Title	Design interactive connectable chronicle
Sub Title	
Author	李, 恩旗(Li, Enqi) 稲蔭, 正彦(Inakage, Masahiko)
Publisher	慶應義塾大学大学院メディアデザイン研究科
Publication year	2013
Jtitle	
JaLC DOI	
Abstract	
Notes	修士学位論文. 2013年度メディアデザイン学 第286号
Genre	Thesis or Dissertation
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=KO40001001-00002013-0286

Master's Thesis

Academic Year 2013

Design Interactive Connectable Chronicle

Graduate School of Media Design,
Keio University

Enqi Li

A Master's Thesis
submitted to Graduate School of Media Design, Keio University
in partial fulfillment of the requirements for the degree of
MASTER of Media Design

Enqi Li

Thesis Committee:

Professor Masa Inakage	(Supervisor)
Professor Masahiko Inami	(Co-supervisor)
Professor Ichiya Nakamura	(Member)

Abstract of Master's Thesis of Academic Year 2013

Design Interactive Connectable Chronicle

Summary

Lacking interactive tools as well as not enough incentive connection to people's contemporary life turns out general public has very limited interest in history related topics. People decreased in devoting their time into it. This thesis is to explore the possibility of designing a Interactive Connectable Chronicle to make historic topic more enjoyable by general public. The combination of chronicle and interactive connection making has been chosen as the design fundamental. Serials of user interactive features will be structure into working prototype and tested as incentive elements.

Keywords:

Design Thinking, Creative Society, Innovation, Education

Graduate School of Media Design, Keio University

Enqi Li

Table of Contents

1. Introduction **1**

Notes 3

2. Related Works **4**

2.1. Timelines and historic information visualization 4

Personal timeline visualization 4

Historical Timeline Visualization 6

2.2. Traditional chronicle and interactive knowledge sharing 8

Traditional chronicle 8

Interactive knowledge sharing 10

2.3. Interactive services with connections 11

Google Knowledge Graph 12

Facebook Social Graph 13

2.4. Summary - A Unique place of Connectable Chronicle 14

Notes 15

3. Approach **17**

3.1. Project Vision - interactive approach to release user potential creativity 17

3.2. Create private history cognition - a primary needs absent 18

3.3. Compare - visualize and inspired by a bigger picture 22

3.4. Making connection - easy interaction and fun to enjoy 25

Notes 28

4. System Prototyping **30**

4.1. Introduction of prototypes 30

4.2. Basic System Setting - Prototype 2.0 32

4.3. Realization of interactive networked chronicles 36

Comparative and Creative 36

Connection between chronicles: Chrono-Link 37

4.4. Designs yet to be prototyped 38

Potential of Historical Social Networking 38

4.5. Models yet to be prototyped 40

Sub-Chronicle Model 40

Free Span Model 44

4.6. User Segmentation 46

5. Evaluation **49**

5.1. User Test One 49

5.2. Summary of User Test One 51

5.3. User Test Two 52

5.4. Summary of User Test Two 55

6. Conclusion **58**

Acknowledgements **60**

Appendix **61**

A. Database Schema 61

B. System User Guide 65

List of Figures

2.1 Twitter. (Source: Twitter Website) 5
2.2 Memolane. (Source: Marshall Kirkpatrick January 16, 2011) . . . 6
2.3 Chronozoom. (Source: Chronozoom Website) 7
2.4 SIMILE Timeline Widget. (Source: SIMILE Project Website) . . 8
9
2.6 Google Knowledge Graph. (Source: Google knowledge graph intro page) 12
2.7 Facebook Graph Search (Source: Facebook graph search intro page) 14

3.1 Joint Perspective Mapping 21
3.2 Early paper prototype to test comparison view 23
3.3 WeChronicle Version 1.0 24
3.4 WeChronicle Version 2 26
3.5 Connectable Chronicle Model: Time narrated causal chain 27

4.1 Prototype 1 : WeChronicle 1.0 31
4.2 Prototype 2 : WeChronicle 2.0 31
4.3 Connectable Chronicle Model basic components setting 35
4.4 Connectable Chronicle Model: Comparative Chronicles 36
4.5 Connectable Chronicle Model: Chrono-Link 37
4.6 Traditional social network user interaction model 39
4.7 Connectable Chronicle user interaction model 41
4.8 Sub-Chronicle Model 1 42
4.9 Sub-Chronicle Model 2 43

4.10 Free Span Model 1 44
4.11 Free Span Model 2 45
4.12 Connectable Chronicle: three layers of user segmentation 47

6.1 WeChronicle V1: Process to create a chronicle 66
6.2 WeChronicle V1: Create a event in the chronicle 67
6.3 WeChronicle V1: Compare chronicles 68
6.4 WeChronicle V2: Page structure 69
6.5 WeChronicle V2: Process to create a chronicle 70
6.6 WeChronicle V2: Process to add event to a new chronicle 71
6.7 WeChronicle V2: Compare two chronicles 72
6.8 WeChronicle V2: Connect two events 73

List of Tables

5.1 Summary of user test two: number distribution 56
5.2 Summary of user test two: List of chronicle people intend to create 57

1. Introduction

Interactive Connectable Chronicle is a historical based interactive service, designed to enhance the experience for general public to enjoy interact with history.

History is a very important aspect of our society. By studying from the past, not only researchers accelerate their work, also many artists are inspired to create masterpieces. Nowadays history topic is fading away from people's daily life. The fun of history has been restrained within the group of researchers. Thanks to the new lifestyle, people heavily relied on Internet but at the same time shortened in focusing, which makes history an extremely difficult topic to enjoy with. General people who interested in history may quit reading a Wikipedia post just because its length.

Lacking interactive tools as well as not enough incentive connection to people's contemporary life turns out general public has very limited interest in history related topics. People decreased in devoting their time into it. This thesis is to explore the possibility of designing an Interactive Connectable Chronicle to make historic topic more enjoyable by general public. The combination of chronicle and interactive connection making has been chosen as the design fundamental. Serials of user interactive features will be structure into working prototype and tested as incentive elements.

There are many detailed reasons why history remains a serious and dull topic to general public. One of the very important reason is its non-related to people's general life. There are many researches associate how to encourage student interested in histories, among which a high percentage of them mention the importance of making connections between history and the students themselves[12] as well as

connections between past and future [3]. From a media design point of view, it is necessary to include interactive features as incentives, and in the case of history related service, connection can be a good focus.

Despite of the connection feature, there are still some basic interactive features remaining absent in history related service. As the purpose of the research is to find an attractive service model, social media model turns out a good reference. Through social medias, in the past ten years we witnessed miracles trigged by the power of crowd working. Facebook, Quora and linkedin, Twitter achieved their extreme success in respective fields. A common feature can be summarized from them is user generation contents, which can be further simplified into a word "creative". Networks have its unique feature on user creativity spreads very fast. In the case of history, network services, which fully allow user creativity seems, remain absent. Take chronicle, which is a typical form of historical document as example, there is still no valid service platform allow historical timeline creation. It is highly possible that user is demotivated by not able to be involved in co-creation process, even it 's a serious historical topic. Creativity and comparative are the two features to be added as premises to connections feature, in order to form a valid network.

As a result, three major incentive design elements are involved in the thesis are creative, comparative, and connective for chronicle.

In Chapter 2, a serial of study works will be explained related to the above three elements. Through which, can also has a brief look at timeline design and its interaction, application as well as future extensibility. In a summary chapter, an analysis will be done to judge the uniqueness of the three elements, and foresee its value to carry them into the followed implementation phrase.

In Chapter 3, a detailed vision will be clarified for the project. Design concept of the three interactive elements will be address one by one prospectively. A analyze of its future possibility of a historical social network based on these three elements will also be discussed. The chapter is a basis of the implementation work, and

also include the hypothesis that need to be tested in the evaluation phrase.

In Chapter 4, detail process and explanation of the two working prototypes will be introduced. Each of them focuses on different features and the later one carries improvements and supplements to the earlier one. The chapter will also include multiple alternative designs that prototyped on a paper basis, as well as complete and advanced design which yet been coded into a working prototype.

In Chapter 5, two experiments regarding the two prototypes are taken and recorded. Through them, previous hypothesis are checked, various users feedback on different functions can be read, plus their different perspective of recognition and expectation of the design. The chapter also includes new findings from the research compare to the original hypothesis.

A summary of the research is available in Chapter 6, as well as an overlook of possible future directions on related research.

It is expected that Connectable Chronicle service can act as a platform to accelerate the communication between experts and general population, as a tool of knowledge inheriting. Wikipedia is a great example we are referring to, and the paper is trying to experiment on a design, which is different to it. The service carry the expectation that Connectable Chronicle of being further expanded into a historical social network service platform to maximize its utility, encourage general people to be involved in the process of historical recording and analyzing.

Notes

1 How to Use a Multimedia Approach to Get Students Interested in History: http://gmarquardt.hubpages.com/hub/How-to-Get-Students-Interested-in-History

2 The historical Society http://histsociety.blogspot.jp/2010/08/i-hate-history-thinking-of-ways-to-get.html

3 McFadden, Laurie L. "Making history live: How to get students interested in university archives." College research libraries news 59, no. 6 (1998): 423-425.

2. Related Works

2.1. Timelines and historic information visualization

Personal timeline visualization

Chronicles are the predecessors of modern "time lines". With the developing social network services, timeline design has been enhance and widely used on handling large amount of fast pace information updates. One of the well-known examples of timeline-based application is Twitter.

Timeline maybe one of the most important design on cyber history, though hardly be called innovation as it 's based on an antique concept - Chronicle. Both timeline and chronicle record things on node basis, and in a chronological way. However the purpose of timeline is to deliver newest message on timely basis, whereat the function of story telling is mostly unsound compare to traditional chronicle.

A early research tried to use timeline design to visualize personal history in 1996 is called LifeLines[1]. The research tried to create software with multiple horizontal timelines to parallel multiple individual related information from education to medical. In the thesis it 's also mentioned the presentation and convincing power of timeline.

Timeline is born as a response to the modern movements of people 's life style. Compare to the previous decades, human now living a more globalized, individual-centered and fast-paced life. Through Internet, people are more easily connect to

each other, but at the same time less social and shortened in concentration. We are dealing with many times of the information every day compare to ten years ago, which we don't have enough time for. In response to it, timeline bare the mission of fast pace responding, and create passive model of socialization. Timeline is come from chronicle, but not a replacement of it.

However up to time of this thesis, almost all the timeline related service are provided for personal history recording purpose. Figure 2.1 Twitter is a typical timeline based design. Twitter applied innovated timeline design to its service, which achieves Information iteration acceleration. The design makes twitter one of the world most popular services since second half of the 2000s.

Figure 2.1: Twitter. (Source: Twitter Website)

Facebook timeline[2] is another representative service introduce in 2011. Facebook timeline make personal history more meaningful and convincing. It also enable user to record events occurred prier to their registration. It is an attempt to realize a completely lifelong function to their billion users. Facebook timeline received positive and negative feedbacks half and half.

Memolane [3] is one of the very famous startup project aiming on recording

people's personal history, but unfortunately it 's shut down on Feb 2013. Other similar services still exists like Timekiwi [4].

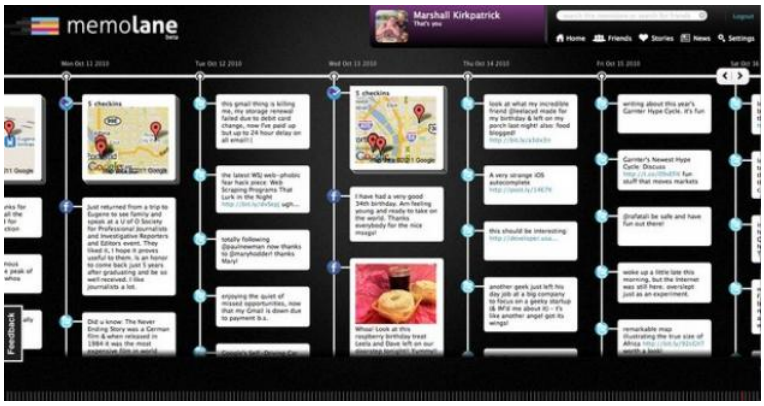


Figure 2.2: Memolane. (Source: Marshall Kirkpatrick January 16, 2011)

Thank to the increased mobile device users, photo based personal timeline services become popular. Some of the famous ones are Path, Life-x, PictShare and Collect. They are all available from app store at the time of writing this thesis.

Most of the personal timeline services are based on social platform. They have a user-friendly input design to encourage user make a real time record on daily life. Be able interact and access other user's information motivated their frequency of use. However those services are not based on big historical information. Though they have a good user incentive design of timeline, but for user who interested in historical research and study those services lack of information focusing. Connectable Chronicle service is more likely to aid on historic related activity compare to the above individual history limited timeline services. Features aid to historical study will be included for specified user groups.

Historical Timeline Visualization

There are many projects trying to create visualized timeline of big scales. Which share the vision of Connectable Chronicle.

There is a thesis in 1995, *Dynamic Timelines - Visualizing Historical Information in Three Dimensions*[5], that discussed visual communication of historical information in computer-based media. It was one of the very early researches about timeline visualization. By applying new techniques derived from traditional graphic design and cinema, such as infinite zoom, translucency, and animation, the traditional timeline is transformed into a dynamic, three-dimensional framework for the interactive presentation of historical information. However 17 years after, today, a popular way of visualize social timeline remain in two dimension, and designs become more and more simplified thanks to the design concept formed by Apple Inc. It somehow proves that a user-friendly input and social interactive design is more important than visualization itself.

Chronozoom [6] is a project in university of California that works on big history data visualization. The project tried to create a new style of chronological visualization by applying zooming feature to big scale timeline on digital canvas such as HTML5. Since the scaling on time is very accurate as Google Map scales on

Figure 2.3: Chronozoom. (Source: Chronozoom Website)

geography, human history compare to the whole universe canvas are only as big as a city dot on the earth. The way of visualize time on zooming scale is proved have strong visual impact, and stands strong point in education purpose. However the

team yet not provides a solution for community input and social use.

SIMILE Project initialed by W3C stands for a bigger vision, which is Semantic Interoperability of Metadata and Information in unlink Environments. However its one of SIMILE 's open source widget, that achieves in timeline visualization. SIMILE Timeline Widget [7]provides a very simple solution to deal with big scale time data, which is a multi-layered navigation bar.

It was later used by several timeline visualization services: Tiki-toki [8] and Verite [9]This is another achievement on the timeline visualization history. From social point of view, it 's also a more successful system that allow user to generate its own timeline. Unfortunately, not much effort has been put to further pursue the socialization co-work model on big history.

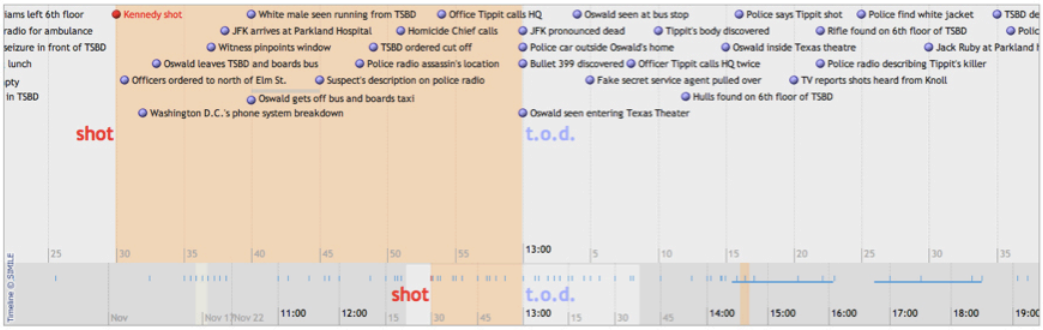


Figure 2.4: SIMILE Timeline Widget. (Source: SIMILE Project Website)

2.2. Traditional chronicle and interactive knowledge sharing

Traditional chronicle

Traditional chronicle is one of the most successful document format in history information recording, probably thanks to its successful imitating in human's time consciousness of brain. Time consciousness help us to live a proper community

life, it help us wake up on time, go to work on time and have a precious control of efforts been spent on different subject. Modern time management skills determine individual 's ability in life and work places. However according to the study, there is a surprising finding that human brain is unconscious of any time length longer than 5 seconds[10]. We recognize a long period of time existence only by making nodes unconsciously and calculate connects between them. Narrations are made by retrieve the nodes one by one in a chronological way. However the results are not always hundred percent secured, that's why we sometimes wake up in confusion after a deep long sleep. It is unavoidable for us to record past time and events in order to build cognition of presence. The logic of a " Chronicle " is very similar to how things recorded in our brain; it is visually a simplified version of the graph in our brain, thus makes it the most popular as well as classical design even. It somehow explained why chronicle has been so widely used as a common format by different civilizations.

Figure 2.5: Brain perception of time. (Source: Time will tell[11] April 5, 2011)

The term " chronicle " often brings epic impressions, thanks to the expensiveness of information reservation in old ages, and thus only important events are recorded and inherited, as well as usually restricted within noble or imperial family only. However this kind resource limitation controversially helped filter

unnecessary information out, and make the contents withstand scrutiny. Information filtering is in deed one of the most wanted in the contemporary decades, in term of information overload on the Internet.

Another interest issue, though all the historical event is given equal weights, and supposed to be read objectively, but turns out it become the most important tool for modern historians to analysis the causal relationship in the history. The chronology consequence and time information a chronicle contains are convicting enough to depict a map of history causal relationship.

Interactive knowledge sharing

Wikipedia is a very successful service in many ways, also in terms of historical study.

Wikipedia's success is very likely thanks to its focus on fulfilling people's demand of knowledge sharing. Old generation inheriting their knowledge, young generations learn and exploring further. Compare to the past, people are ever free to choose their desire field of study. Thanks to the raising of online knowledge sharing services, not only by individuals, but university researchers are benefiting.

Wikipedia[12] was founded in 2001. In the time of writing this thesis, it now has 30 million articles in 286 languages; it is the world biggest online encyclopedia and still keeps growing. Wikipedia is the successful example of utopia knowledge sharing concept. In perspective of knowledge inheriting, Connectable Chronicle bare the same vision with Wikipedia, which is to build an all-covered knowledge-sharing platform. Wikipedia is taking encyclopedia as its prototype, and Connectable Chronicle is taking chronicle.

Wiki, which in terms of created collaboratively is firstly introduce in 1994 by a web called wikiwikiweb. Wiki concept is to inviting user to create new page, promote meaningful topic, and seek to involve visitor in an ongoing process of creation and collaboration and constantly changes the web site landscape[13]. Wikipedia is the first and most successful example of world-range practice of the concept. Wiki

concept is very different to social networking; it is more object oriented, wiki user less self-concern, and motivated by common goals. Both for information sharing purpose, if network service model is taking use of the self-concern need of humanity, wiki knowledge sharing model is rely on the divinity of spreading truth. Both nature are inherence to human, so there should be no argue on which model is of advantage. And in fact they are both successful.

Other successful examples in public knowledge sharing like "Quora" and "Ask.fm" are also good reference. They proved that crowd knowledge network is powerful, and people are seeking interact with others. Even on the way of study, its still more inspiring if a group of people exchange their ideas.

Connectable Chronicle model is visionary a wiki based co-working system. However networking model, which fulfill one 's need of esteem, is the main direction that the connectable chronicle design is visioning on.

2.3. Interactive services with connections

Connection has been address by many historical educators as the most effect tool to draw student's attention. Researchers such as McFadden, Laurie L has mentioned more than one time in their paper about the importance of connection making.

Timeline embedded with connection are also very popular topic started even more than ten years ago. A research of interactive timeline in 1998 [14] has applied a timeline design into a library administration system, it was a very early attempt of networked database. Later in 2002, researchers from Indiana University and Drexel University again take a further try in making a more advance library system[15], and interactive timeline was used for document comparison purpose.

The interactiviy between timeline is always a popular topic that researchers trying to seek new fields of application. It is a classical formula that triggers miracle in different kind of fields, however its result on history chronicles remains

undiscovered. There are many successful service take good user of connection making and succeed dramatically.

Google Knowledge Graph

Google knowledge graph (GKG)[16] is a very impressive vision of future knowledge sharing provided by Google. It is now still under its way of full realization. GKG believes the future search engine shouldn't only provide a webpage, but an answer to the user. The search engine need to " think " by itself, to understand what exactly user is looking for.

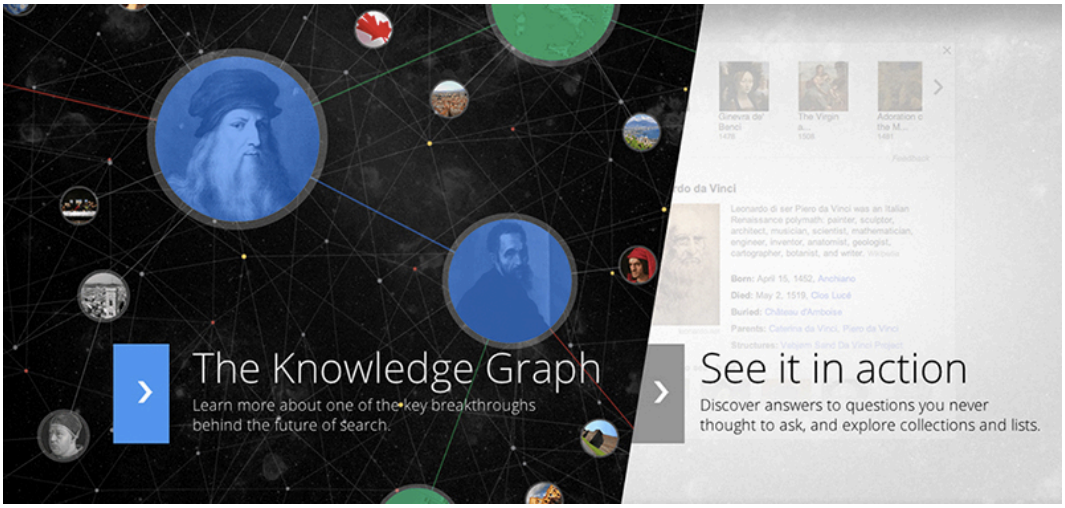


Figure 2.6: Google Knowledge Graph. (Source: Google knowledge graph intro page)

For example, the project assumes a user behavior that while user is searching for the term " DaVinci ", he actually wants to understand the person by look at the network related to him. GKG believes the search engine can self-learning from the billions of past user actions, and summarize what a user would actually be interested in to know. Future search engine will provide the end result to user positively, like an actual consultant providing solutions.

In GKG project, knowledge can be seen as all sorts of nodes in the universe. Nodes themselves stand as a single webpage or site. The isolated mode is how

the search engine working in the past ages. But by connecting them all together in the future, a knowledge graph can be generated as a guide map. The map will acting computer intelligence and help us searching smartly.

Facebook Social Graph

Another outstanding example regarding connection feature is face book social graph. The recent ten years, a word became really popular in cyber industry, which is called " Big Data ", all thanks to user 's adoption on Internet as a 2nd life, user data became of equal value as real world energy resources. Companies owns zetta-bites and yotta-bites datas like Facebook and Linkedin[17] been seated on throne of oligarchs. They are the data bank of our new age. Medium and small developers developer their service rely on the data they provided. Users enjoyed and get used of being provided customized services by 3rd party.

As a respond to the unlimited demand of improving customized services, varies methods of data mining has been developed. During the evolution, social graph is one of the most exiting achievements.

Facebook Social Graph[18] is a sociogram that depicts the relation between Internet users. The concept was introduced by Harvard student in 2002, but first brought into public vision by founder of Facebook, Mark Zuckerberg in 2007. Facebook was the first and one of the very few who able to realized it, thanks to its world largest user population. Google also later introduced its own Graph API to clarify their competitor position.

Ideally, social graph is able to draw not only relation between users, but also between human and non-human objects. It can bring revolution on many different fields from individual character analyzing to product review and optimization. The fully potential of social graph is still under discovery. However, Facebook proves it that database of link between objects, is going to change our future. By providing ultimate convenience to any contemporary user who is involved in that graph, we become never so close and mutual understandable. It was never be

Figure 2.7: Facebook Graph Search (Source: Facebook graph search intro page)

considered this big, but now proved that the power of understanding truly turns our life into a better way.

2.4. Summary - A Unique place of Connectable Chronicle

In the previous section, we can see many remarkable projects that contribute to historical study and knowledge sharing. However, currently a universal time based platform remain absent.

Timeline and social media's combination have many successful examples, but among them, comparison view functions remain absent. Other projects that master in visualization such as "Chrono-zoom" and "SIMILE" are without social input support. Though Wikipedia and individual blogs somehow act as a portal on knowledge sharing, still inconvenience exists while chronological based information cannot be share and compared. However, comparison of historical timelines is a potential demand from many researchers.

Also without a universal network support, it is very difficult to free user from

not being able to make own decryption about history. Creativity and interactivity has yet been considered a essential part of history related service. As we know wikipedia allows only one universal version for a single post. No matter how many argues exists associate with the topic, only a compromised version can be recorded. Such kind of compromised objectiveness may lead to massive information lost, which is not in the principle of modern information management. Manage the voice from different perspectives to the history can be a path to arguments as well as open discussion.

While come to the connectivity stage, we all benefit from the social media connections, and enjoy the machine smartness provided by data mining. However when come to historical study, without collaborating with social media, historical information is isolated from our contemporary life, and even among themselves. In the rest of the paper, we will take a tour to explore several possible designs which may contribute to the solution of those issues.

Notes

1 Plaisant, Catherine, Brett Milash, Anne Rose, Seth Widoff, and Ben Shneiderman. "Life-Lines: visualizing personal histories." In Proceedings of the SIGCHI conference on Human factors in computing systems, pp. 221-227. ACM, 1996.

2 Facebook Timeline
https://www.facebook.com/about/timeline

3 Memolane
http://blog.memolane.com/

4 Time Kiwi
www.timekiwi.com

5 Kullberg, Robin L., William J. Mitchell, and Stephen A. Benton. "Dynamic Timelines-Visualizing Historical Information in Three Dimensions." (1995).

6 Chronozoom
http://www.chronozoom.com

7 SIMILE Timeline Widget
http://www.simile-widgets.org/timeline/

8 http://www.tiki-toki.com

9 http://timeline.verite.co

10 [Levin and ZakayLevin and Zakay1989] Levin, I. and D. Zakay (1989). it and human cognition: A life-span perspective, Volume 59. North Holland.

11 http://mastermindmaps.wordpress.com/2011/04/05/time-will-tell/

12 Wikipedia
http://wikipedia.com

13 [Leuf and CunninghamLeuf and Cunningham2001] Leuf, B. and W. Cunningham (2001). The wiki way: quick collaboration on the web.

14 Kumar, Vijay, Richard Furuta, and Robert B. Allen. "Metadata visualization for digital libraries: interactive timeline editing and review." Proceedings of the third ACM conference on Digital libraries. ACM, 1998.

15 Monroy, Carlos, Rajiv Kochumman, Richard Furuta, and Eduardo Urbina. "Interactive timeline viewer (ItLv): A tool to visualize variants among documents." In Visual interfaces to digital libraries, pp. 39-49. Springer Berlin Heidelberg, 2002.

16 Google knowledge graph
http://www.google.com/insidesearch/features/search/knowledge.html

17 Linkedin Graph
http://inmaps.linkedinlabs.com

18 Facebook Graph API
https://developers.facebook.com/docs/reference/api/

3. Approach

3.1. Project Vision - interactive approach to release user potential creativity

Connectable Chronicle is a historical based chronicle post and sharing platform for people to enjoy a more flexible and inspired history interactive experience. Objection mainly realized by design interactive experiences. Chronicle is chosen to be the fundamental of the service, as we have analyzed in the 2nd Chapter, that chronicle is the most classical document type that suit our brain functionality. Also the modern design of timeline has be widely accepted and proved successful. A interactive timeline featured with connectivity comes to the final decision.

However, in order to realize it, we need to break the whole design into three sub stage. Firstly, the service is going to let use be able to create a chronicle with no restriction of its topic and contents, and share with other people. Secondly, Those chronicles has to be able to compared in a larger view, so people can inspired by the potential relations between them. Third, user would be able to make connection between chronicles make connection by themselves. Therefore, Create, Compare and Connect are the three major values to be add and tested. This chapter will analysis the user demands and value of those three elements in details.

3.2. Create private history cognition - a primary needs absent

"Odd how the creative power at once brings the whole universe to order. Virginia Woolf, British Author"

Free creation is the first approach.

In ancient times, chronicle used to be an " Autocracy " document that only affordable by noble families. In which way, it only write from minority 's perspective. Public voice is considered mute due to lack of social rights in those years. General people do not have the rights to record their thought against an official document. They do not have an freedom to speak history freely.

However, with the growing of world population and averaging in education level, opinions from different perspective become of equal importance. There is a very interesting approach in the British library about shelf arrangement. Book reservations for a particular topic usually constituted by pair of two books from opposite side. Especially come to history topics, assumptions can be made that a true good way to record it objectively is to allow different perspectives, and let the public choose what to hear.

While comes to today, the world best knowledge crowd source platform Wikipedia still cannot avoid such defect since only one ultimate version is allowed. One Wikipedia user is not allowed to create his private version of recognition to history. In a wiki working model, that each individual's work can be replaced or erased by a updated version, no solid private creation retain. There are many examples that authors in Wikipedia get their submission denied only because of editor's team misunderstand the value of the work. Such mono-speak mode is obviously falling behind modern concept of crowd creativity, since only one selected team is credited. Still the threshold of historic related creation remains high.

How to further lower the threshold of historical related creation is still to be explored. In this thesis, the first approach will be to create a simply chronicle

based platform, that allow everyone to create a chronicle based on his personal judgment.

Some very early interviews was done prior to prototyping. In the interview, user are explained the concept of the project as a co-working tool related to chronicle writing. In terms of feedback, a user were asked the question "*Do you write wikipedia, and why?*", and he answered "*I am a heavy user who read it a lot, but while turn to write, i feel myself not confident enough. Personally I collect animation data into excel file, this kind of work is my career as well as out of personal interest. I want to find a platform to record them, a networked chronicle can be a good one if a individual version can be retained.*" The user is from Japan, a professional animation producer for more than ten years. People think historical recording are serious and only one strict voice can be recorded as official. General public in most of the occasions choose not to take the responsibility to be involved even they have a different perspective. Connectable Chronicle would like to try opening a door to a wider view.

Another quite strong feedback regarding personal creativity is from a professional writer for more than ten-year experiences. He is very interesting in the project concept, and comment as follows: *"If i am motivated to write a chronicle about something, It must be a thing either I really loved or really hated. Anyways, it 's going to have personal emotion in it. For example, a chronicle of DaVince, someone will especially mentioned he is a gay, others will not. I do think people will sooner or later realize they only care about the world in their eye, no one cares what the world truly looks like.".* It again proves the concept that it is very difficult from human nature to record a thing objectively. Even people are forced to do so, an autocracy document is considered dull and less attractive. To histories studies, allow emotional different perspectives to be created is a choice of advance.

Creativity is also about tolerant in different perspectives. During the experiment of first prototype with basic chronicle create functions (which is going to

be explained in detail in Chapter 4), more than one user has asked questions associated how to solve conflict between different perspectives. Since the big public history till today is an Autocracy document, general people educated with a official version of history from text book. Except professional historians, people rarely aware of that history have many different perspectives. An official history record by Taiwan government is very different compare to the version admitted by China government. However both of them contain its unique perceptiveness, and if one read both them, a more objective understanding can be acquired.

Due to time constrains, the following design is yet to be build into a working prototype, but tested with interview basis. In order to enhance perspective recording, the system will allow sub-chronicles to be created, which related to the main chronicle. User can thus choose to create and read the " possible " or even " fiction " version of that history as an additional to the formal recorded one. It allows user to experience how many possibilities that history can be lead to another direction. It aims to breach the strictness of history, and make it more fun, and free for general user to be involved in the process of history recording, reading and analyzing.

One person's craziness can be another person's reality. On Connectable Chronicle service, each node is a memorable event for a particular topic. History is consisted by all kinds of nodes in different fields. Modern way of recording history should not be limited by historians only, but require the involvement of people from all fields, who live in different places, and work in different kinds of industries. The way British Library shelf their books with opposite point of view paired is a very convincible example, reader thus be aware of different perspectives, and read more objectively.

Connectable Chronicle with a comparative view system will allow the existence of multiple chronicles associated to the same topic, and being paralleled comparable to each other. It provides a reading experience with sufficient reference and discussion.

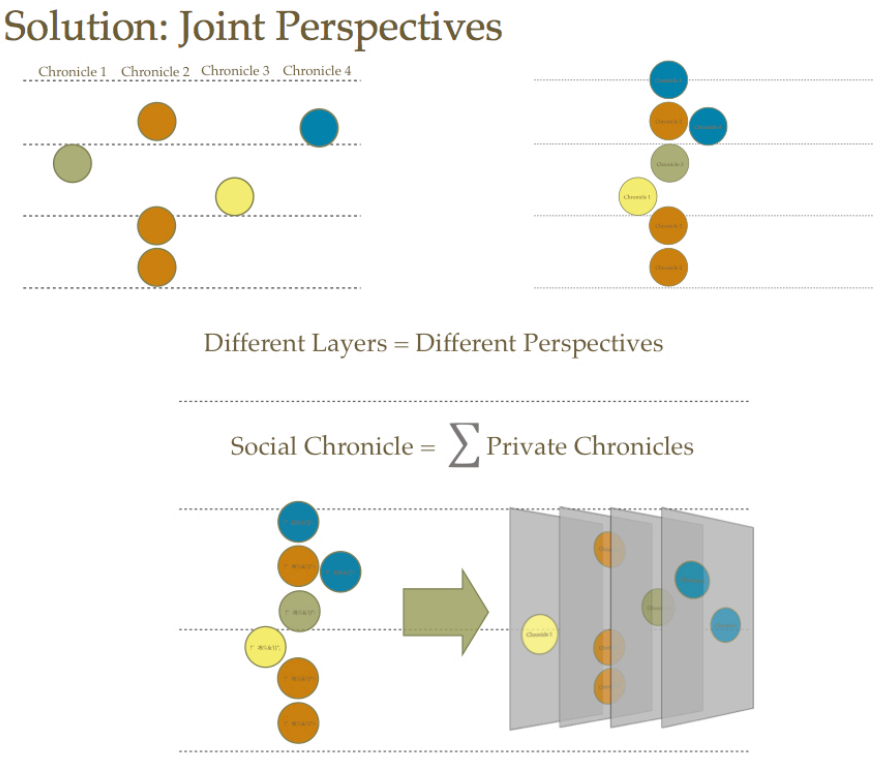


Figure 3.1: Joint Perspective Mapping

3.3. Compare - visualize and inspired by a bigger picture

Comparative view of chronicles is the second approach.

As partly mentioned in the introduction chapter, history topics remain unattractive to the young generation. The fact is also reflected by early user study of this paper. Young male user admits that they have no interesting in historical topics, unless it 's related to them. Young female user interested in history somehow quit reading a historical article since its too long. In fact*History repeat itself*, and historians enjoys relate them into our modern life, as an approach to attract young student in classroom. However, how to find the relations remains skill of professionals. At least no efficient tools for general public to do so.

To make historical timeline more attractive it is necessary to relate them with each other, and to make them available in a big picture is a prior condition. Thus the second approach is a comparative view of chronicles.

In different to most of the existing timeline base services, Connectable Chronicle will allow two or more different timelines to be aligned with a universal vertical axis and compared to each other horizontally.

To test user's likelihood of adopting a horizontal comparative view of historical timeline, a early experiment was done by very simple prototype. The prototype is made in Microsoft Excel file, which contains three different chronicles and two different type of calendars. They are Chronicle of Sakamoto Ryuma, Chronicle of Big history of Japan, and Chronicle of Saigon Takamori, two calendars are Gregorian calendar and Japanese Calendar. The excel sheet were shown to more than 10 people, and all the people who see the horizontally aligned chronicles began to show interest in the information and started to compare them. They also show excitement on the idea of having an online system where all the chronicles can be viewed.

The first working prototype was launched on February of 2013. It allows people

西暦	和暦	坂本龍馬関連事項	日本大事記	西郷隆盛
1835	天保6年	(11月15日[3])龍馬出生。		
1846	弘化3年	(この年)母幸死去。		郡方書役助をつとめ、御小姓与(一番組小与八番)に編入された。
1848	嘉永元年	(この年)日根野弁治の道場へ入門し小栗流和兵法を学ぶ。	(12月)山内豊信土佐藩襲封	
1852	嘉永5年		(7月)中浜万次郎、アメリカから土佐へ帰国。	父母の勧めで伊集院兼寛の姉須賀(敏(敏子)であったとも云われる)と結婚したが
1853	嘉永6年	(4月)剣術修行のため江戸に出て、千葉定吉道場(小千葉道場)に入門。		2月、家督相続を許可されたが、役は郡方書役助と変わらず、禄は減少して41石余であった。
1853	嘉永6年	(6月頃～9月頃)臨時御用として品川藩邸警衛にあたる。	(6月22日)将軍徳川家慶死去。	12月、ペリーが浦賀に来航し、攘夷問題が起き始めた。
1853	嘉永6年		(6月3日)黒船来航	
1853	嘉永6年		(11月23日)徳川家定将軍宣下	12月、ペリーが浦賀に来航し、攘夷問題が起き始めた
1853	嘉永6年	(12月)佐久間象山の私塾に入門[21]。		
1854	安政元年	(6月23日)土佐に帰郷。		藤田東湖にも会い、国事について教えを受けた
1854	安政元年	(この年)画家河田小龍から西洋事情を学ぶ。	(3月3日)日米和親条約締結。	
1855	安政2年	(12月4日)父・八平死去。		西郷家の家督を継ぎ、善兵衛から吉兵衛へ改める
1856	安政3年	(9月)再び江戸小千葉道場に遊学。		武田耕雲斎と会う
1857	安政4年	(8月4日)盗みを働き切腹沙汰となった仲間(山本琢磨)を逃がす。		参勤交代の帰途に肥後熊本藩の長岡監物・津田山三郎と会い、国事を話し合った
1858	安政5年	(1月)千葉定吉より「北辰一刀流長刀兵法目録」伝授[26]。		僧・月照らの協力で慶喜継嗣のための内勅降下をはかったが失敗した
1859	安政5年	(9月)剣術修行を終えて帰国。	(4月23日)井伊直弼が大老に就任。	1月12日に潜居地の奄美大島龍郷村阿丹崎に着いた
1859	安政5年	(6月19日)日米修好通商条約、調印。		11月、龍家の一族、佐栄志の娘・とま(のち愛加那と改める)を島妻とした
1859	安政5年	(7月6日)将軍・家定死去。		
1859	安政5年	(9月)安政の大獄はじまる。		
1859	安政5年	(10月25日)徳川家茂将軍宣下。		

Figure 3.2: Early paper prototype to test comparison view

to create chronicles and compare up to 10 chronicles horizontally. The prototype received many interesting feedback on KMD forum, February 2013.

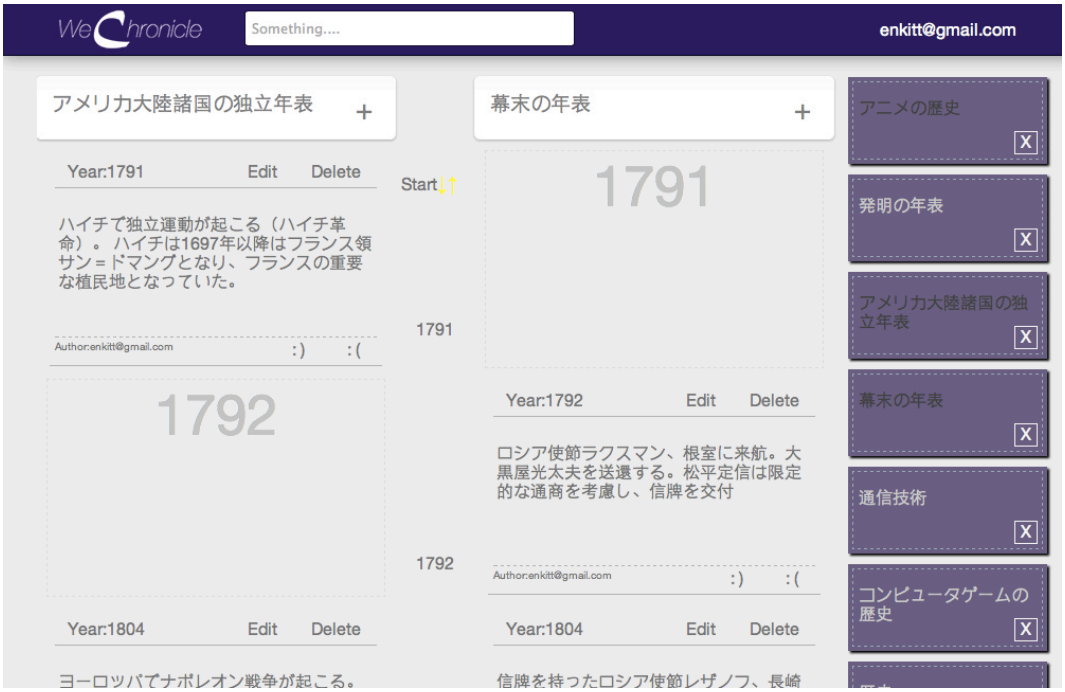


Figure 3.3: WeChronicle Version 1.0

Feedbacks from KMD forums February 2013: *Ït is a inspired experience to watch comparison between different chronicles which are not related to each other originally. " Ït can be a good tool of historical study. By compare to a chronicle i am familiar with, a new chronicle become easier to remember. " Ŕather than just compare two chronicles, i think the system can be more interesting if we can make connections between them. I am working for radio industry for many years, and there are some hidden stories between different timelines, which seem not related. It can be nice if we can connect them and tell the story."* Inspired by the above feedback, "connection" was further confirmed as the ultimate focusing of the research, and finally been included in the 2nd version of working prototype. How to make connection between chronicles, and how general people value this approach become of highly concern.

Chronicle is a old concept, adopted by contemporary society in the form of timeline. But comparable visualization will bring a new life to it, and especially add value to historical related information. Timeline form of chronicles can be found in most of the organization webpage and many articles that trying to make a systematic explanation on the objective development of a subject. Connectable Chronicle with a database alone is not meaningful, but by visualize them in a comparable way, it give birth to a new value. It is more easily for people to adopt new information by compare it with the information one familiarized already; in the case of chronicle it can be to compare a familiar chronicle with an unfamiliar one.

And thanks to people's familiarity with the chronological form of recording, there is generally demand for such kind of recording service. Plus many existing data can be directly used. Ideally the data source will be enriched by seek collaboration with Wikipedia or other educational organizations such as universities. However, in the prototype stage, limited data are input manually for experiment purpose only.

3.4. Making connection - easy interaction and fun to enjoy

Making connection between chronicles is the third approach.

The last but not least feature to be explored here is the function of building connection between events on two chronicles. Connection interaction approach is a ultimate feature that has been brought up many times by historical educators before, but yet has a service model to realize it on a network system. The ideally was also double confirmed by the feedback from KMD forum 2013 above.

The hypothesis is that people who inspired by the comparative view of chronicles, may interested in create connections between them and share their insider story of it. Readers will be enjoying look at them and feel inspired. Connection

function may inspire people in history study, since it lead viewer from one topic to another by serials of inside stories.

In Connectable Chronicle prototype, the system will allow user to create connections when they are in the process of comparing two chronicles. It is yet to know whether people will be motivated to make connections, and how big is the percentage. However it is highly possible that they will be interested to see the connections.

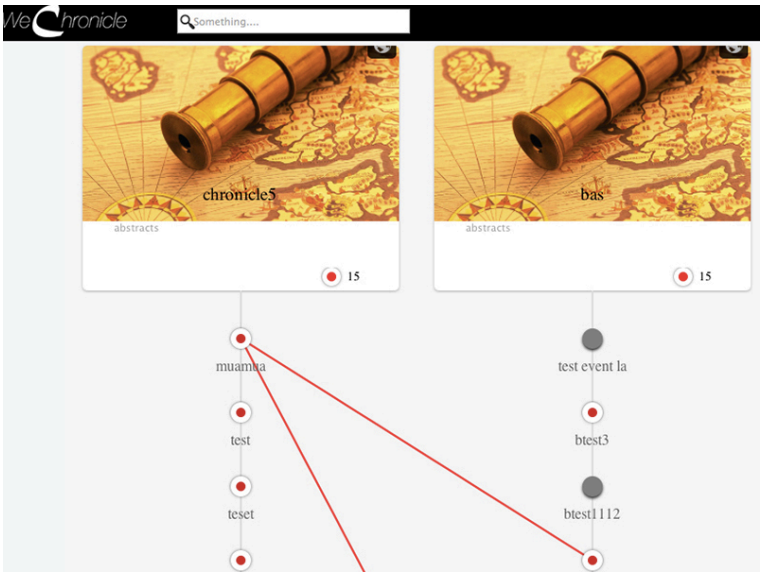


Figure 3.4: WeChronicle Version 2

In a aerial view, if enough connections can be generated by user, the system can visualize those data into a beautiful connection map. Since chronicle has its unique advantage in time coordinating. And two events with time information can be easily read its cause and effect relation, by simply follow time direction.

There is a vision can be possibly achieved if a successful historical connection system can be created, in where user are motivated to be involved in the process of co-creating. Since data linkage is of huge value in current time, it is one of the very big information achievements in the past decade. By user generated linkage graph, fragmented data piece become meaningful. Search engine services such as

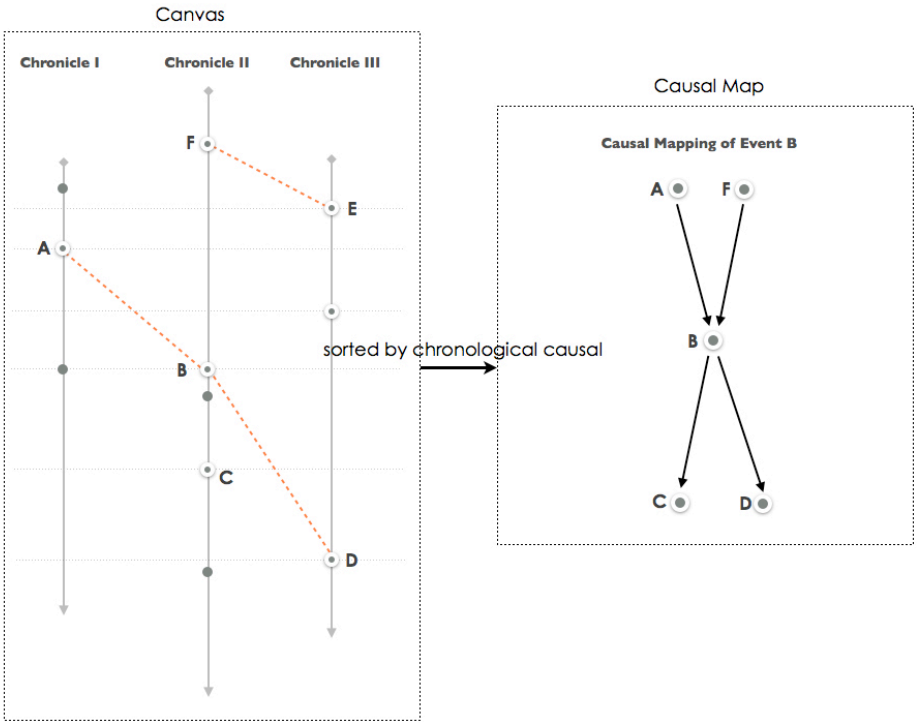


Figure 3.5: Connectable Chronicle Model: Time narrated causal chain

Google and amazon getting more and more smart, thanks to the contribution by big data. Artificial Intelligence is no more a science fiction phrase if a larger and more complete logical linking database can be included in machine learning. In 2007, the founder of Facebook, Mark Zuckerberg declared his goal of constructing a social graph where all the internet user can be connected and noded. It was in less than 5 years, we witnessed its realization[1]. Sooner graph search will allow us to experience on a social Siri [2] who will be answering to all the social related questions.

Instead of modern information, Connectable Chronicle with connection function can be a tool to create a causal connection between so related events, which is bigger in time scale. It could help people understand the world better, by knowing how past event has impact our contemporary life. So while reading a chronicle record, not only the development of a particular event, but also its cause and consequence can be seen. It might take several years or more, but finally a knowledge engine can be build to answer all your questions about the history.

In a causal map, usually significant events are radially connected to its consequences. The very initial trigger of the event stands in the middle of the charts. Traditional chronicles are designed to have one narration only, which is a one-dimensional chart. Causal map is a two-dimensional chart with multiple causal developments, but missed time narration. However those two charts can be combined. Since time consequence itself also contains causal information, early events usually impact and lead to the later one on a chronicle. Connectable Chronicle thus transmits such relation info and draws them on a three-dimensional service canvas.

Notes

1 Zuckerberg's vision realized: One graph to rule them all
http://news.cnet.com/8301-33617$_3$ − 57564200 − 276/$zuckerbergs - vision - realized -$

$one - graph - to - rule - them - all/$

2 Siri

http://en.wikipedia.org/wiki/Siri$_{(}software$)

4. System Prototyping

In this chapter, detail about the service includes, feature, functionality and ethnography will be explained, in case for further researchers interested to replicate the process.

Connectable Chronicle prototype has a temporary name called "WeChronicle" as it shows on the site logo. WeChronicle prototype version 1.0 and 2.0 are available on *http://www.chronrth.com* and *http://dev.chronrth.com* respectively. Both of the prototypes are constructed base on PHP and MySQL. Javascript are used as part of the front end.

Prototypes are created to test the degree of possible user acceptance on the three major features mentioned in the above sections: "create", "compare" and "connect".

4.1. Introduction of prototypes

Prototype 1.0 is mostly designed to test the creative and comparative function, it allows more than up to ten chronicles to be compared together horizontally. User can perform register and login to the system from any device. A chronicle can be created under user's account, and be added into the public pool, any other user will be able to see the chronicle and creator's name.

In Prototype 2.0, connect function become available, but as a sacrifice, user will only be able to compare two chronicles at the same time, and it takes more complicated process to compare two chronicles. User can still register and login, but database from version 1.0 is not inherited. User can compare two chronicles

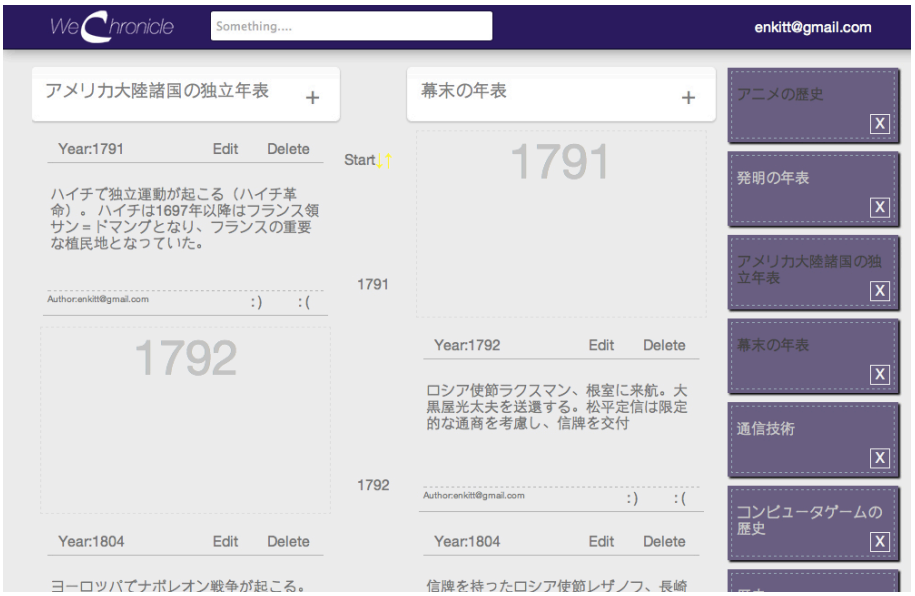


Figure 4.1: Prototype 1 : WeChronicle 1.0

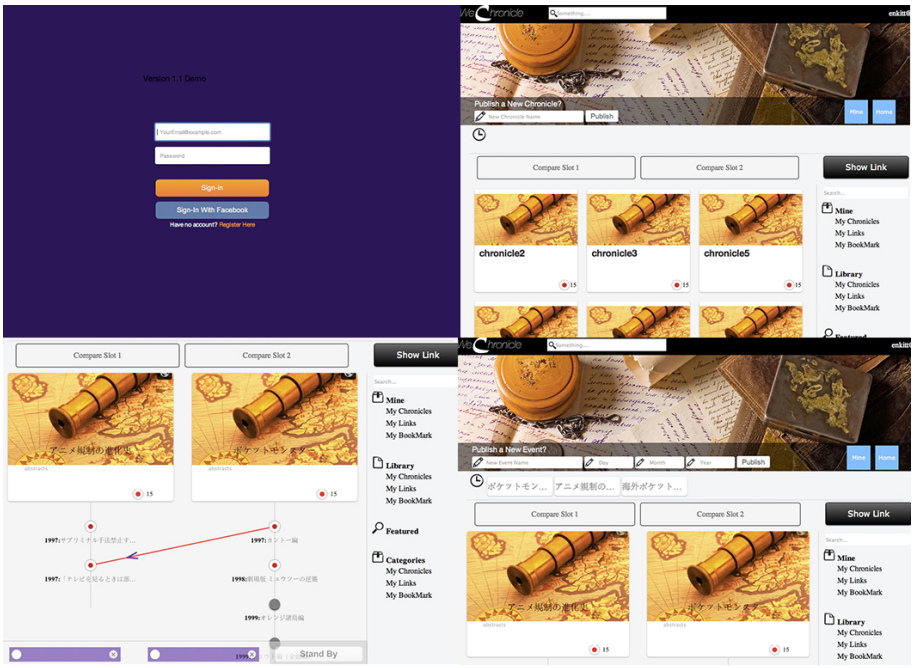


Figure 4.2: Prototype 2 : WeChronicle 2.0

by drag and drop chronicle icon from view history into the two comparable slot. A connection-making slot is available from the bottom of the comparative view.

A connected node will also indicated in color of red. Click on the connected event name will open a connection list to indicate the linked events.

A complete version of user guide for both versions is included in the appendix chapter with screenshots.

4.2. Basic System Setting - Prototype 2.0

Since prototype 2.0 is more close to the ideal idea product aimed by the paper. Here just attached the detail design element setting of it. There document are used as the basic guide on system development.

A: Nodes:

Time Node	Also called Time Event or Time Node. A chronicle is Constituted by number of nodes in chronologically Arrangement.
Empty Time Node	An empty node is a node isolated to any node existed on other chronicles.
A Non-Empty Time Node	A non-empty time node is a node connected to any of the other time events in other chronicles. While click a non-empty node, linked event will be listed in a sub-menu.
Expanded Node	A expanded node is a node with linking chrono-menu opened.
Linked Time Node	Linked Time Node is the link portal listed in a chrono-menu.
Chrono-Menu	Chrono-menu is a sub menu list opened besides an expanded time node, shows the list of linked time nodes.

B: Chronicle

Chronicle	Chronicle is series of chronologically arranged nodes associate to the development of a particular topic. It draws vertically on the service canvas.
Type of Chronicles (Not available in Prototype Version 2.0)	Chronicles fall into the categories of Person, Thing, Place, Project, Theory, Brand and so on.

C: Chrono-link

Chrono-Link	Chrono-link is the connections between time nodes of two different chronicles. User as a result of individual ' s cognition to the world creates it. Chrono-link draws horizontally on the service canvas.
Chrono-link between Time Nodes	Chrono-link between time nodes can be made between two different chronicles. Those links don't have direction, the direction is decided by chronological order. The former event always contributes to the happening of the later event in direct or indirect way.
Chrono-link between Chronicles (not available in Prototype Version 2.0)	Chrono-link between chronicles is defined by free tagging system. Tags manually define the relationship between two chronicles.

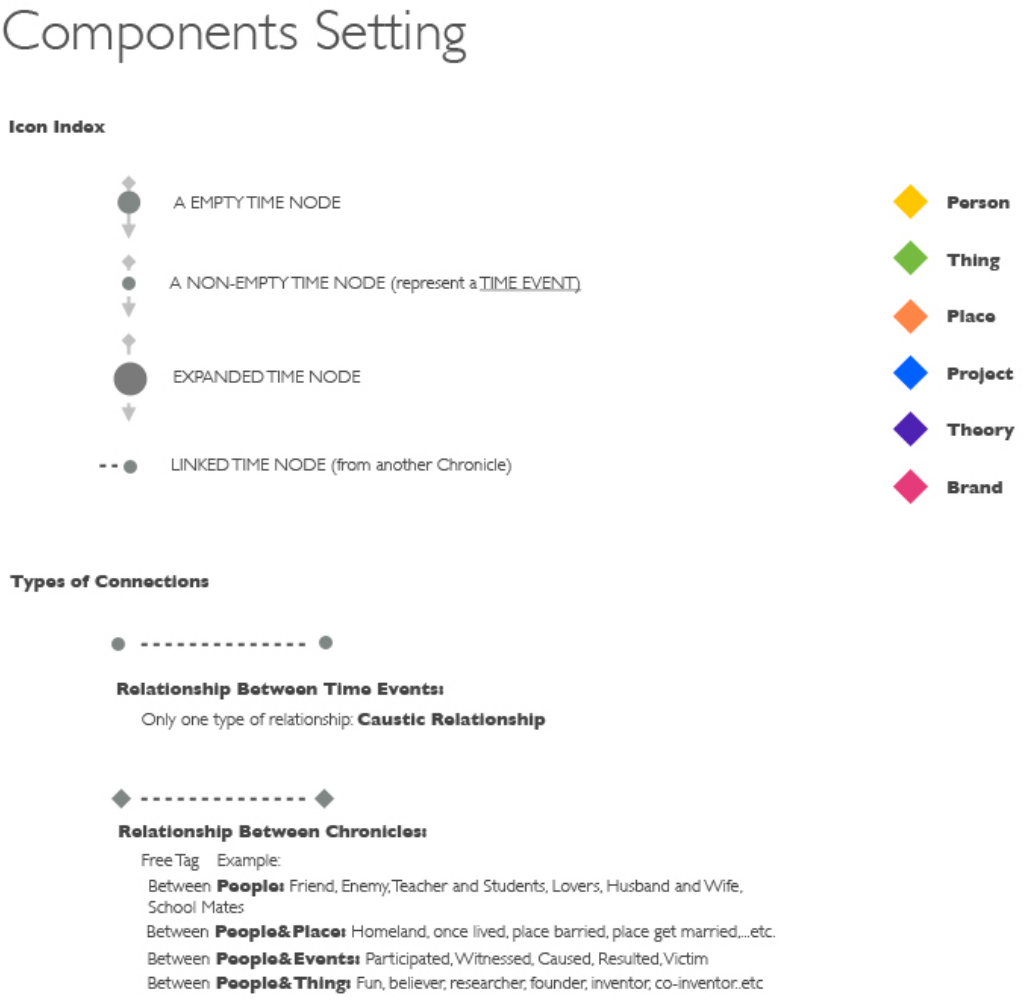


Figure 4.3: Connectable Chronicle Model basic components setting

4.3. Realization of interactive networked chronicles

Comparative and Creative

Comparative functions are especially enhanced in the Prototype 1.0. On the right side of the prototype page, there is a list of chronicles created. By click it will show and hide the chronicles.

A same chronicle of different perspective can be created in both Prototype 1.0 and Prototype 2.0.

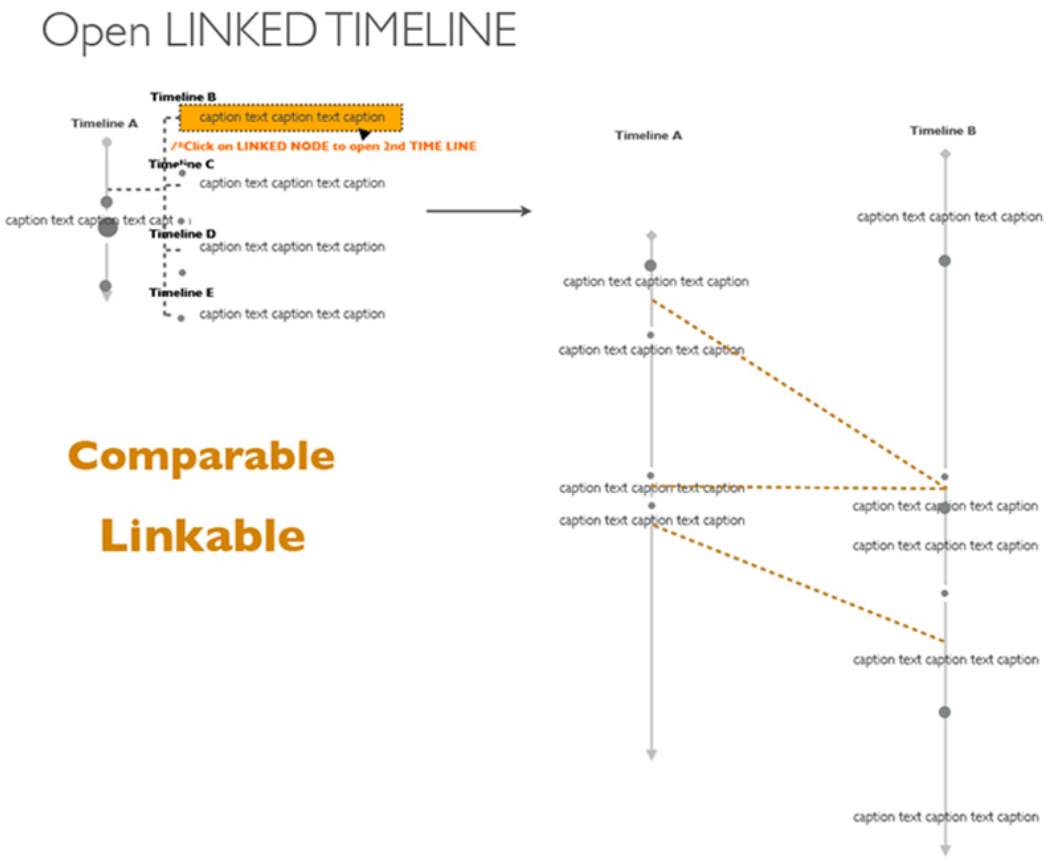


Figure 4.4: Connectable Chronicle Model: Comparative Chronicles

Connection between chronicles: Chrono-Link

We-chronicle service is targeting on long time span linkage mapping. How to allow user create linkage between events is the most concern feature. Here in the prototype while a comparative view is build to allow two chronicles show at the same time, and while click on time nodes on either of the chronicle, nodes will be added to the compare panel. After confirmation, a connection line is visible immediately.

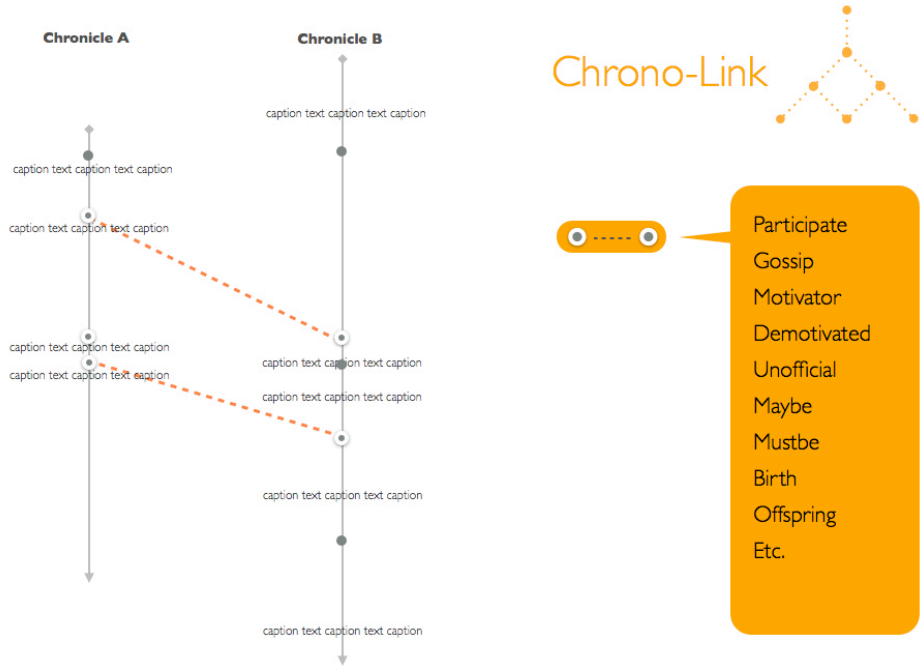


Figure 4.5: Connectable Chronicle Model: Chrono-Link

This kind of link can be made between any two chronicles regardless of time parameters, so we named it Chrono-link. Chrono-Links are the major feature of WeChronicle. It allows connects events over any two event-nodes regardless time and location.

Chronicle and Chrono-link are the main components on WeChronicle canvas, they draw vertical and horizontal connections respectively. The canvas drawn can afterward be converted into a causal map. While looking into any of the single event node as a base node, the map can show the cause of consequences of that event, by listing all connected events before and after it. Any connected node happened before, is somehow contribute to the base event node. And anything happened after the base node, must have been affected by it.

4.4. Designs yet to be prototyped

Potential of Historical Social Networking

WeChronicle is a network service based system. However, its ultimate goal is to serve historians and general history study people in a more social way. In order to realize this, the current network service functions designed can be embedded or expanded into a social network model efficiently. Social network has its natural of rapid spreading. User profiling and user interactions are its incentive mechanism for raising active community. SNS usually allows user to register one or multiple accounts, each accounts can be used to represent a unique avatar such as individual or organization. Here in **??** is the general interactive model of social network summarized as a result of research by this paper.

Here in **??** is a vision of a chronicle based social network interaction graph. As an assumption that WeChronicle has the potential to create a universal canvas of events connection mapping, it requires a number of users to keep working actively and continuously, SNS is the best suitable models to achieve such goal. In WeChronicle, making connection between chronicles events primarily does user interactions. Invitation a user to co-working on a chronicle or simply comment and discuss on a connection made is also available. User can also bookmark a favored chronicle, a favored user, and get push notification of its updates.

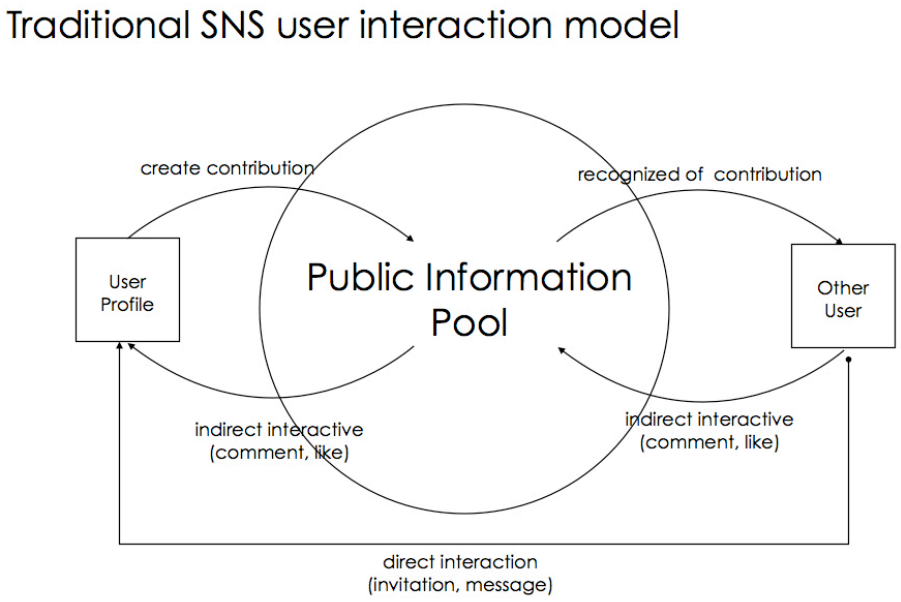


Figure 4.6: Traditional social network user interaction model

A profile page is available to present user 's contribution to the system, and interaction activity from other user. User can be encouraged to make more contribution to the system by community ranking system, such as number of followers, bookmarks and invitations. It is a new attempt for historical researcher and general public to be worked together.

How self-esteem can be experienced is the key to a success service. In Connectable Chronicle, based on user connection making feature we mentioned above, a beautiful profiling system will become available. Each user is able to create a chronicle of own life. Any new connections made to this chronicle positive or negatively will be counting in to the profiling system of the user, to show one's impact in the history. User profile page will also show the list of motivators and list of consequences that have been cause by the user, thus enjoy being connected to the big view. Users can possibly visualize his potential conniption to any of the other events, party or human, by those connections made by himself as well as by other user.

4.5. Models yet to be prototyped

Building historical causal graph is a dramatic task. The project is aiming big, may take many years to see it accomplish. The current proto-type only tests the validation of basic system design. There are designs not yet prototyped, they are recorded in this chapter for the interest of any further researcher to build it out.

There are two models of expanded Connectable Chronicle models. Both design fall into the concept of building a social causal graph under the power of social collaboration.

Sub-Chronicle Model

Sub Chronicle Model focusing on the relationship between chronicles. It allows user to add "Tagged Events" while reading a chronicle. Events under same tag

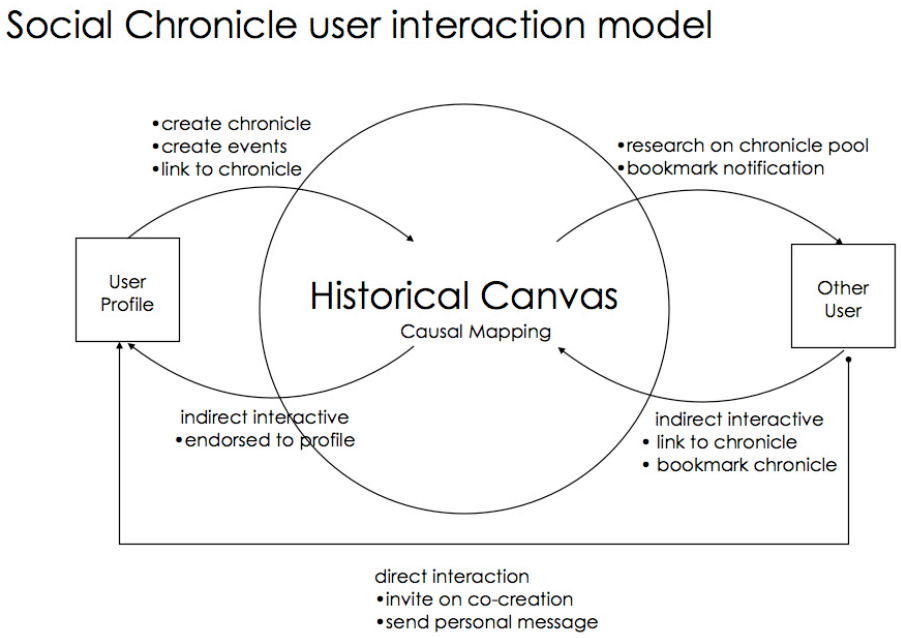


Figure 4.7: Connectable Chronicle user interaction model

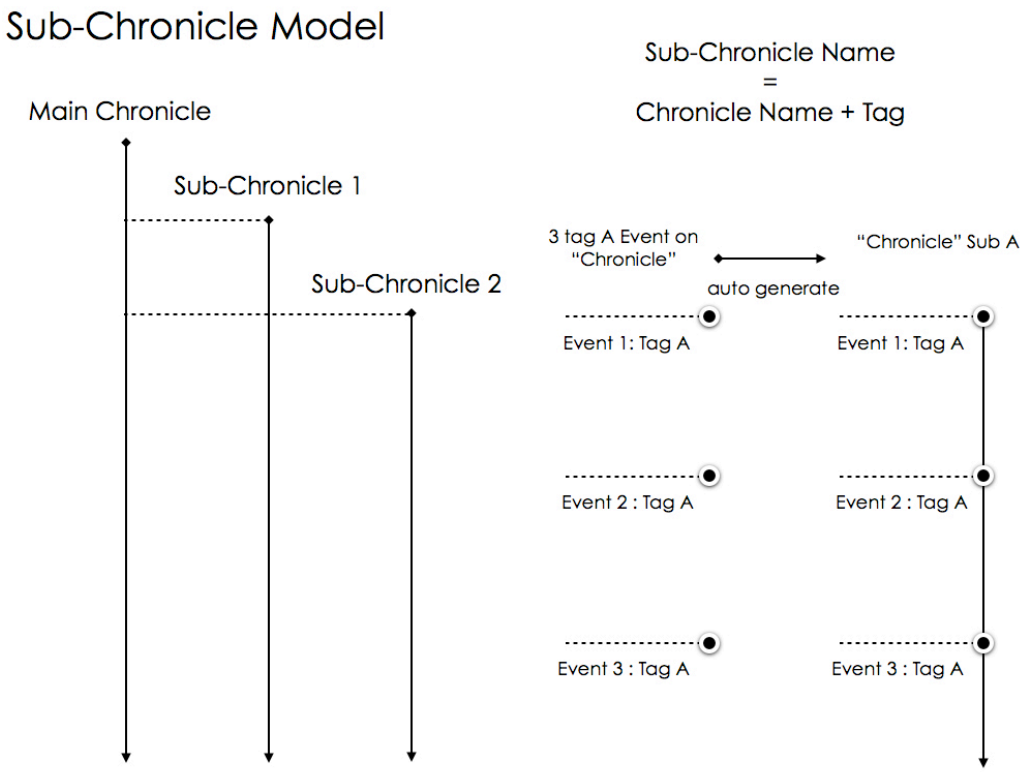


Figure 4.8: Sub-Chronicle Model 1

auto generate a sub-chronicle in title of the tag name. In another word, the relationship between father and child chronicles is defined by tag. Take Chronicle

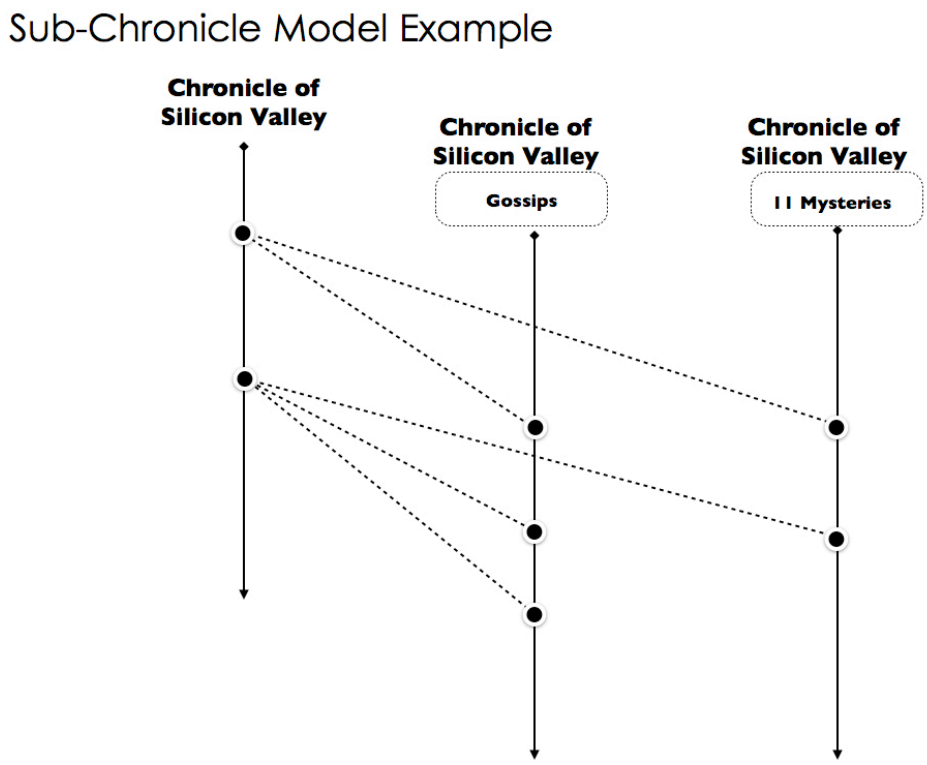


Figure 4.9: Sub-Chronicle Model 2

of Silicon Valley as an example. In the above chart, the chronicle on the left is the formal chronicle, besides it, three and two linked events has been created under the tag of "Gossip" and "11 mysteries" respectively. Those sub-chronicles are anecdotes and backside stories, which add fun to the original narration.

Merit of this model is retaining the rigor of original historical timeline, but allow different perspective to be added freely. Plus allow multiple users to co-work on a sub-chronicle. Defect of such model is it 's required large amount of high quality reliable chronicles to be entered as a premise. WeChronicle Prototype 2.0 is mainly based on this model without tag function.

Free Span Model

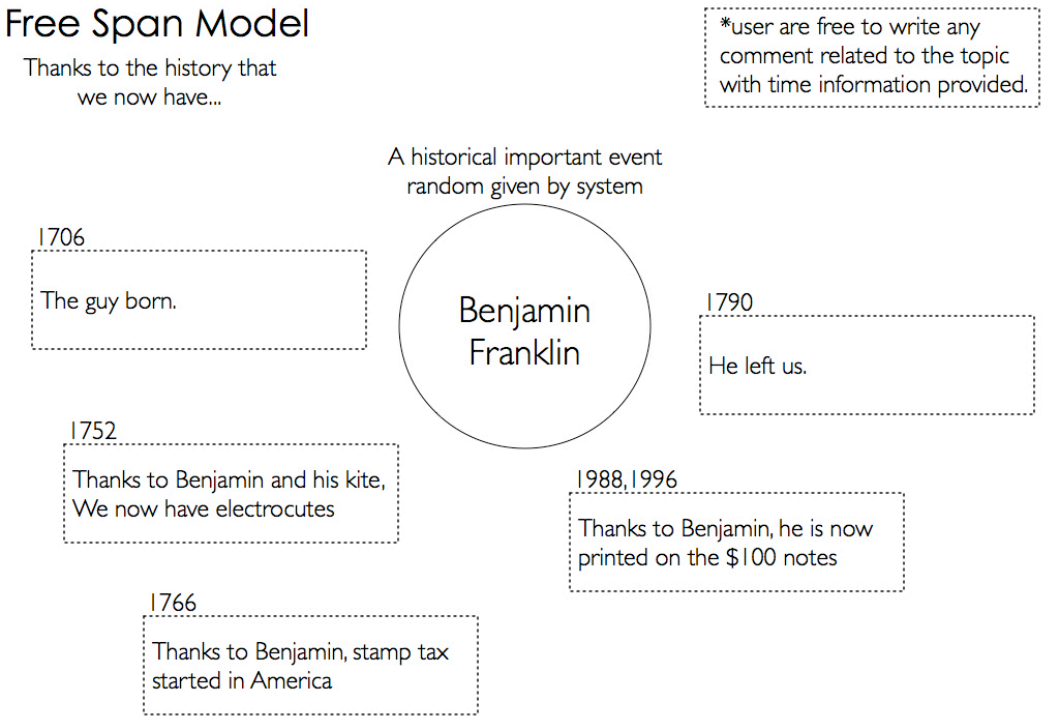


Figure 4.10: Free Span Model 1

Free Span Model is fundamentally different to Sub-Chronicle Model. It is focusing on social gasification, and targeting on young generation users. Vertical and horizontal concept no longer constitutes the main structure of view. Instead, a free white canvas with floating event cards is introduced. As seen in Figure 4.10, a title card has been put in the center of the canvas in the circle, it is called the solar event in the system. It has to be created before we open the canvas. Square floating cards are the planet event; planet event can be created or quoted from another solar canvas. Users are free to write on the canvas with any event that related to the solar event. The only condition is that time information has to be filled out. Figure 4.11 is the fun part of this service model. That according to the entire event entered in the canvas, a chronicle view can be generated. Through

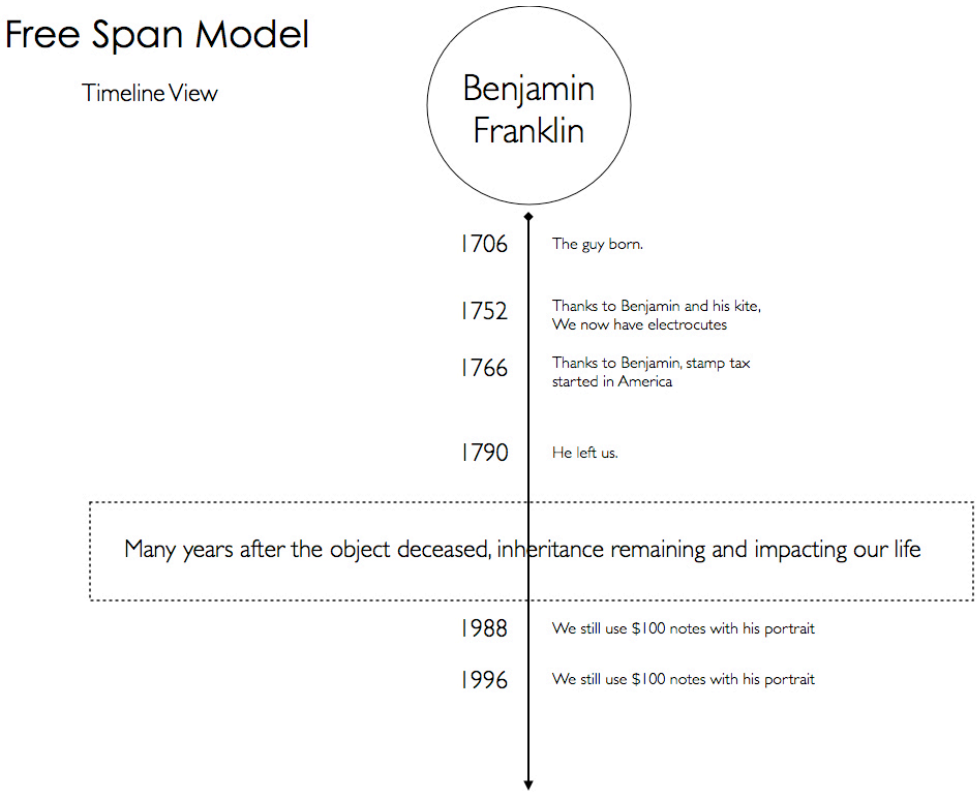


Figure 4.11: Free Span Model 2

the chronicle we can see all the events listed chronologically on a vertical line. This way of chronicle generating give more space to user creativity. All the events that regardless of perspective and quality will be listed all together. Generated chronicle also can be considered a time narrated impaction indicator.

4.6. User Segmentation

WeChronicle has three different layer of target user.

The first layer is core user, also known as academic user. Those users are of average over 30 years old, in the range of age 20 50. They are those who contribute to Wikipedia. The size of user segment can be forecast by the user amount of Wikipedia. In the year of 2011, Wikipeida has 3 Million registered user, and 270 thousands active users. However Wikipedia is a closed platform that no individual version can be reserved, and requires comparatively complicated procedure to register an editor accountKittur, Aniket, Ed Chi, Bryan A. Pendleton, Bongwon Suh, and Todd Mytkowicz. "Power of the few vs. wisdom of the crowd: Wikipedia and the rise of the bourgeoisie." World Wide Web 1, no. 2 (2007): 19.. In response to that, core contents generators of wikipedia remaining low, there is a research predicted that a very high percentage of wikipedia articles are generated by a group of user numbered around one thousand [1]. As a low threshold social network it can be estimated that WeChronicle can draw double of that number, which is at least 500 Million core users. Those user draws vertical on service canvas.

Second layer of user are younger generations. They are younger and energetic, in the age of between 15 25. They may not have enough knowledge to write a complete chronicle, but are faster-learner and curious about the world. They adapter chrono-link quickly, and having fun of connect self to the world history. They will be the core promoter of WeChronocle. We hope to accumulate the second layer user after first layer accumulation finished, and vertical contents are enriched already. User from this layer contributes to horizontal drawing on service

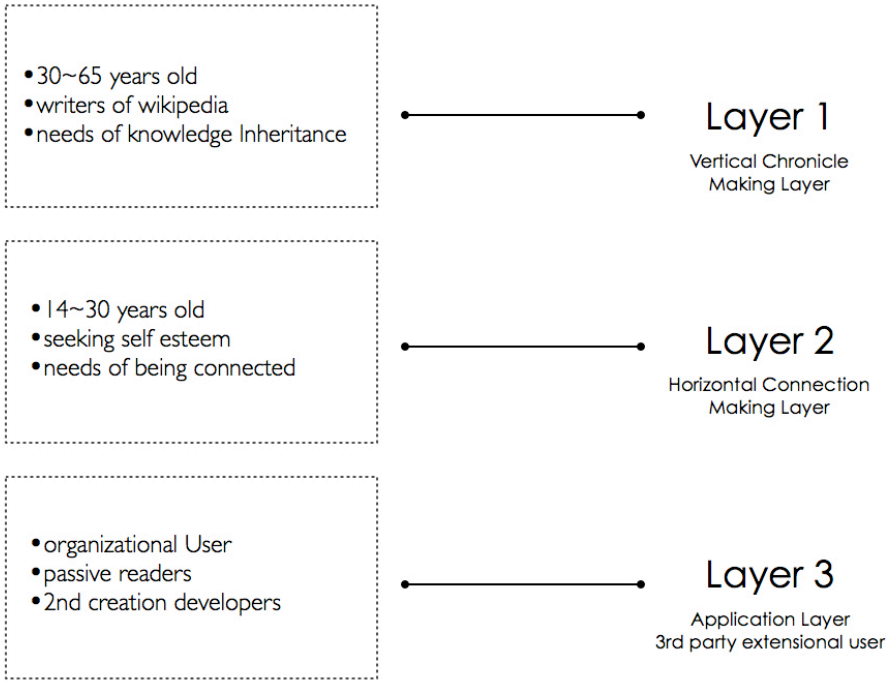


Figure 4.12: Connectable Chronicle: three layers of user segmentation

canvas.

Third Layer is the application layer. Those users are press and organization users. They build official chronicles for they service and product, and quote the contents to their own site. Chronicles provide also contents materials for their secondary creation, an.jpgd service plus alpha.

5. Evaluation

Evaluation of the concept is taken in forms of a serial of interviews with user who actually used the prototype. This chapter will go through the evaluation process, and summarize the major finding through the process.

5.1. User Test One

Experiment 1

Based prototype: WeChronicle Version 1.0

Access address: http://www.chronrth.com

Test Period: 2013/2 — 2013/4

Testable feature list:

- Open the comparison view
- Create a chronicle
- Create several time events
- Compare the chronicle created with other existing chronicles

Test Procedure and Environment:

User test are taken in a casual basis. In various indoor environments, tests are arranged either by interview, or by flexible meet and start criteria. More than Ten existing chronicles are already created and visible in the system. After showing the basic function of prototype, user will try to use the system themselves, any questions regarding the concept will be answered by interviewer. And interviewer will ask user for feedback on a flexible basis, through a serial of random questions related to their personal interest in history and expectation on the system. Users

are asked to follow the instruction to test out the system.

Hypothesis to Evaluate:

In the first experiment, main function to be tested is the primary parallel comparing function as well as to create an chronicle by themselves. Testing purpose is to know the user level of satisfaction by over viewing comparison of large-scale history events, which used to be non-related to each other. And also so to see the user's willingness in input their own perspectives of history. Questions include but not limited to whether user would be interested in making a chronicle out of creativity. Whether they will be inspired to see the comparative view of chronicles, and inspired to enjoy history more than before. What kind of incentives do they need to make a creation.

Test Result:

Around twenty user are involved in the test, and the main feedback can be summarized into following points:

From reader's perspective:

1. It is fun to have comparative view of different histories, which is a brand new experience.

2. Compare to the parallel view of chronicles, its more fun to see where the hidden connection between them.

From chronicle maker's perspective:

1. A rich existing historical database is needed to make the service more fun. Chronicle is better off attaching to existing database like Wikipedia to let user focusing on linkage making.

2. A more clear motivation or vision statement is needed for the service, in order to attract user who share the same vision. Currently there is no strong motivation for user to

3. It is difficult to manage conflict between different perspectives of history. How to resolve conflict versions is a big issue.

4. People are emotional; they prefer a service where things from their own per-

spective can be recorded.

5.2. Summary of User Test One

As a conclusion, people are not interested in record chronicles of big histories. It is not only become of the usability of the prototype, but also due to the knowledge requirement of historical related topics is high. For those who interested in record their research result, chronicle is too abstract to depict their lifetime research. General user would more likely to record timelines related one's life experiences, and the development of a objective matter that he has witnessed.

However users are very interested in watching the comparison between different chronicles, and feel inspired by them. Big history is included in the field of academic research; it is not easy for normal user to make a input. However user can be interested in writing big or small histories in his own perspectives or interoperation. And viewers are also interested in reading them out of fun. There are some user mentioned connections between different chronicles can be a inspiration since he know some insider's stories that can be shared. Reading the chronicles' comparison reminder him of that.

Since researcher of this paper is strongly interested in connections part from the above feedback, in response to it, second version of the prototype began in the middle of June 2013. The prototype is later known as WeChronicle version 2.0.

WeChronicle Version 2.0 is mainly emphasized on making connections between two chronicles. Part of the comparison function is sacrificed in order to realize it.

5.3. User Test Two

Experiment 2

Based prototype: WeChronicle Version 2.0

Access address: http://dev.chronrth.com

Test Period: 2013/6 - 2013/7

Test Procedure and Environment:

The second experiment is done under a face-to-face interview basis. Altogether 25 user are involved in the test, among them, 7 people took a deep interview with videotaping for an average 40 minutes each. The other 18 use the system under a writer instruction, and give written feedback to questions through online survey application. A group of ten chronicles related to Japan animation history is pre-entered into the system. First, user are asked to view those chronicles printed on separated papers without connections, and try to make connections by themselves using a pen. In the second step, user will be introduced to WeChronicle 2.0, and view those chronicles on the system with existing connection. They will then be able to value whether the prototype can surprise them with more connections. A interview will be conducted after the test to hear their feedback and comments on the system. In the final section, user will be introduced of the future vision of the project, along with the visual design of all yet prototyped functions. A concept of networked chronicle will be introduced by short presentation. After that, user feedbacks are recorded.

Hypothesis to Evaluate:

The purpose of the test is to value user's level of satisfaction on viewing hidden connections between different chronicles. And to observe their level willingness of being involved in the connection creating process.

Test Result:

As a result of the test, all of the users can draw some connection on the paper chronicle, even they don't know the exact connection between two events, and they would love to make connections firstly by imagination. Most of the user

found more connection through the prototype than through themselves, include a experienced animation industry expert. Elder users (over 40 years old in average) are more likely to response that they know some hidden connections other than the system has recorded. Younger users responded that they don't know more hidden connections of the recorded topics, but they may know something else associated with their interest. A business owner user responded that he would like to use the system to record the connections between businesses, contents and humans. It can be interesting business analysis tool for him. Another two replied that while talking about cause and relation connection, it sounds very serious so he or she would hesitate on make a connection. If the connection is more flexible in definition, they would be more confident to start making connections. Followed are summary of feedbacks:

There are some valuable feedbacks from deep interviews selected:

Selected Feedback 1: To relate different chronicles is a very interesting concept. I would like to learn history of different nations, but usually get bored easily since the whole story is too long. However the connection make history contents more interesting and easy to remember. I like the project because it has the potential to become a new way of learning histories, events, stories, which are usually boring and hard to understand. This system order event in timeline order which is easy to understand. And to connect to other events make me curious about discovering new knowledges.

Selected Feedback 2: Personally I feel its very difficult for me to find connections between events, that 's the reason I responded that will not be the one to make connections on the system. But I would like to use it in business analysis; it can be a very powerful tool. I think as a tool of historical study, connections with a rich history database are extreme valuable. If I had this kind of tool in my school age, it will be really delightful. However, I can hardly see a way to monetize the system, unless to start with a very small scope. Connections with

time narration is very interesting, if the connection map can be finished, we will all benefit from it, and i would really love to view it everyday. Anyway, same as Wikipedia that it requires huge numbers of volunteer to make input, so will take years to accomplish. For myself, the connection map is a very interesting tool for business analysis, if i could see my position in the big picture, i could use it as a inspiration to develop new business models.

Selected Feedback 3: I don't think cause and effect is a good name for the connections on Connectable Chronicle. There are many different types of connections; some user like me may want to make connection out of imaginations. However cause and effect relations are very important to history study, as the system is base on chronicle, i would love to see the trigger and consequence between events and people. I am also very interested in the concept of the project, to combine chronicle with SNS is a very interesting idea. Monetize problem can be the biggest obstacle to the project, once find a solution to it, it could have a bright future.

Selected Feedback 4: I am not a Wikipedia user and I am not really interested in history. But I feel excited while knowing common thing are shared between me and my interested person or event. Compare to just view a chronicle; it would be fun if I can interactive with it. I might making some connections between the topics I familiar with, for example, the connections between Japanese animation history and events happened in Thailand.

Selected Feedback 5: I am not a fan of history and i would probably not input any chronicles on the system. But I am interested to see historical coincidence that might connect to myself. I would like to create my own profile and make connections to the things related to me, and let the connection graph take me to anywhere a surprise exist.

5.4. Summary of User Test Two

As a conclusion, connection between chronicles function has its value. From the viewer's perspective, it is a very good way and inspiration for people to learn and understand history. Since chronicle and connection links are both visualization of histories, user are inspired by its succinctness, as well as enjoy the interactivity. However, from the perspective of data input, connections are very difficult to define, especially while user are been told the purpose of connection is to tell cause and effects. General user would prefer a more casual way to make connections; they sometimes want to make connection out of prediction or imagination. Anyway, people prefer to make connections rather than input the whole chronicle.

Table 5.1: Summary of user test two: number distribution

Total number of testers	25
Have habit in google history of interested topics	16
Doing personal research on a particular topic and has habit to record its development	13
Interested in ancient histories	9
Interested in modern histories	6
Interested in viewing connections between different histories	6
Prefer wiring chronicle of his own life and achievements	15
Prefer writing chronicle if a objective event as a witness or researcher	10
Would like to use the service in the future if details is improved	6
If it contains enough existing chronicle like wikipedia, i may interested in browse the site	6

Table 5.2: Summary of user test two: List of chronicle people intend to create

Topic of chronicles user would be interested in record
Chronicle of my grown up
Chronicle life of study
Chronicle The things i have done without regreats
Chronicle of my travel life
Chronicle of my cinema life
Chronicle of comics i have read
Chronicle of memorable encounters in my life
Chronicle of lives of my friends
Chronicle of living in a foreign country
Chronicle of my progress in writing a book
Chronicle of my favorite things
Chronicle related to design and technology
Chronicle of cinema
Chronicle of Paris
Chronicle of love
Chronicle of my startup
Chronicle of video game industry
Chronicle of the development of J-pop in Thailand
Chronicle of Thailand political issue
Chronicle of the development of distance learning
Chronicle of my family tree
Chronicle of Yamapi
Chronicle of Japanese apparel and fashion
Chronicle of trend changing in guy culture in Japan

6. Conclusion

The above thesis take the journey to explore historical timeline related interactive approach to release people's creative potential. Prior ethnographic study was done to make sure general young people whoever interested in history or not has a difficulty in explore deeper, where reflects the threshold of enjoy history remains high. Study on related works was taken on timeline and history related services, many prior researches shows that timeline is a very extensive design with various type of possible interactiveness. Also researches on historical education shows that connection between topics motivate students most. As a reaction, approach related to create, compare and connection making are included into the design, where the first two approaches is to ensure the validity of the third. And two web based prototype were built for evaluation.

As a conclusion, the current Connectable Chronicle design is not sufficient enough for people to fully enjoy history. However, connection making feature has a good potential to inspire people if a rich database can be prepared as a pre-condition. People are delighted in using the current as an additional tool of history study. Comparative view, allowance for free creation on different perspectives and connection mapping are attractive to most of the users from a viewer's perspective. However most of the user are not fully motivated to be involved in the creating process by the current design. Big history remain a serious topic that normal user don't have confidence to talk about. Side stories and undefined flexible conniptions making sounds more attractive to them. In future versions, if connection making can be re-designed and re-defined into a more relax and flexible tool, it has a good potential to attract general public, especially young

generation to be involved.

Connectable Chronicle model is aiming on attract not only historians, but also non-academic user to co-working together. From general user's point of view, they rarely self-motivated on writing objective record unless with tightly emotional connected with it. Most people writes more or less from one's own perspective, and with individual purpose. It can be difficult to handle the quality of entry in an anonymous based social service. Further researchers are suggested to take deeper look into incentive models for social networks. For academic oriented contents, its difficult to handle user motivation, as well as to balance contents quality and user population.

People enjoyed being connected or find things in common between self and an relatively big events. There are demands for individuals to tell a story from his own perceptive, and to split the secret from his proficiency. This can be a breach for involving general user co-working on the causal graph unconsciously.

Connections is a interactive feature that requires little input, which fit social network model very much. However, people would like to make casual connection based on imagination and prediction, rather than guarantee it. A combination of social network and historical chronicles has the potential to form a informal but active historical study community, rather than a tool of serious historical research.

Future researchers who aiming on create a serious historical research project, are recommended to focus its design on a more closed based system, rather than a open social network.

Acknowledgements

I am indebt to Professor Masa Inakage, Professor Masahiko Inami, Professor Ichiya Nakamura and Associate Professor Atsuro Ueki for guiding throughout my research.

Appendix

A. Database Schema

Extended function/User Interface (not available in Prototype Version 2.0)

1. Chronicle Title Panel, Username/Profile Page
2. Close Chronicle Button。
3. Suggest Section: Chronicle List
4. Bookmark/Follow Function
5. Custom Background Picture

Module and Detail Rules:

1. User Registration
   a) Quick registration from Login Panel
      i. User Name：Email as Unique Recognition ID
      ii. Password 1：firs entry
      iii. Password2：confirmation. Error Message on inconsistent password
      iv. Click Sign-up button
         i) Success: Jump to Home Page
         ii) Error Message

   b) Facebook Login
      i. Authorization from user

i. Accept authorization, jump to homepage.

ii. Authorization failed, back to top page try again.

2. User Sign in

a) Input Username/Password

b) Click Sign-in

i. Successful and jump to Home Page

ii. Fail Sign-in

3. Create Chronicle/Action

a) Top Menu

i. Add chronicle

i. Name, digital limit

ii. Graphic, define system default cover image.

iii. Abstract, Non-blank

iv. Privacy: Public/Private. Default Public, anyone can see.

b) Edit Chronicle:

i. Press Chronicle for 3-seconds

i. Chronicle enter edit mode

ii. Pop-out edit menu

iii. Press any blank to quit, or press “ x ” button to close

ii. Privacy

i. Edit chronicle, user can edit an chronicle that created by himself

ii. Delete chronicle, user can delete an chronicle created by himself

iii. User can see all the chronicle created by other user with public privacy setting

c) Chronicle Editable Module

i. Banner, can be replaced

ii. Name, no blank name allowed

iii. Abstract, no blank abstract

iv. Privacy, switch between Public/Private

v. Delete, Delete a Chronicle

- All chronicle linkage deleted
- All time events deleted

4. Create Time Event/Action

a) Create Event

i. Click Timeline, Open add time event menu

i) Add event NAME

ii) Add event TAG

b) Edit Time Event

i. Mouse hover 2-seconds on event

ii. enter edit mode

iii. pop-out edit menu (transparent)

iv. click any part to quit menu, or click "x" button.

c) Privacy Setting

i. Edit Time Event, user can only edit a event created by himself

- Editable part
  - Year
  - Content
  - Delete (once delete, all linkage deleted)

5. Linked Time Node

a) Rule:

i. Node can not link themselves

ii. Node on the same Chronicle can not link to each other.

b) Action：Single Click on linked node

i. Expand Chronicle

ii. Click on linked time node

i) Expand Chronicle, Enter Compare Mode, Show Event Linkage graph

ii) Action：Double click event, can be only done under “ chronicle compare mode ”

iii. Event Highlight, enter ”add linkage mode ”

i) Time Event Highlighted

ii) Click time event on other chronicle to make a linkage.

c) After Events linked, dotted line appears between linked time events.

i. Press dotted line for 3-seconds, enter edit mode

i) Delete

ii) Add comments (Not available in Demo)

iii) Cancel Highlights

- Single click on blank space, cancel action.

6. Close comparison view：

a) Single Click Close:

i. Click the “ x ” button on the event to close chronicle.

b) Single Click Event:

i. Expend Chronicle

ii. Pop-up notification on closing another chronicle

iii. New expended chronicle replaced the other one in the slot

7. Open chronicle

a) Open through single click

b) Open through single click my menu

c) Open through search, listing, single click to open

d) My Chronicle Library

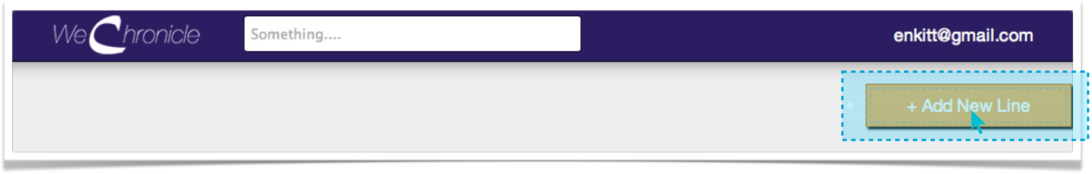
e) My Event Nodes Library (not available in Version 2.0)

B. System User Guide

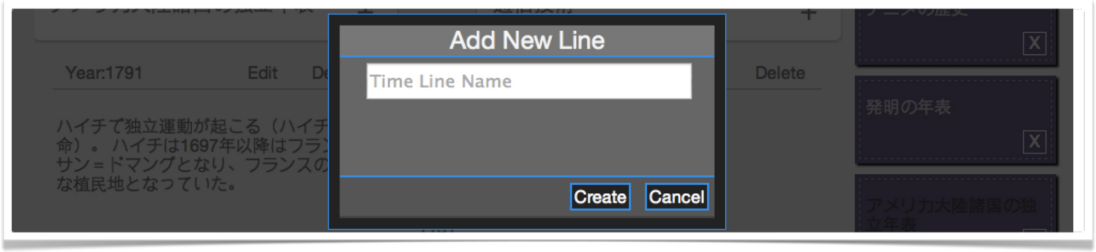
Here is a brief instruction on the prototype version 1.0 and 2.0 perspectively. Prototype 1.0 is mostly designed to test the comparison and different perspective concept, it allows more than up to ten chronicles to be compared together horizontally. In Prototype 2.0, connect function become available, but as a sacrifice, user will only be able to compare two chronicle at the same time, and it takes more complicated process to compare two chronicles.

WeChronicle Version 1.0

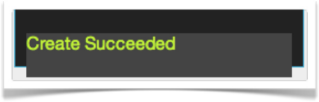
Process to create a new chronicle



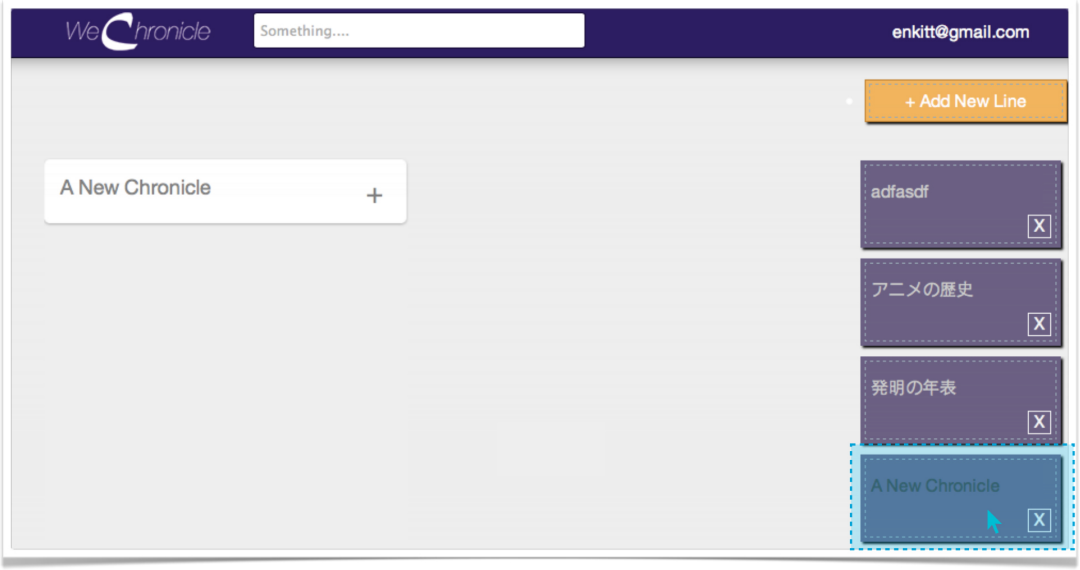
Step1: To create a new chronicle, user need to click on the orange button on the top-right under the top navigator.



Step 2: In the pop-up screen, user need to input the name of the desired chronicle.



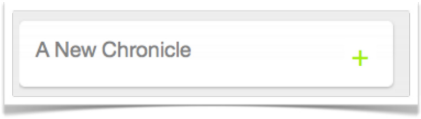
A window will pop-up for 1 second to indicate if creation successes. Failed creation may due to false internet connection or failure system processing.



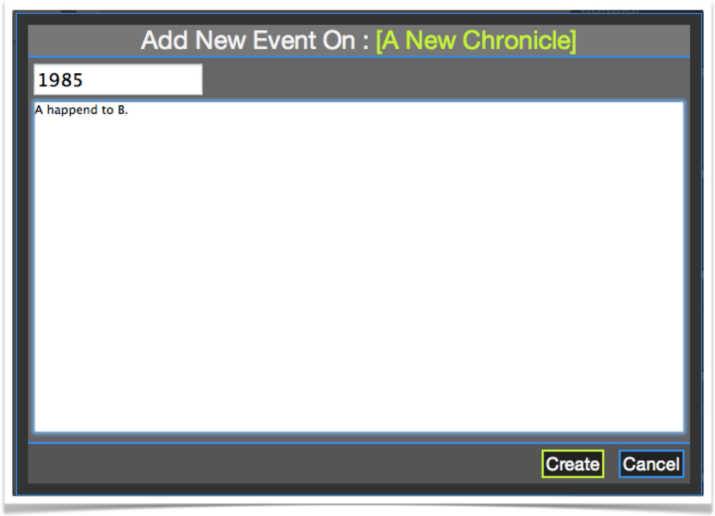
Step 3: New chronicle will be show on the list in the right side-bar area. By click on it, contents of the new chronicle will be show on the left main display area. At the moment, its still a blank chronicle.

Figure 6.1: WeChronicle V1: Process to create a chronicle

Create a event in the in the chronicle

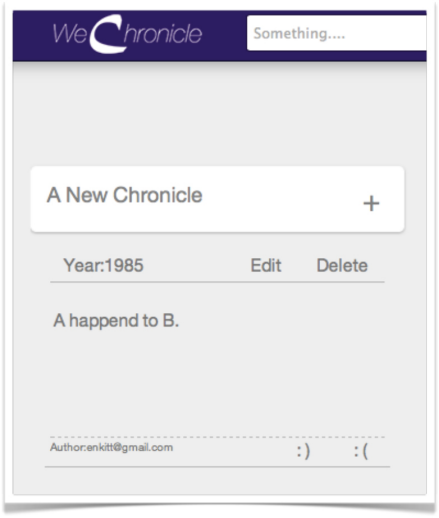


Step1: Click on the green cross on the chronicle title will allow new events to be added into the chronicle.



Step 2:
A pop-up window will appear to allow user input detail event of a chronicle. Those events will be show in a vertical timeline flow in chronological sequence.

Use need to enter year and contents of the event as a compulsory condition for the system.



In a successful case, event will be added to the chronicle and show beneath the title.

Figure 6.2: WeChronicle V1: Create a event in the chronicle

Compare Chronicles

Click on the right side navigator will turn on a chronicle on the main display area. Click it again will turn it off from the main display area. More than one chronicles can be turned on at the same time, and horizontally drag the mouse will enable scrolling of the canvas.

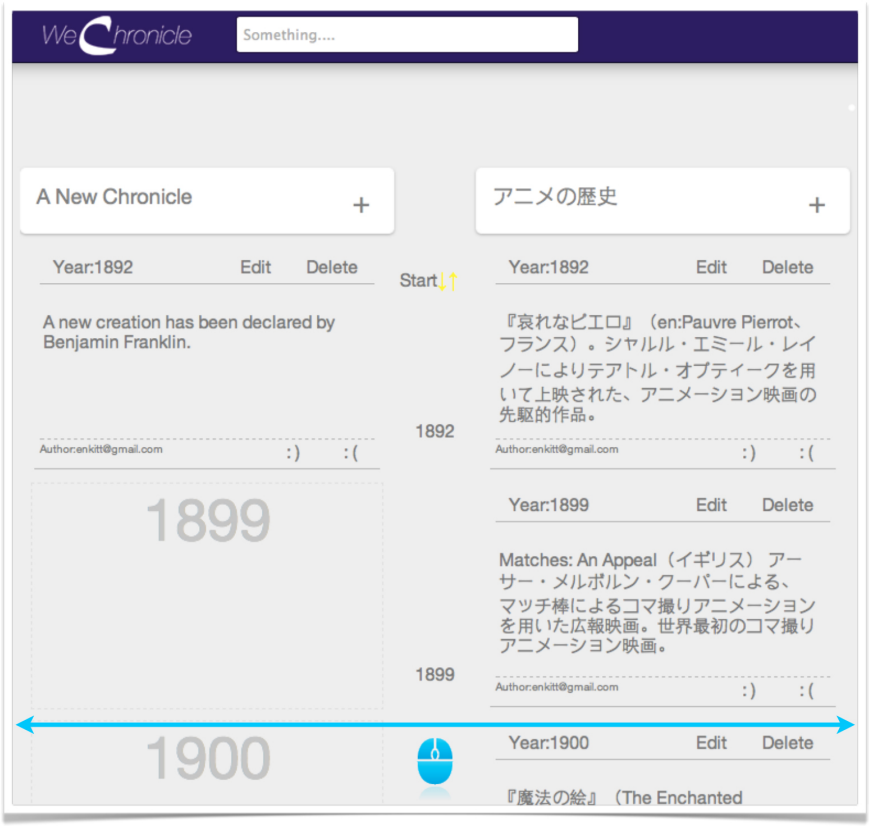
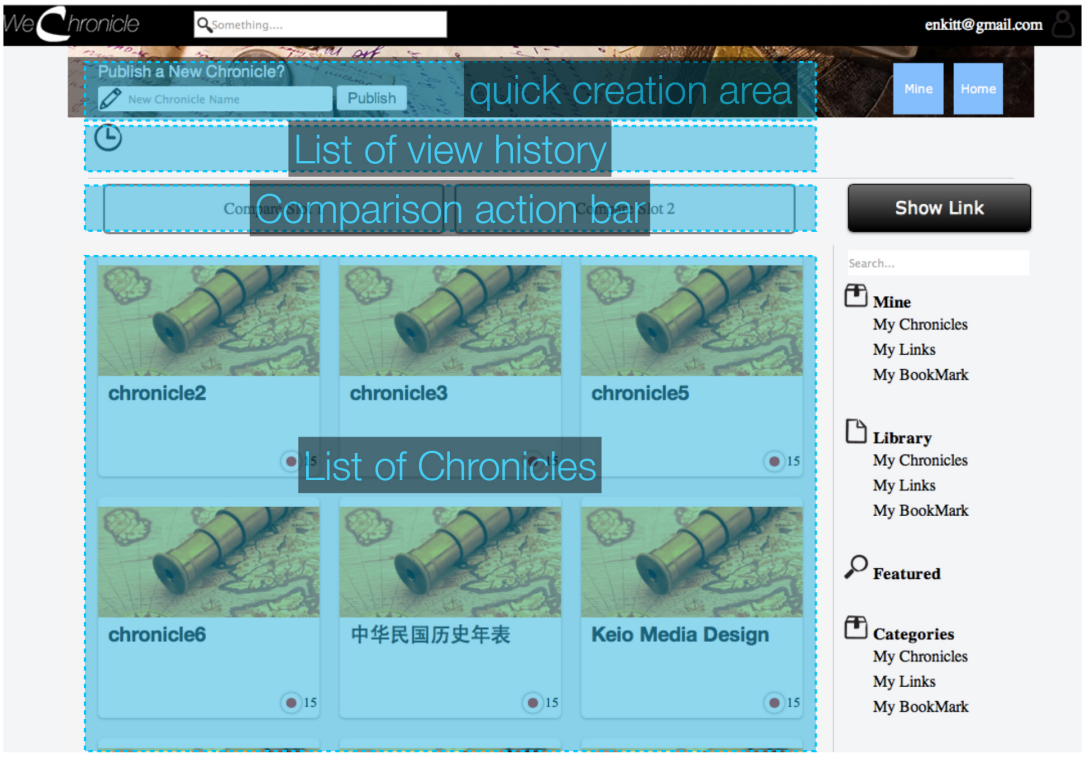


Figure 6.3: WeChronicle V1: Compare chronicles

WeChronicle Version 2.0

Page Structure



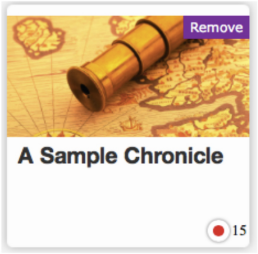
In version 2.0 homepage, there are three main functioning area.
Quick Creation Area allow user to quickly publish a chronicle by just entering name and press publish.
List of view history shows the icon of chronicles that has been visited by user in the current visit.
Comparison Action Bar allows user to drag icon from view history to the slot, and enter comparison view by just click show link button.
List of Chronicles lists all the chronicles user has been created.

Figure 6.4: WeChronicle V2: Page structure

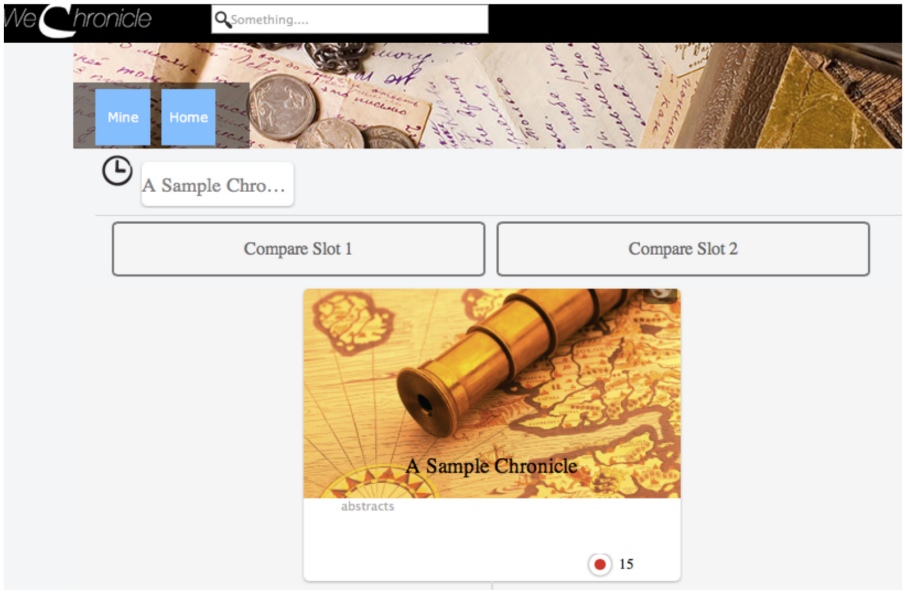
WeChronicle Version 2.0

Process to create a new chronicle

Step1: Enter chronicle name and press publish button in home page.



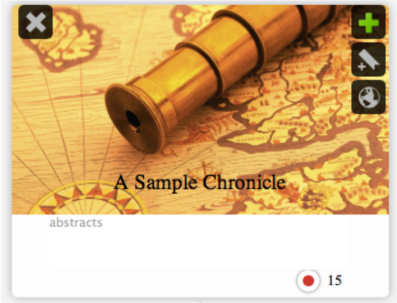
Step2: Find the new chronicle created in the end of the list, and click on the image to enter the chronicle view.



Here a new chronicle is created with no events in it.

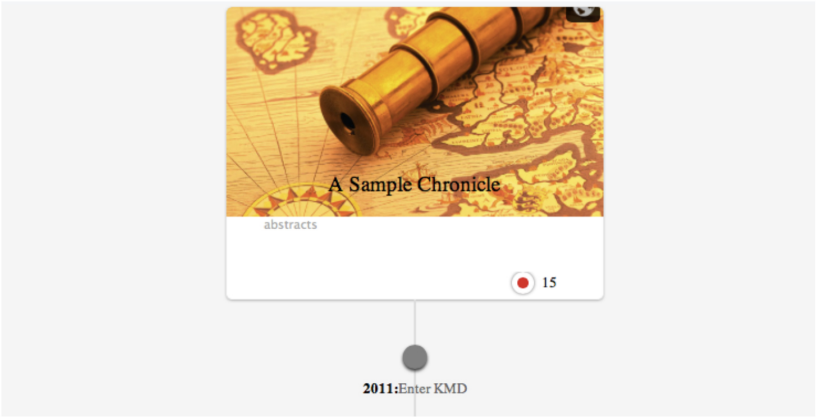
Figure 6.5: WeChronicle V2: Process to create a chronicle

Process to add event to a new chronicle



Step1: Hover on the title card to show the create button menu.

Step2: Fill out information on the top event entry bar, and click publish button.

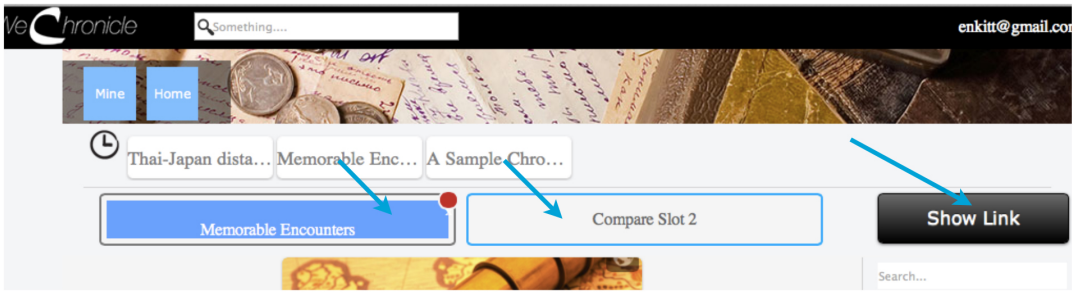


Congratulations, a new event has been added to the chronicle.

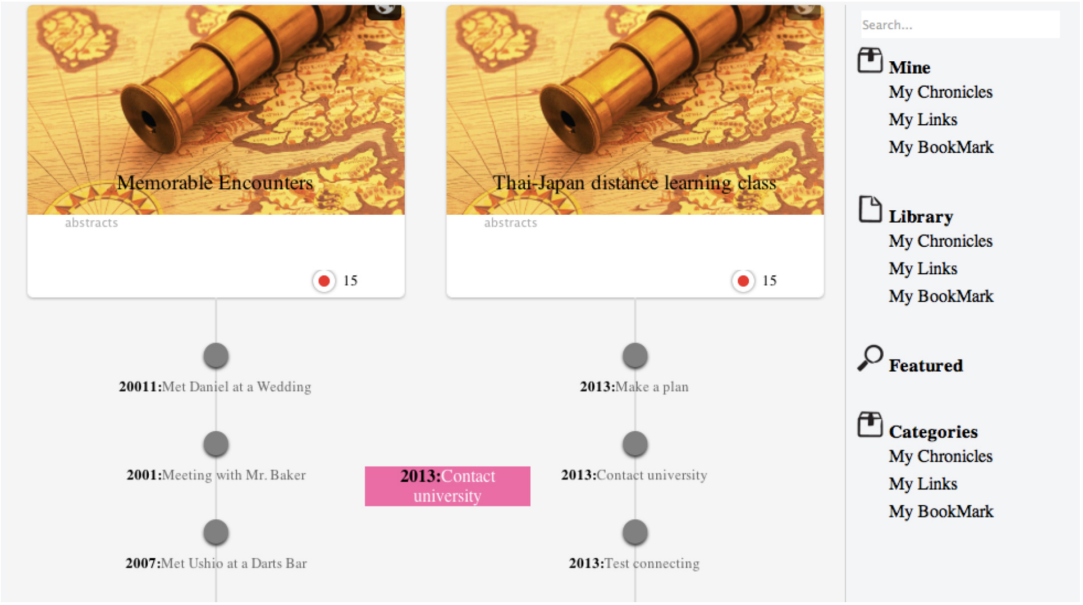
Figure 6.6: WeChronicle V2: Process to add event to a new chronicle

Compare two chronicle

In version 2.0, only two chronicles can be compared at the same time, in order to enhance connection feature.



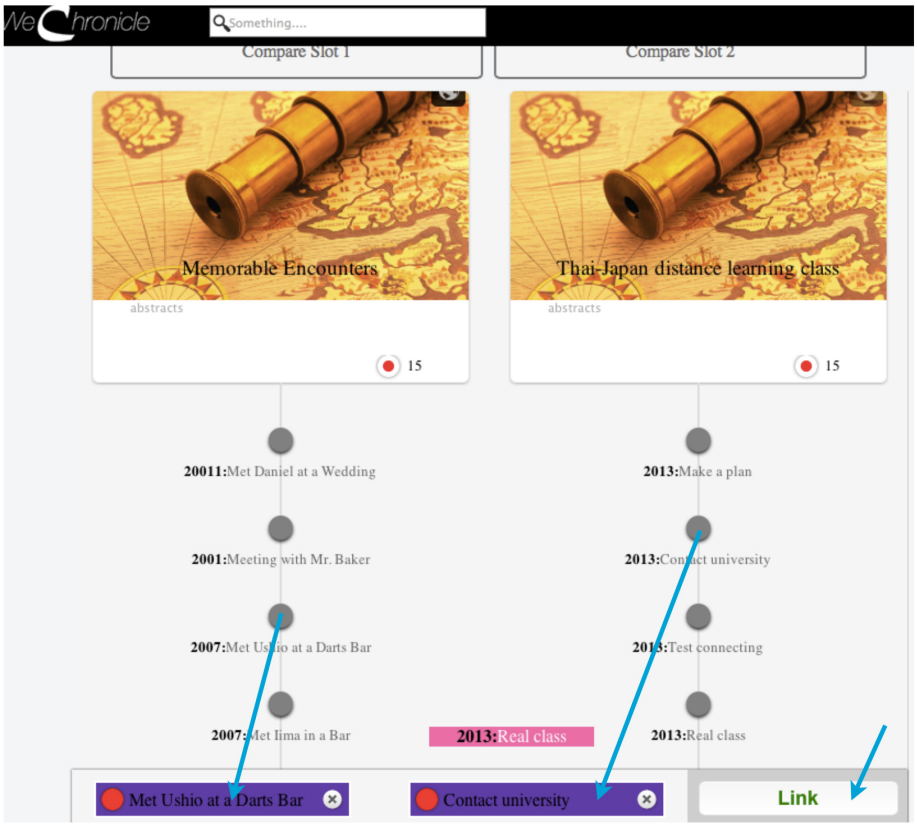
Drag two icons from historical bar to the compare slot 1 and 2 separately, and click show link button.



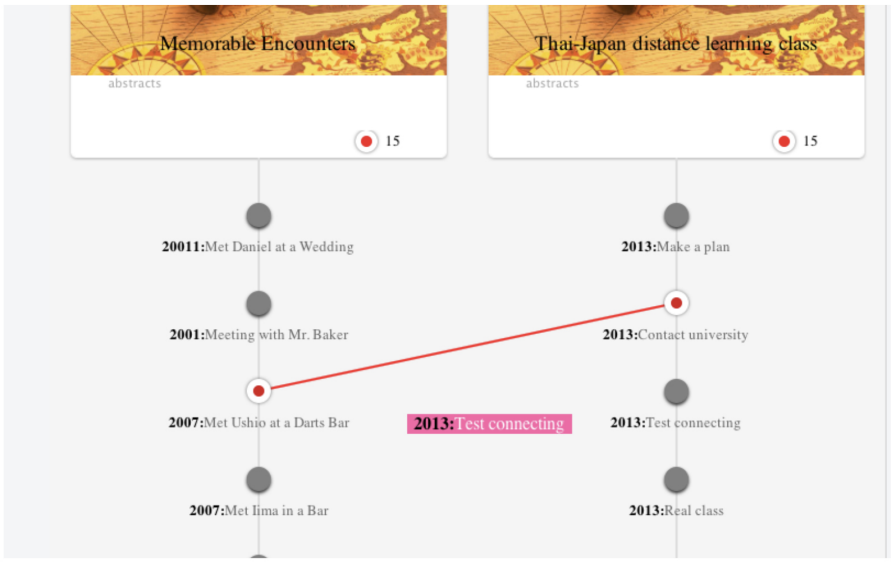
You are now in the comparison view.

Figure 6.7: WeChronicle V2: Compare two chronicles

Connect two events



Click the any two dot from the chronicles in comparative view perspectively, will load them into the connection slot. Click link button will create link on them.



Linkage comment function is not yet available in Version 2.0.

Figure 6.8: WeChronicle V2: Connect two events