting injustices, shaping international dialogues, influencing national policy, and toppling governments have been forefront in the news across the world from the Arab Spring through to the Occupy Wall Street movement. Like human movements throughout history, these movements have grown through sharing ideas, connecting with others facing the same problem, and then mobilizing to take the issue to the people who can make the changes that need to happen. Unlike movements past, recent movements have utilized the communication dynamics of social media to connect, to plan, and to rally protests and movements far beyond the physical reach of the originators of the movement. The global nature of the Internet allows people to be connected with a social movement in ways not possible before, not bounded by their location or physical relationship to others in the movement. The asynchronous communication that characterizes online interactions allows ideas to be exchanged and developed outside of physical meetings and personal time constraints. The open nature of social media enables all people to become participants in the movement, whether in calling people to action or reporting on the events. The Arab Spring and Occupy protests were marked as essentially leaderless, reflecting the nature of the social media the movements were organized with (Cannistraro). The direct power associated with influencing trending topics, and the equal status of every user of social media mirror the often chaotic, anarchic or socialistic structure of the same

recent social movements.

The transitory and decentralized nature of social media that allows a movement to expand quickly does not however lend itself well to sustaining a movement long-term. Where a paper pamphlet will last until it is burned, a tweet is buried in the Internet dialogue within days if not hours or minutes. The excitement around a movement can build extremely quickly through social media, but can die down just as quickly as soon as people lose interest. Similarly, a challenge that arises as a movement grows larger is aligning the language used by members of the movement to create a common platform for discussion. In the anonymous arena of social media, the equal status of every user also makes leadership a daunting challenge. The credibility and trustworthiness of a person that would make them a candidate in choosing a leader for a movement in a meeting does not exist as tangibly online. Trust is also a heavily influencing factor in new users accepting an invitation to join a social movement (Passy, 2001). Often, those with the best command of the social media tools being used are not the ones best fit for leading the movement – should the most prolific member of the online community be made leader, or one with the highest positive feedback? For all the amazing benefits of social media to movements – mass mobilization and massive catalytic potential for action – it is important to keep in mind the fact that social media is a *new form of media*, not necessarily the end-all of all media (Harrison 2011). Groups using social media are still faced with the same questions: Who is leading the movement, and how do they lead; who are the members of the movement, and what is their role; and how do you know if the movement is succeeding or failing?

Existing Solutions

The existing use of social media to this point by groups has largely been done by one or more social media marketing managers or by the leaders of a human movement. This strategy involves using metrics software to calculate the reach and discussions about the movement taking place on social media. This social media activity is then either aggregated and presented on the group's web presence, or synthesized by the Social Media manager and expanded upon or commented on (HootSuite, 2012). This approach has several major drawbacks, including:

- Lag time in social media trending activity – failing to capture the momentum of the movement. With record posting rates of 25,000 tweets a second, it is impossible for one person to have a picture of the entire movement (Hernandez, 2012).
- Potential bias in the blog post or content created by the social media manager.
- For a large social movement, spanning the populations of cities or countries, qualification to be the voice/hand behind the movement is less clear.

The blogs or posts by self-appointed members of the movement can serve to capture the poster's view or opinion of the movement well, but a large collection of content from many unconnected members of the movement can create a disjoint face to the movement, and confusion within the movement.

This Project

This project seeks to fill the social media needs of an organization or community in the process of building a movement, particularly those of movements

launched by smaller organizations limited in manpower. This project seeks to offer three main tools to smaller organizations to help them lead movements better.

- **A tool to track what is trending within the movement.** A real-time, self-updating tool that captures the momentum of the momentum, so that leaders can spend more time responding to the needs of the movement, and less time working at trying to see where the movement is going.
- **Better tools for engaging others in the movement.** The trending topics in the movement will be presented in a visually interesting way, and with easily accessible ways to interact with those topics. Right on the first page, users will have the option to discuss, act on, or share a topic within the movement. The tool will need to lower the barrier to new user engagement, and will seek to do that by displaying the needs of the movement, and inviting the user to engage to answer those needs.
- **A tool to better align the movement and leaders.** Having a tool that enables the leaders of a movement to interact with social media on a movement scale will enable smaller organizations to launch much larger, focused social media campaigns. The shared vocabulary created by the tool created by highlighted topics and discussion will enable current members to talk about the topics in a much more concise manner, with that shared understanding. It will also lower the barrier to entry and engagement as new users can quickly grasp the ideas and concepts behind the topics important to the movement. Using these tools, leaders can focus on laying out a vision, and leading the other members of the movement in using some of the shared

vocabulary. Once the movement has momentum, this tool will give a snapshot of exactly where the movement is at for any given moment.

Chaosocial

Chaosocial is a solution to those needs of social movements that was developed during this project. It takes the concept of chaos theory – that order and chaos are connected, and that chaotic data can be traced back to a point of origin. Chaosocial starts with a main word or twitter hashtag defining the social movement (i.e.: #ows, #kony2012). The tool then tracks the trending topics related to that movement – the paths of nonlinearity branching off from the core topic. It updates the trends in real time, and creates ways for users to interact with each trending topic, seeking to bring users into real-life engagement. By focusing on the top trends related to the movement topic, it begins to establish a common vocabulary within a movement – allowing shared thought within the movement to be more concise.

The implementation of the Chaosocial concept built for this project can be found at <http://hughmancreation.com/senproj>.

Design: Inspiration

Chaos theory deals with order diverging into chaos as the complexity of a system increases – the perfect inspirational concept for building a tool for social media, which is essentially chaotic data diverged from a main topic. The first design concepts for Chaosocial were designed to reflect the nature of the data itself. Figure 1a and Figure 1b show the first attempts to generate patterns from the main topic,

using morse code or other techniques to create a layouts that would be unique to each topic and each social movement. It was quickly concluded that this would be a huge challenge from the programming side, but could also be very confusing from a

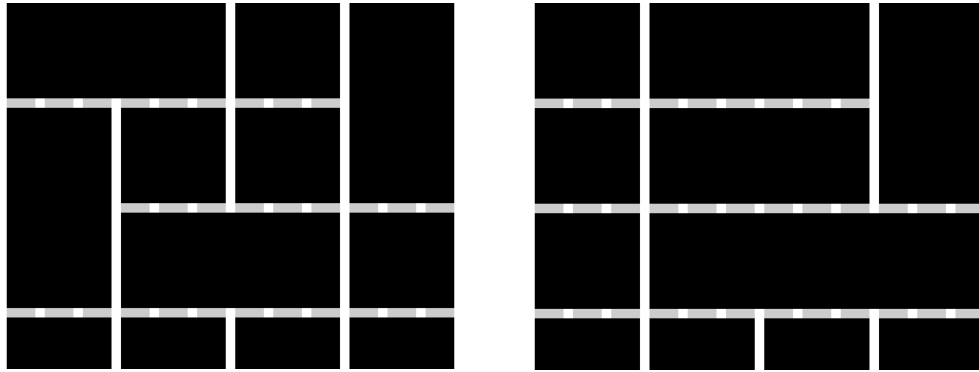


Figure 1a,b: Two sample layouts testing custom-generated layouts for the web tool

user's view, as the tool would change for each web page.

The next design direction for Chaosocial was inspired directly by chaos theory. The graphical models of nonlinearity – paths starting from a point and diverging from there (figure 2) – as well as the fractal patterns often connected with chaos theory were used as the basis for the design. The final design for Chaosocial has the Fibonacci spiral (Figure 3) as the foundation for the main screen layout. As seen in Figure 4a, the natural feeling of the golden ratio helps to balance the chaotic nature of the social media content displayed on the front page.

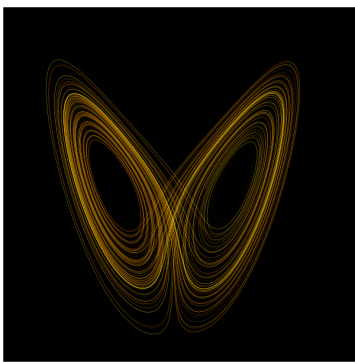


Figure 2: A model of the the Lorenz Attractor, showing nonlinearity

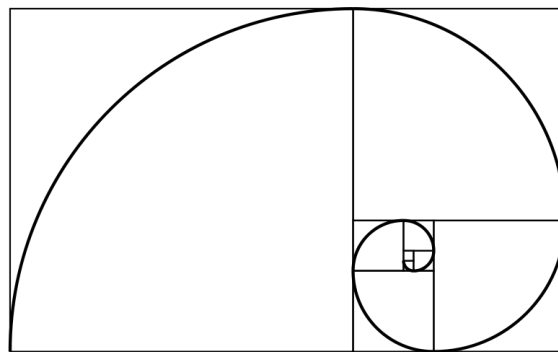


Figure 3: A graph of the Fibonacci Spiral, based on the Golden Ratio

Design: Implementation

For the implementation of the design, the user interface needed to be as simple to use as possible with the functionality of the tool at the front, in order to be an improvement upon existing tools for engaging users in a movement. The essential elements for Chaosocial to include were:

- **A way to present the top trends within the movement** – A major problem social movements face is in engaging people with the cause. For Chaosocial to be successful, it would need to display the current state of the movement in an eye-catching way. The landing page of Chaosocial was designed to be image driven to convey the ideas behind the current trends in the movement in the most effective way.
- **Easy, fast way to engage with the movement** – There is no benefit to having a tool like Chaosocial layered on top of a service like Twitter, unless it can deliver far greater results. The goal with the engagement component of Chaosocial is to lower barriers to engagement, by giving the user easy ways to get involved in the movement around their physical area.
- **Rich discussion about movement, centered on the trends** – A social movement that does not have an active dialogue going about the causes and themes central to the movement cannot progress. In Chaosocial, gathering and displaying the top trends within the movement creates a shared vocabulary to discuss those concepts. That in turn will enable the members of the movement to develop the reach of the movement, and enable new visitors to the tool to quickly understand the movement. Having a discussion

system similar to reddit (www.reddit.com) will also engage current members in conversations, and begin to build levels of trust between various members.

Design: Layout

The first layout concepts for Chaosocial were designed to be as simple and clean as possible. The original concept for interaction with the website was to have the components for user engagement and involvement one click away from the landing page. As seen in Figure 4b, transitions between the landing and the content page would be done with javascript animation, to create a fun, smooth-flowing interface to attract users.



Figure 4a: The first mock-up using the new design concept, using an image-driven front page with the Fibonacci Spiral as the foundation for the layout

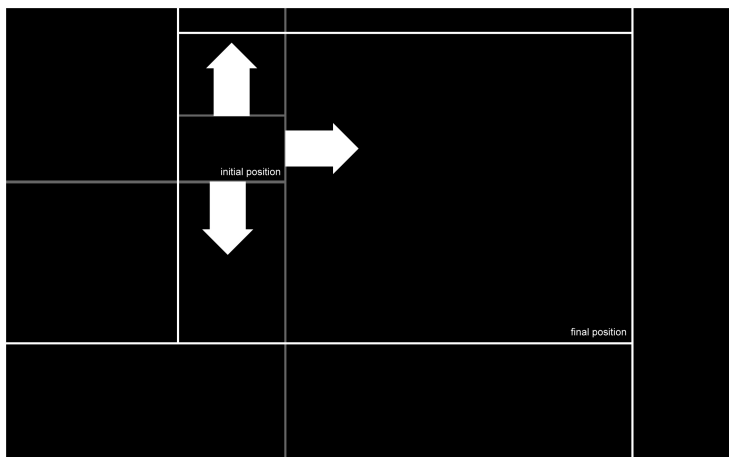


Figure 4b: A concept for the transition from landing page to content. The idea at this stage was to enable to access the content in a quick, clean way

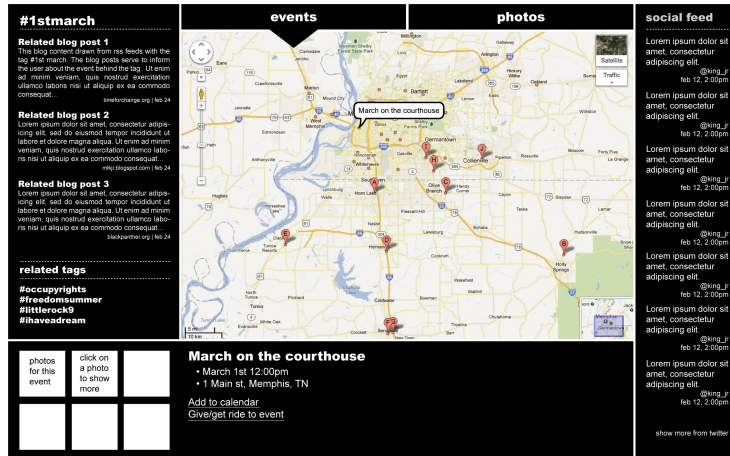


Figure 4c: The design concept for the engagement component to Chaosocial. It included a map to see what is happening locally and get involved, and access to other social media relating to the movement around the edges of the page.

Design: Final

The Final design for Chaosocial retains much of the original inspiration – the front page still retains the Fibonacci spiral, and the info page for each trend reflects back some of that design. However, In the process of creating mock-ups for the layout of the site, it became clear that the social media content, and the systems for interacting with the content would need to be divided up across multiple areas. As seen in figures 5a-8b, the final implementation layout of Chaosocial has a main landing page with 3 sub-pages for content. The content pages were designed to be as uncluttered as possible – a problem with the first layout design that could lead to new user confusion with the page, or existing user frustration with the system.

The interface layout for the final design begins with the landing page – displaying the top four trending topics within social media related to the movement with the hashtag or title of the trend, and a related picture (Figure 5a,b). The 4 size photos correspond with the rank of the trends, and a mouseover of the photo reveals the links to the other sections (Figure 5c)

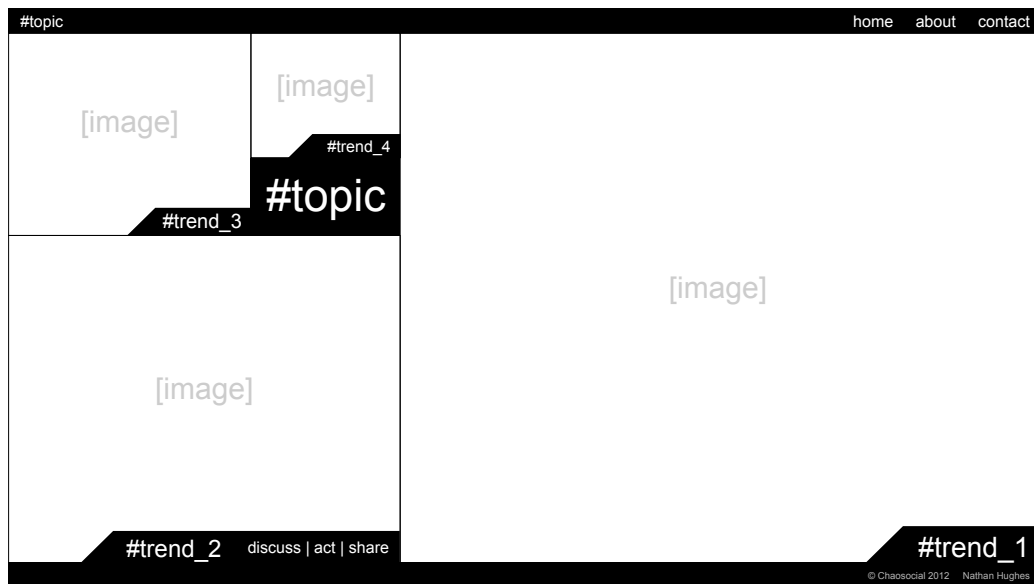


Figure 5a: The layout concept for the landing page.



Figure 5b: The implemented landing page. Pictures have lowered opacity until a mouseover.



Figure 5c: On a mouseover, the title of the trend rolls up to reveal the actions a user can take to engage with that trend.

For each trend on the landing page, there are three links. The first is accessible by clicking the title of the trend, which takes the user to a page displaying the info related to that trend's activity within the movement. As seen in Figure 6a and 6b, the page includes a statistics based on data collected, the trend definition from tagdef.com, links pulled from tweets related to that trend, and photos related to the trend from Flickr.com

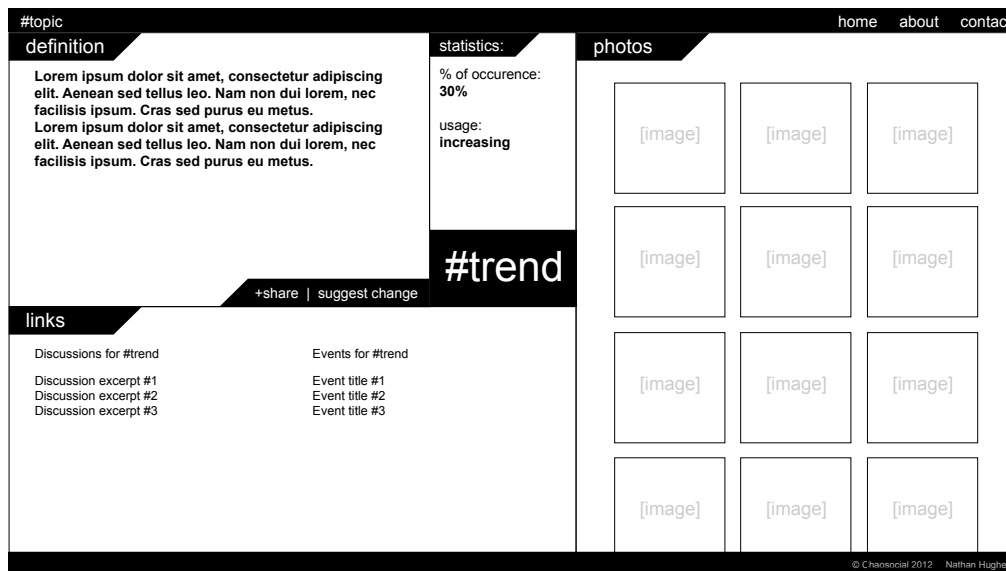


Figure 6a: The layout concept for the info page.

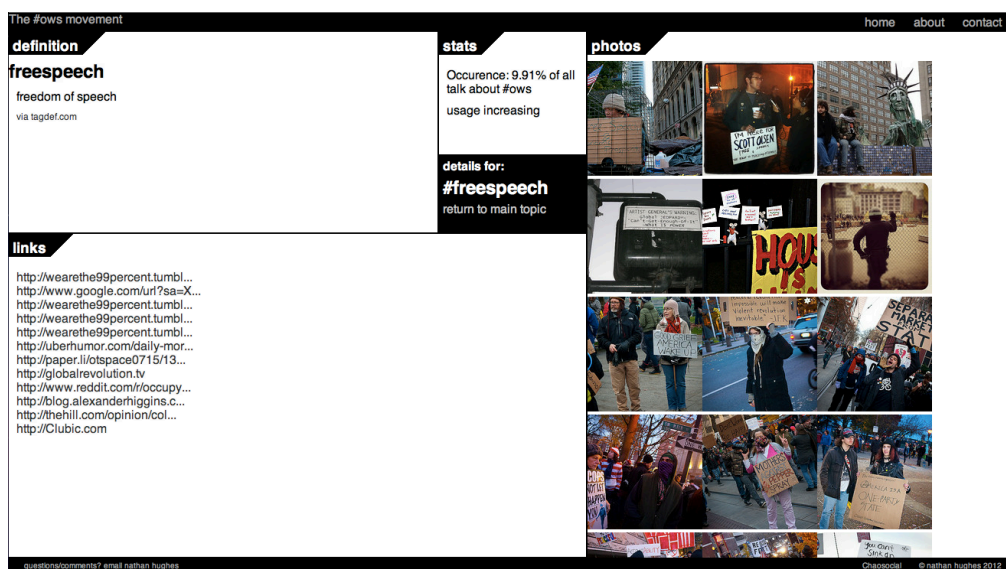


Figure 6b: The implemented trend info page.

Of the other two links for each trend on the landing page, the “discuss” link takes the user to the page seen in Figure 7a ,b. The discussion page lists tweets related to the trend chosen, and allows users to interact with the tweets on twitter, or directly responding to the tweets in Chaosocial. There is also a live stream of tweets from Twitter that a user can grab to add to the tweets under discussion.

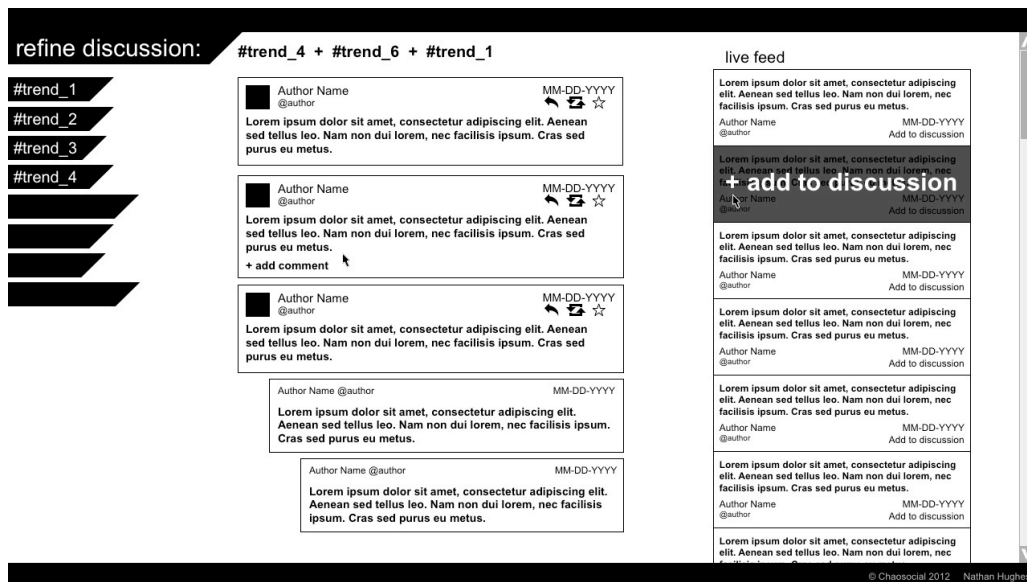


Figure 7a: The layout concept for the discussion page.

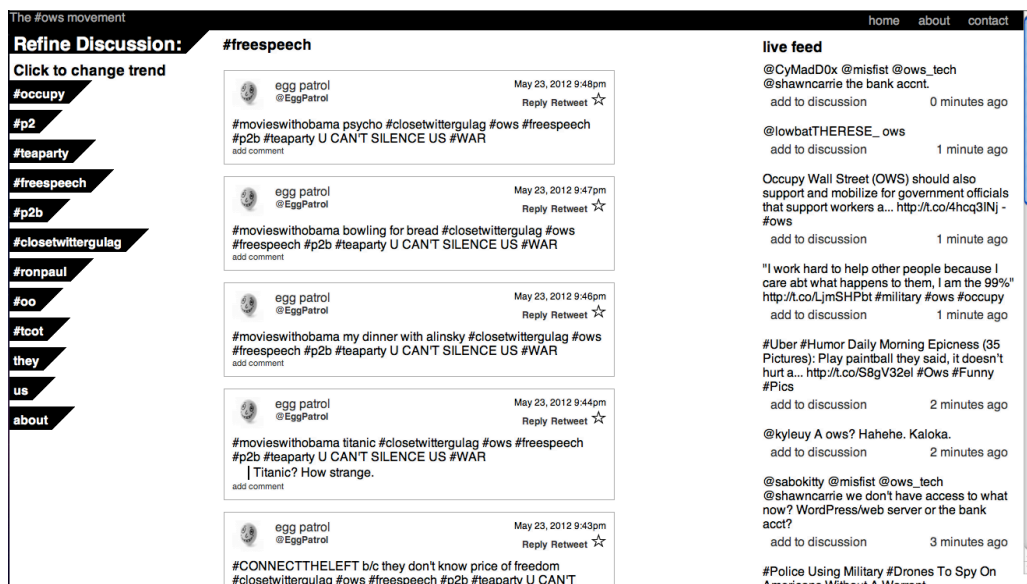


Figure 7b: The implemented discussion page.

The final link for each trend on the landing page is the “act” link, which takes the user to a page that displays all events related to that trend happening near the user (Figure 8a,b). They can view a map or list with all the events, click through events to get more details, or add their own event.

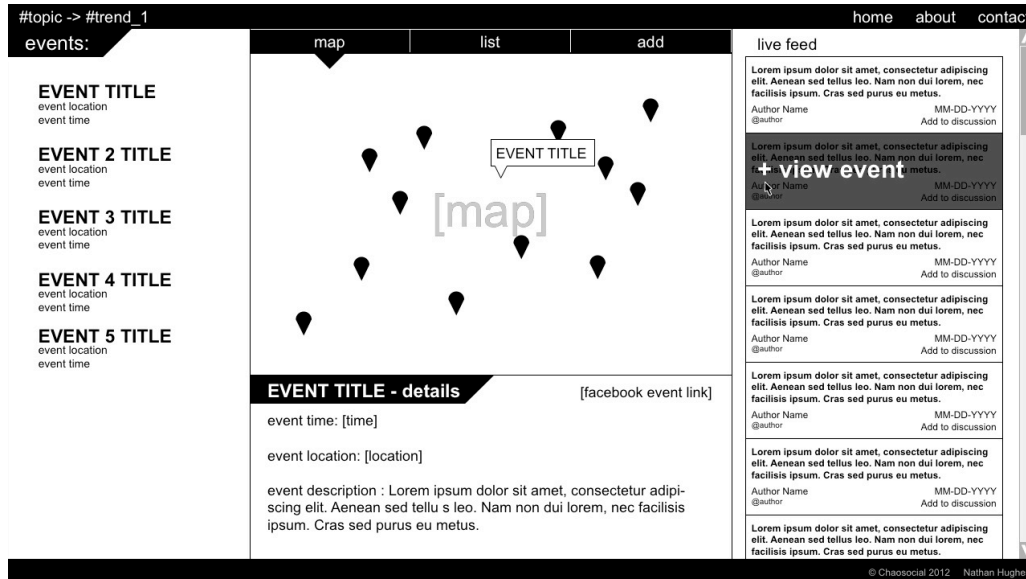


Figure 8a: The layout concept for the act page.

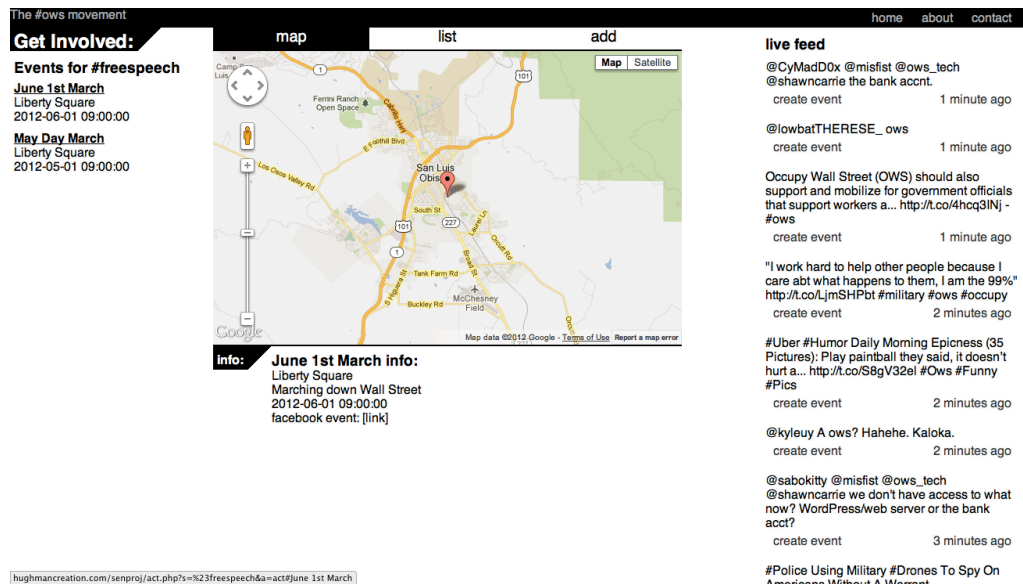


Figure 8a: The implemented act page.

Development: Concept

The frontend of Chaosocial was designed to present the current momentum of a movement as accurately and interestingly as possible, and the backend was designed to constantly power that functionality by mining social media data and building up information on the trends around a specific subject. In planning to development of the Chaosocial backend, the decision was made to limit the scope of this project 's implementation to content from only Twitter and Flickr. The back end of Chaosocial is essentially an asynchronous Twitter client, mining twitter data related to the chosen topic on a regular basis, then displaying those results as needed for the frontend.

One of the first ideas for the site was to have a single page that would dynamically load parts of the page, to increase speed and simplicity, but through the first stages of development, it became clear that it would not only be quite challenging to build the Chaosocial as a single page, but negatively affected the user experience by restricting the use of the 'forward' and 'back' buttons. The decision to make the site multi-paged, and site skeleton similar to the site now were established.

The final goal for Chaosocial was for it to be a dynamically generating site – a user could enter a topic, and a custom page would be served, tracking the social media related to their chosen topic. This would be the ultimate tool for an organization looking to build a social movement, the ability to launch a web-powered movement without requiring their own social media marketing manager or web developer.

Development: Implementation

Building Chaosocial as a multi-paged, yet dynamically generating site presented many problems, one of the largest being the challenge of passing information relating to the topic and trends between the pages. A system combining MySQL tables and variables passed through page calls was developed to address this challenge. Tweets related to the topic found by the backend program are stored in a database, and then called up by each page as needed. New tweets can be added to the table from the live twitter feed on the discussion page.

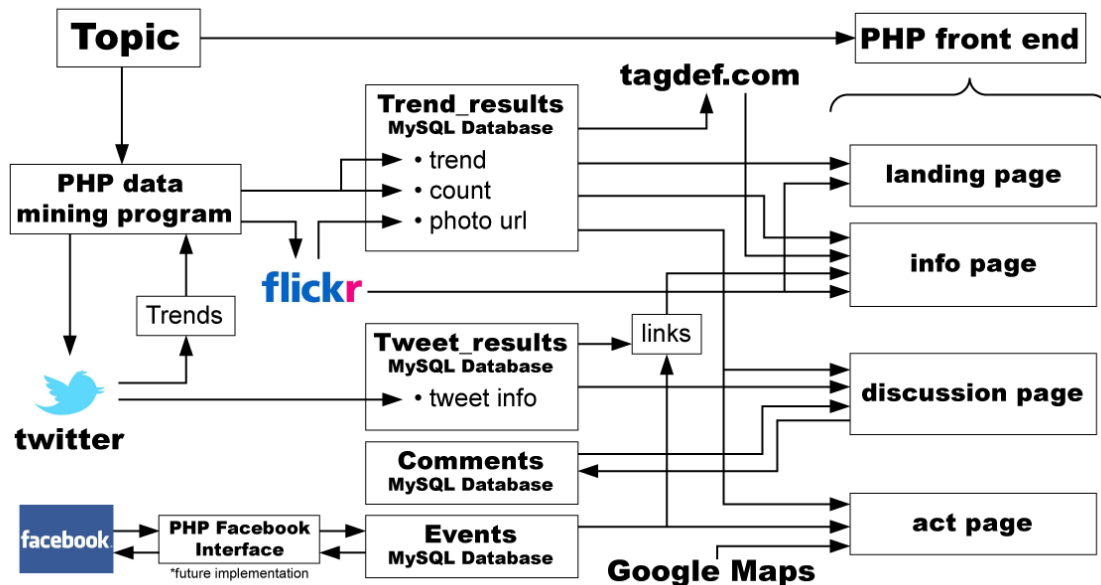


Figure 9: Software diagram for Chaosocial

As seen in Figure 9, Chaosocial functions by mining Twitter data through the Twitter Search API. The Search call returns a Javascript Object, which is then parsed by the backend PHP, and “Tweet” Objects are stored in a MySQL database. The stored Tweets are then processed to calculate the top related trends within that topic. The MySQL database with the trend info is used to power all four parts of the

Chaosocial frontend, with extra images or content added unique to that page. The info page, found by clicking the title of a trend on the landing page, is different than the rest of the pages in that it only pulls data from the trends database, using that information to retrieve live results from twitter, flickr, and tagdef.com.

An original idea to pull events from facebook, and then push events created n Chaosocial back to facebook was abandoned during development due to its complexity. Instead, a MySQL database was created to store the events created by Chaosocial, and are displayed on the map of the 'act' page. Similarly, the discuss section was first conceived to enable a user to log in via twitter to Chaosocial, and have their comment sent as a tweet at the same time. The site currently links you to twitter to perform twitter actions, but comments on the page are only stored locally.

Much of this implementation of Chaosocial is still hard-coded, unable to dynamically pass information around the site. However, the backend functions by taking in a search term, enabling trends for any subject to currently be stored, just not displayed.

Future work

Even with the very limited functionality Chaosocial has at this point, it exhibits many of the features that make it an exciting concept for empowering movements. As the tool stands right now, a user can view what the important things within a movement are, and dig deeper into the meaning/content related to those trends. You can use the tool to see what people are saying, and then add to their thoughts. You can use the tool to see where the movement is happening around you, and get involved.

Future work to do on Chaosocial would be to first finish implementing everything that the tool has right now, bringing it to fully functioning. Then from there, begin to add/modify the site to maximize its effectiveness.

- Remove hard-coded elements, and allow a user to dynamically generate a site for any social movement.
 - Eventually package Chasocial as a Software as a Service – allowing it to be marketed to groups.
- Change webhosts to take advantage of Cron on the server for running a true asynchronous twitter data miner.
- Implement Facebook integration to allow events to be pulled from Facebook, or pushed to Facebook when created
- Convert Chaosocial into a template for a CMS, to speed up deployment on individual host sites. One of the original visions for Chaosocial was to integrate Chaosocial with Ushahidi, a social web platform.
 - Build underground P2P Twitter mirror, to enable countries where Twitter is blocked to disseminate information

Related Work

In researching for this project, there were several sites implementing one or more components of Chaosocial, but none of them employed all components for similar purposes. Existing work can be broken into three categories:

Social Media Aggregator sites:

- The Occupationalist (occupationalist.org) – Aggregates EVERYTHING – every photo, video, news, and media stream. So much information on the page that it almost becomes useless.
- Friendfeed (friendfeed.com) – aggregates content in a more readable manner, but gives no options for dealing with content other than reposting.

Twitter Trending Topic Sites

- Hashtagify (hashtagify.me) – Interactive tool that enables you to see relationships between tags on twitter, but only does visualizations, doesn't enable you to share/build on information.
- Hashtags.org (hashtags.org) – Allows you to see trending tags, and see stats for those tags. Only shows twitter-wide trends, no way to get trends related to a specific term.

Organizational Structure

- Flipboard (flipboard.com) – Organizes curated content from other websites into nice-looking format, allows people to share right from flipboard.
- Pinterest (pinterest.com) – A visual sharing system, people start with an object defined visually, then can add what they would like through the discussion system.

Conclusion

The Arab Spring protests, and other recent social movements of its kind are bringing about massive changes, and through the leveling power of social media, are empowering people to speak up and be heard. The fight for justice, with Twitter as a main weapon, is an age-old battle, fought in an interesting way. Because of the very tangible current events, doing a senior project focused on empowering movements like the Arab Spring has been really interesting. Through the process of building the web tool, I have learned web and User Interface design skills, but at the heart of it, have learned a lot about what a movement is, and how people gather together to empower movements.

This project was a diverse and challenging project that fit well with the skills I have learned through my Liberal Arts and Engineering Studies coursework. This project drew on the visual narrative and design skills gained in art classes to craft the layout and user experience in a way that will draw a visitor in and engage them in the movement. The project drew on my understanding of computer language to pull together the server side and browser side code to make the web tool work. After this project, I feel far more prepared to take a concept and develop it from a raw idea to a full web prototype.

I hope to continue the development of Chaosocial after graduation. I believe that it could be a valuable tool for small organizations and movements to rally together in a way that they wouldn't have been able to before. In May, Chaosocial

was chosen as a finalist in the annual Innovation Quest Entrepreneurship contest, enabling me to experience what it is like to present a product to potential investors. Through the contest, I was introduced to the field of social entrepreneurship, and see that as a definite possibility for a future career.

Social movements have most likely existed just as long as humans, while the media that supports the sharing of ideas and empowering of the movements has changed quite a bit through time. This moment we are in now is a time where social media is enabling social movements to do massive things, and this senior project is designed to empower those social movements to do what they do better.

Bibliography

Cannistraro, Vincent. (2011). *Arab spring: A partial awakening*. (Vol. 22, No. 4, pp. 36-45). Duke University Press. Retrieved from <http://muse.jhu.edu/journals/med/summary/v022/22.4.cannistraro.html>

Harrison, Andrew. (2011). *MEDIA: Proceed with caution along the social media highway. Marketing Week*. (April 28, pp. 8-8). Centaur Communications Ltd. Retrieved from <http://search.proquest.com.ezproxy.lib.calpoly.edu/docview/863783891?accountid=10043>

HootSuite Media Inc (2012). HootSuite Media Inc. Hoover's Company Records. Dun and Bradstreet, Inc. Retrieved from <http://search.proquest.com.ezproxy.lib.calpoly.edu/docview/925636452?accountid=10043>

Hernandez, Brian A. (2012). *Tim Tebow Pass Lands in Twitter's Record Book*. Retrieved from <http://mashable.com/2012/01/09/tim-tebow-twitter-record/>

Passy, F., & Giugni, M. (2001). *Social Networks and Individual Perceptions: Explaining Differential Participation in Social Movements. Sociological Forum*. (Vol. 16, No. 1, pp. 123-153). Springer. Retrieved from <http://www.jstor.org/stable/685032>

Resources

Using code from <https://github.com/themathharris/tmhOAuth>

- The Matt Harris Twitter Open Authentication – used to authenticate single tweet calls from the discussion page.

Twitter API - <https://dev.twitter.com/>

- Making json calls using the Search and GET APIs, with both PHP as well as jQuery.

Flickr API - www.flickr.com/services/api

- Making json calls using the photos.search API

Jaisen Mathai's twitter-async - <https://github.com/jmathai/twitter-async>

- Built an asynchronous php twitter client based on this open-source version.

Ink Plant MySQL Helper Functions - <http://www.inkplant.com/code/php-mysql-database-functions.php>

- Used for database queries and management.

Google Maps API - <https://developers.google.com/maps/>

- Used for map functionality on act page.

TagDef API – <http://tagdef.com/>

- Used to retrieve definitions for hashtag trends.

LongUrlPlease - <http://www.longurlplease.com/js/longurlplease.js>

- jQuery function for expanding shortened URLs.

Ushahidi - <http://www.ushahidi.com/>

- Social Web platform, empowering people to report on corruption around them. It was the inspiration for Chaosocial, a web platform on the initiative side of social movements

Honorable Mentions

Dr. Michael Haungs, Ph.D of Computer Science

- Helped with user interface and data visualization concepts.

Innovation Quest - <http://www.iq.innovationq.org/>

- Recognition and support for the project.