

CHALMERS



Visualizing Literary History

First Step of designing a prototype for Litteraturbanken

Master of Science Thesis in Interaction Design

ER LUO

Department of Applied Information Technology
CHALMERS UNIVERSITY OF TECHNOLOGY
Gothenburg, Sweden, 2014
Report No. 2014:106
ISSN: 1651-4769

Visualizing Literary History - First Step of designing a prototype for Litteraturbanken

Er Luo

© ER LUO, 2014.

Report no 2014:106

ISSN: 1651-4769

Department of Applied Information Technology

CHALMERS UNIVERSITY OF TECHNOLOGY

P O Box 8718

SE – 402 75 Göteborg

Sweden

Telephone + 46 (0)31-772 4895

Göteborg, Sweden 2014

Visualizing Literary History - First Step of designing a prototype for Litteraturbanken

ER LUO

Department of Applied Information Technology

CHALMERS UNIVERSITY OF TECHNOLOGY

Abstract

This project is about visualizing the Swedish literary history. To be more precise, the project develops a simple visual timeline website prototype of the Swedish literary history with Swedish authors as a basic step for the timeline webpage of the Litteraturbanken website.

The project deals with how a timeline should be allocated, how different types of literary history and authors could be classified. During the development process, literature review has been made in order to set the basic guidelines for the timeline design. Different designs and tools of the visualization for timelines have been compared and analyzed based on discussion, web guidelines and visualization guidelines in order to inspire the design of this project. Different prototypes have then been made one after another for both internal comparing and continuous developing for this project.

Two half-structured one-on-one interviews and one non-structured one-on-one interview have been made for getting the feedback from the latest prototype. Open discussion has been kept going during the development process for improving the quality of the timeline design. HTML codes and image processing have been studied in order to make a digital prototype.

The final digital prototype is not a successful website design according to the interviewees' judgments. Therefore the best way of designing the timeline on the website stays uncertain after the finish of this project. The author's experience in being trapped into the guidelines and real data prototypes could be seen as a warning for other designers - keep guidelines and real data prototypes in mind, but never address them too much.

Keywords

Visualization, Literary History, Sweden, Timeline, Website

Content

Visualizing Literary History - First Step of designing a prototype for Litteraturbanken.....	1
Abstract.....	2
1. Introduction.....	4
1.1 Structure of this report.....	4
1.2 Background of Litteraturbanken website.....	4
1.2.1 Different versions of literary work and explaining function on the Litteraturbanken website.....	5
1.2.2 Display order and search bars of the Litteraturbanken website.....	5
1.3 Reason and aims for developing the timeline for Litteraturbanken.....	7
2. Theory.....	10
2.1 Timelines and visualization.....	10
2.2 Design Guidelines.....	12
2.3 Visualization theory.....	13
2.4 Reading psychology.....	14
2.5 Design Process.....	15
2.6 Collecting Requirements and Reflections.....	17
3. Survey of timeline in literary history.....	19
3.1 British Literature History.....	19
3.2 Brief Timeline of American Literature and Events: Pre-1620 to 1920.....	21
3.2 The American Novel.....	22
4. Methodology.....	25
4.1 Technological solution.....	25
4.2 Visualization.....	27
4.3 Prototypes and resolution.....	28
5. Time plan.....	29
6. Process.....	30
6.1 Preparations for developing the project.....	30
6.2 First Iteration – basic structure of the prototype.....	31
6.3 Second Iteration - detailed design for the first Iteration of the prototype.....	35
6.4 Third Iteration - Combine the data with the design concept.....	40
6.5 Development of prototypes and research questions.....	50
7. Result.....	52
7.1 Interview with Designer working at Chalmers University.....	52
7.2 Interview with Editor working for Litteraturbanken.....	54
7.3 Interview with PHD student studying at Göteborg University.....	57
8. Discussion.....	58
9. Conclusion.....	61
9.1 Future work.....	63
References.....	64
Appendixes.....	66

1. Introduction

1.1 Structure of this report

The structure of this report is a little bit different from other reports. The result section uses interviewees' comments about the final prototype instead of the final prototype that some other reports might use because the prototypes developed during the developing process could not be completed due to the technological problem.

1.2 Background of Litteraturbanken website

Litteraturbanken is a website that designed for general public, students, teachers as well as scholars. It co-operates with many other organizations such as “Swedish Academy, the Royal Library of Sweden, the Royal Swedish Academy of Letters, History and Antiquities, the Language Bank of the University of Gothenburg, the Swedish Society for Belles Lettres, and the Society of Swedish Literature in Finland according to its introduction page” (Litteraturbanken The Swedish Literature Bank, 2014).

Litteraturbanken provides Swedish classics in digital versions. It provides target users with the information for different literary work from Sweden together with the information for neglected authors and genres in Sweden. It establishes “a set of ‘minor classics’ alongside the canonical works” (Litteraturbanken The Swedish Literature Bank, 2014). Classics like C.J.L. Almqvist, Selma Lagerlöf, August Strindberg as well as “a wealth of less renowned yet equally interesting authors waiting for the users’ attention” are focused on by Litteraturbanken (Litteraturbanken The Swedish Literature Bank, 2014).

Different formats such as the facsimiles of the original edition, PDF files or EPUB files of the literary works are provided on this website. Therefore the users could search for their target works and then select the formats they want to read on the website.

Overall, Litteraturbanken could be seen as a kind of classic e-library that users could search for different genres of Swedish authors and Swedish literary work they are interested through this website.

1.2.1 Different versions of literary work and explaining function on the Litteraturbanken website

Typically, the Litteraturbanken website offers information about the authors and works such as simple epitome for the selected author, important work written by this specific author and publishing time of the specific work etc. Users could search for the typical author or work with the help of a search function through the search bars on this website as Figure 3 shows. Users could also select E-text, E-pub and facsimile provided after the literary work as Figure 1 and Figure 2 show to decide whether they want to read the content of this literary work in text, whether they want to download the special work or whether they want to read the scanned version according to their requirements.

What's more, Litteraturbanken provides two external links: SAOB¹ and Dalin² together with a special explanation bar for explaining some uncommon vocabulary or words for users to understand. Users could search for these particular words through these external websites. Or users could also simply type in words they do not know into the explanation bar to get a mini pop-up window for the explanation of this special word.

1.2.2 Display order and search bars of the Litteraturbanken website

Litteraturbanken is a website that aims at introducing the Swedish authors and their work to its users. On this website, users could scan authors as well as literary work through different order under the "Författare" title as Figure 1 shows and "Titlar" title as Figure 2 shows³, and they could also search for specific authors or work according to their requirements with the help of searching boxes on the web pages as Figure 3 shows.

¹ Dictionary of the Swedish academy

² Swedish dictionary of 19th century language

³ For detailed information, please try this function on web pages <http://litteraturbanken.se/#!/forfattare> and <http://litteraturbanken.se/#!/titlar>.

Författare

Titlar

Epub-filer

Presentationer

Aktuellt

Rättigheter

Om LB

In English

Kontakt

Hjälp

Statistik

LB:s skola

Sök i verk

Författare

Clicked button
would change
into gray color

Sök efter författare:

(Lämna rutan tom för att visa alla)

Decide the order
according to the
alphabetical
order of the
names of
authors.

Allocate the display order
of the authors and works

Decide the
authors' order
relying on the
years/time.

SAOB ::: Dalin

Slå i Svensk ordbok

A B C D E
F G H I J
K L M N O
P Q R S T
U V W X Y
Z Å Ä Ö

Det här är en lista
över de

GAASEN, Elisabeth	f. 1935
ADAM AV BREMEN	d. 1095
ADELBORG, Ottilia	1855–1936
ADLERBETH, Gudmund Jöran	1751–1818
ADOLFSSON, Eva	1942–2010
AFZELIUS, Arvid August	1785–1871
AFZELIUS, Nils	1894–1970
AGARDH, Carl Adolph	1785–1859
AGDLER, Theres Kessler	f. 1969
AGRELL, Alfild	1849–1923
AHLGREN, Ernst	1850–1888
AHNLUND, Knut	1923–2012
ALBERTSDÓTTIR, Sigríður	

::: se Benedictsson, Victoria

Figure 1: Authors under “Författare” in alphabetical order

Litteraturbanken Hem > titlar

Författare
Titlar
Epub-filer
Presentationer
Aktuellt
Rättigheter
Om LB
In English
Kontakt
Hjälp
Statistik
LB:s skola
Sök i verk

Alla författare
Alla mediatyper
Sök titlar

▲ ▼

Decide the order according to the alphabetical order of the names of work.

▲ ▼

Decide the works' order depending on the alphabetical order of the name of authors

SAOB ::: Dalin	Aftonstjärnan	Söderberg	etext ::: epub
Slå i Svensk ordbok	Aftontidsfördriv i pigkammarn	Anonym	faksimil
	Aftontidsfördriv i pigkammarn N:o 2	Anonym	faksimil
	Aftontidsfördriv i pigkammarn N:o 3	Anonym	faksimil
	Aftontidsfördriv i pigkammarn N:o 4	Anonym	faksimil
	Agneta Horns leverne	Horn	etext ::: epub
	Alice Brandt	Malling	etext ::: epub
	Almanach [ms]	Nicander	faksimil

A B C D E
F G H I J
K L M N O
P Q R S T
U V W X Y
Z Å Ä Ö

Figure 2: Works under “Titlar” in alphabetical order

Författare
Sök efter författare: (Lämna rutan tom för att visa alla)

Alla författare
Alla mediatyper
Sök titlar

Litteraturbankens epubfiler
Det här är en lista över de titlar som Litteraturbanken erbjuder i formatet epub – ett filformat som passar för de flesta mobila läsare, t. ex. läsplattor och avancerade mobiltelefoner. Listan på verk som finns tillgängliga i formatet kommer att utökas med tiden. Läs mer om epub på [hjälpssidan](#).
Alla författare Filttera

Sök i texten visa sökalternativ >>
Ord eller fras:
Visa 20 träffar per sida.

Figure 3: Different search bars on the website of Litteraturbanken

1.3 Reason and aims for developing the timeline for Litteraturbanken

Even though there are already so many functions on the Litteraturbanken website, the important literature timeline of these authors and works are still missing according to the staffs' opinion.

The head of Litteraturbanken website wants to create "...a web based way of displaying literary history, primarily Swedish, on a web site" (Malm, 2013). This website "should be possible to visualize historical development in a great number of ways, not least by placing different developments side by side" (Visualizing Literary History, 2013) as its proposal said.

However, as this website exists already, no big changes should be made to it. Thus how to insert the timeline of the authors and their works into this website unobtrusively and how to balance the inserted elements in order to make the timeline both sufficient and consistent for users would be the most important issues that would be discussed in this project.

Overall, this project aims at exploring the following questions:

How to display a timeline for literary work and authors on the Litteraturbanken website?

- *How to balance the concept design and the real data design?*
- *How to balance guidelines and the designers' own concepts during the project development process?*

These aspects would be discussed later in the report in order to answer the question of what is the best way of displaying timeline for literary work and authors on the website as mentioned before.

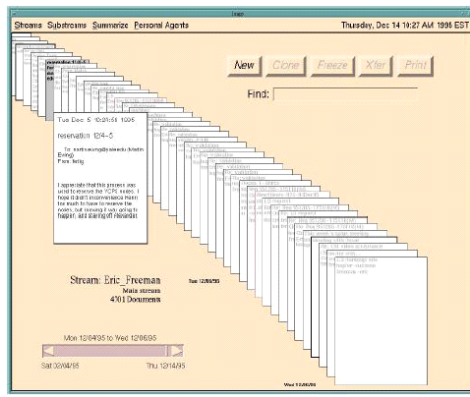
2. Theory

Before developing the prototype and deciding on a timeline tool which timeline tool for developing the prototype, different guidelines and theories related to the timeline design have been checked to set a basic guideline for this literature timeline as the following subsections show.

2.1 Timelines and visualization

According to “Visualization using Timelines” (Karam 1994), timeline could be seen as a linear, graphic tool which is used for presenting the events over time. It could be used for enhance comprehension because timeline can help people to understand patterns or connect related figures in a series or process (Hines, 2006).

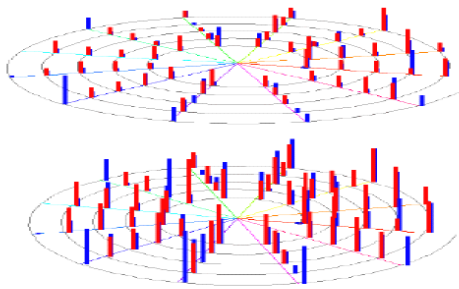
Timeline visualization techniques have been used for a long time (Hasan et al. 2013) Different display of the temporal data such as Lifestream interface (organizational metaphor), TimeScape desktop interface, Spiral visualization of serial data, Circle segmented techniques for multi-dimension data visualization etc. have been created as Figure 4 shows. Different models and tools like Continuum etc. have also been developed to create the timelines.



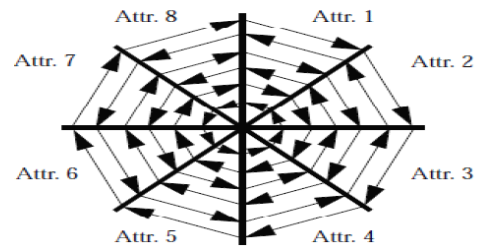
Organizational metaphor



TimeScape desktop interface



Spiral visualization of serial data



Circle segmented techniques

Figure 4: Different displays of the temporal data (Hasan et al. 2013)

There are several different models that could be used for creating the timelines. For example, Karam used the xtg (Timeline Display Generator for X-windows) prototype as a “timeline display generators based on a formal model of event history and the objectives of timeline visualization”(125). This prototype gives some basic ideas about how a timeline generator works through the process. Even though this literary project might not be as complex as the generator describes, this process helps designers to assume the possible actions that readers might take when they are using the timeline.

As mentioned by Karam, there are three major processes used in timeline display generation. They are event interpretation (a trace of events), activity rendering (display of derived information on timeline) and display presentation (the set of timelines). Thus how to trace the events and make the information be displayed properly for the users would be the most important things for the generation. At this time, not only the basic structure of the timeline, but also the detailed information provided by the timeline need to be taken into consideration carefully.

The focus of the timeline could be different from one another, too. The model mentioned previously would be more focused on the generation part, while another paper called “Enhancing Online Timeline Visualizations with Events and Images”

(Pandya, Mulye and Teoh 2011) is more focused on the explanation of “the contextual information of events which are related or cause changes in the data”. Even though the timeline created in this paper addresses the voting trend (a line graph which shows how much support different candidates got during several years) and the explaining part, the usage of the images and explaining texts could be a good example to be used later in this literary timeline. How to indicate the related work to users would be an important part in this literary project, too.

2.2 Design Guidelines

There are several guidelines that could be used for designing user interfaces and websites. For example, Mandel (1997) has defined three golden rules that could be used for designing the user interface for softwares, applications, websites etc..

Even though these rules seem to be based on a broad range, some detailed principles mentioned in “Reduce Users’ Memory Load”(13-22) and the “Make the Interface Consistent”(22-27) rules such as “relieve short-term memory”(14), “Promote Visual Clarity”(20-22), “Sustain the Context of Users’ Tasks”(23), “Keep Interaction Results the Same”(26-27), “Provide Aesthetic Appeal and Integrity”(27), “Encourage Exploration”(27) etc. are both important in design as well as in visualization.

According to both Ware (2012) and Mandel, the short term memory of human beings is quite limited. Thus how much information should be displayed on the website need to be carefully considered. Mandel’s 7 plus/minus 2 theory makes optimal menu design typically has about 7 chunks of related items (Nielsen 2000). However, at the same time, he also addressed that the 7 plus/minus 2 model might be different when navigating on the web. Thus how the model should be applied on the website still need to be considered.

Nielsen also described some rules about the use of the colors and images on the website. According to him, the colors for the background and texts should always be “consistent” in some way. That means if the background color changed, the texts might need to be changed also in case of being mixed with the new background color. The images displayed on the website should fit the window size, and the designers also need to take care of the resolution of the images so that they won’t loss quality due to the different sizes of browsers or screens.

Besides the guidelines mentioned above, there are still some other guidelines that might help in web design, too. However, some of these guidelines are more focused on how to make website credible and reliable (Marshall and Fogg 2001). Some other guidelines are more focused on the URL part of the website (Tauscher and Greenberg 1997). Thus the guidelines such as “Avoid overly commercial elements on a Web

site”(67), “Avoid the pitfalls of amateurism”(67-68) from Marshall etc. and the “A selectable history list of the previous 6-10 URLs visited provide a reasonable set of candidates for reuse”(133) guideline etc. from Tauscher and Greenberg are not so useful in helping design for the non-commercial timeline website.

However, guidelines such as “‘Make Web sites easy to use’(67), ‘include markers of expertise’(67), ‘Tailor the user experience’(67)” from Marshall, “‘Maintain records of URLs visited and allow users to recall previous URLs from those records’(132), ‘It should be cheaper, in terms of physical and cognitive activity, for users to recall URLs from a history mechanism than to navigate to them via other methods’(132)” from Tauscher and Greenberg are good guidelines that should be kept in mind when designing for the website, as these guidelines might be able to increase the quality of the website.

2.3 Visualization theory

Visualization theory is an important part in web design. What color should be used for the background and texts; what structure should be used for the website; How could the important elements be displayed on the website et cetera are all related to the visualization theory. Thus Ware’s theory and many concepts mentioned in his book *Information visualization* would be applied in this project.

The contrast color would be one of the good concepts that could be used for the background and texts. According to Ware, contrast color is two colors that could be seen as “opponents” with each other. The contrast color is good to be used because they are more likely to be identified according to their differences. Thus apply the contrast color to the background and texts would help the users read the texts more easily, which is good from the visualization aspect.

One other important concept mentioned by Ware in his book is called pre-attentive processing. This could be seen as how the brain works to make the target information easier to be found. According to Ware, pre-attentive processing could be classified into different categories based on form, color, motion, and spatial position. According to the examples shown in the background part, the form, color and motion pre-attentive processing are used by all or at least one of the example websites. And these pre-attentive processing does work well in helping users identifying the target information in some way. Therefore, using one or several pre-attentive processing in this timeline design project might be a good idea for addressing some of the important information for the readers.

In addition, Ware also mentions that the dynamic moving patterns are more likely to be caught by the human eye. Thus a good idea for showing the selected item for the users could be showing the pop-up window on the website once the users moving

their cursors onto the target items as showing in previous website examples. The color of the selected item should also be changed in order to indicate which item is selected by the users.

Whether to use some icons on the website and which icons should be used on the website are also necessary to be considered according to Ware. According to him, images are more likely to be identified by people, thus using icons as some kind of remind hints might be useful. However, due to the cultural conflicts etc., the meaning of the same icon could vary a lot according to Ware. Thus whether to choose the icons to represent something special or just use the texts to directly show their meanings need to be compared in order to get a better solution.

2.4 Reading psychology

Reading psychology is also an interesting topic to learn before the designing of the website. As these psychologies might have influence on the readers' reading order as well as what part the readers would focus on, on the website. Thus the structure of the website should be arranged carefully with the help of the reading habit theory in order to "navigate" the readers so that the most important part of the timeline would be noticed by readers easily.

One important thing mentioned in "The Psychology of Reading" book (Rayner and Pollatsek 1989) is the human information-processing system. Figure 5 is a simple flow chart that shows a typical model of how the information-processing system works for humans. As mentioned by Rayner and Pollatsek, the best way to describe the human information-processing system is rather controversial. However, this model could give the readers some basic ideas about how people could process the information. Thus how the following reading models would work for people would be more easily to understand with the help of this figure.

Rayner and Pollatsek have listed three basic models of reading in their book. According to them, the bottom-up, top-down and interactive models are somehow representative. As they are "...characteristic not only of the reading process but of the descriptions of most of the tasks and phenomena that cognitive psychologists typically investigate."(25) These three models are somehow all based on the human-processing system. As Rayner and Pollatsek mentioned, the bottom-up model address "most information flows in a passive manner through the human information-processing system."(21) Because in this model, the flow of information goes quickly and the knowledge stored in the memory would have little impact on the processing part. The top-down model could be seen as an opposite way as in this case, the flow of information would be slow due to different reasons and the memory load might affect the processing part.

Even though the authors admitted the importance of the models and ensure that these models could be seen as some kind of inspiration for designers to design the structures of the books etc.. There is no evidence which model would fit this timeline project better. The structure of the website would be designed based on several different things. The web design guidelines, the visualization guidelines and the reading psychology et cetera.

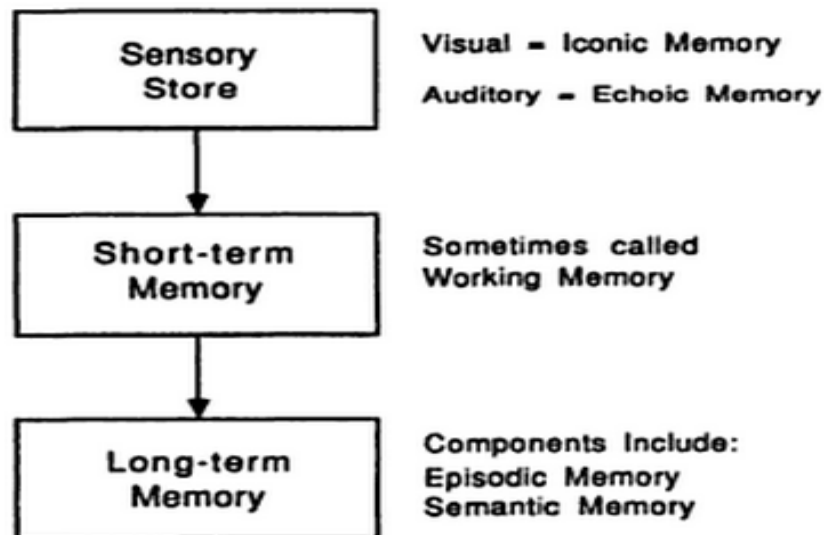


Figure 5:
An
overview of the human information-processing system (Rayner and Pollatsek 1989)

2.5 Design Process

There are several design processes that could be used when designing for the timeline website. For almost all of the design processes, there are six phases in the whole process. They are analysis, requirements specification, design, implementation, testing and integration and operation and maintenance phases.

1. In analysis phases, designers and programmers should be involved in and try to set the goal they would like to achieve;
2. In requirements specification phase, users, designers and programmers should be involved so that different kinds of requirements are going to be collected and classified to help modify and improve the goal;
3. In design process, designers try to set up the design prototypes;
4. In implementation process, designers try to transfer their design prototypes to programmers, and programmers then try to implement these prototypes and make them realistic;

5. In testing phase, users are involved again to try to test the designed products and find out some bugs or something that they are not satisfied with, designers and programmers then try to solve all these bugs and parts that users are not satisfied with;
6. In operation and maintenance phases, programmers and designers try to maintain the stability of the system or product so that no more bugs will occur.

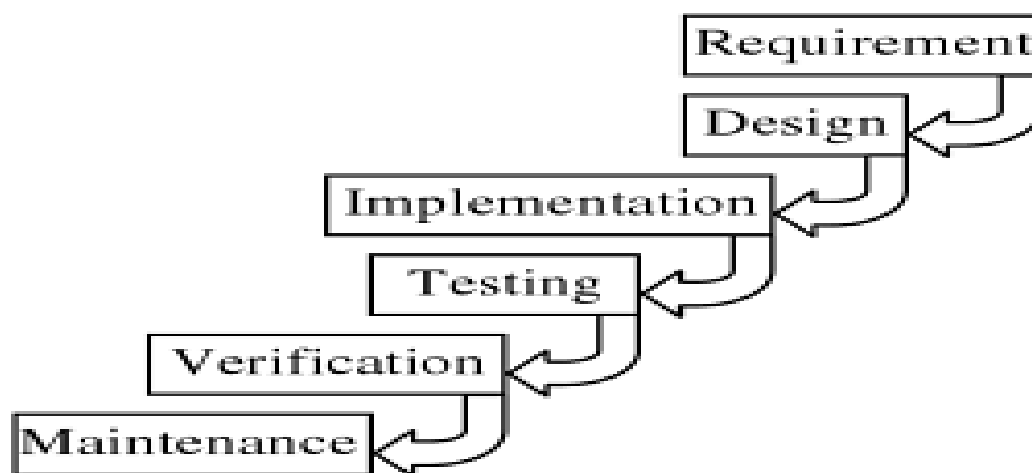


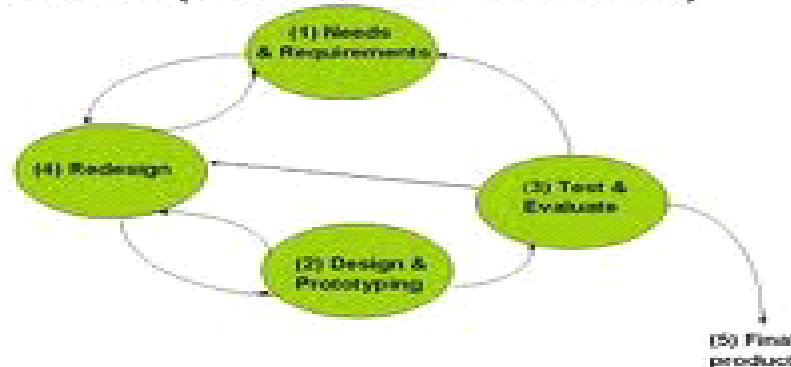
Figure 6: waterfall model (Yang etc. 2009)

Even though these steps are basically the same for different design processes, when and where to apply these steps is different. For example, the waterfall model shown in Figure 6 describes how the design process uses these steps during the design. As the figure presents, these 6 steps would be used one after another. Thus there would be no chance for going back and fixing the bugs after each of the steps. Thus if there is something missing in the design process, there would be no chance for re-doing it, which is not a good way to do website design.

Another design model could be the interaction design model. As shown from Figure 7, these steps would “interact” with each other. The users could easily jump backward and forward for fixing or improving. Thus the quality of the product could be improved, but it is rather easy for the designers to lose their focus and it is also easy for the designers to forget their purpose during this design process.

Besides the models mentioned above, there are other design process models that could

A Simple Interaction Design Model (Preece *et al* 2002)



be used in the design process. All of these processes have their pros and cons. Thus which model fits this project best is difficult to know. However, due to the quality requirement, the interaction design model would hopefully be the model that is going to be put into use.

Figure 7: Simple interaction design model (Rogers, Sharp and Preece 2011)

2.6 Collecting Requirements and Reflections

One important process for the design process is collecting the requirements and reflections from users. Ideally, this process is going to be used throughout the design process. Therefore, how to collect the user requirements and reflections needs to be taken into consideration. There are a lot of methods for collecting the users requirements and reflections such as Stakeholder analysis, User cost-benefit analysis, User requirements interview, Focus groups, Personas, Scenarios of use, Existing system/competitor analysis, Task/function mapping, Allocation of function and User, usability and organizational requirements etc. (Methods check list 2013).

The customer interview and Usability test might be good methods for collecting the requirements and reflections for this project (Courage and Baxter 2005). Customer interview could help designers to identify the requirements from the users. Usability test would be more focused on users and this test tries to collect data to identify what element would be a preference in the design process (Rubin and Chisnell 2008). Even though these two methods need some analysis to identify the final user opinions on the subject afterwards, both of them could be used in earlier studies.

The interview could be used for gathering detailed user requirements as well as for helping designers understand what the interviewees' opinions on the designed prototypes are. Moreover, interviews could also help designers to understand and explore their design target more deeply in the requirement study (earlier studies) from Courage and Baxter. For the Usability test, it is a way which is focused on users' needs for particular products. According to Wiklund, Kendler and Strohlic (Wiklund, Kendler and Strohlic 2010), they used the usability test to evaluate whether the user's requirements were met with the certain medicine device. This usability test could be seen as a good example for the evaluation process after the website has been designed.

Importantly, the requirements collecting methods like Focus groups mentioned above is not sufficient to be used in this project during the development process because a lot of time needs to be spent on the preparation work for such kinds of methods. Therefore, in order to speed up the development of the project, the author instead mostly used the open discussion for gathering the user requirements. Interview, however, was used a lot at the evaluation process of this project for collecting the users' reflections on the designed prototype since this interview method helps author understand how the prototype work for the users and what are the users' opinions on the final designed prototype as show in following result section.

3. Survey of timeline in literary history

As previously stated, there have already been different kinds of timelines developed for displaying different topics such as literary history, author history, important events that were occurred during the history etc. It is good to analyze and evaluate these timelines as described below so that the designers could be inspired somehow with the help of these examples.

Among all these timelines, British Literature History⁴, Brief Timeline of American Literature and Events: Pre-1620 to 1920⁵ and The American Novel⁶ are the three basic timelines that have been designed for displaying the literary work and event history for Britain or America. These websites display the events or/and literary work depending only on the time even though the design of their visualization are somehow different from each other. Below follow a detailed analysis of these timelines.

3.1 British Literature History

The British Literature History displays all its information on the same page. It displays literary works, literary authors as well as important literary periods of England on the timeline. Generally, this timeline contains the images and texts of the authors and their works. It provides texts for literary periods of England on the timeline, too. Detailed introductions to the authors, works and literary periods, however, are displayed on the same web page below the timeline frame as shown in Figure 9.

This website is convenient in some way as the users do not need to switch back and forward between different web pages since all the information is displayed on one page. However, due to the size of the browser, the users usually could only see the timeline. The detailed information displayed below the timeline is easy to ignore if the users do not scroll down, which is not good from a visualization point of view.

The space arranged for the display of the timeline is also problematic. The images on the top of the timeline occupy almost the same space as the texts as Figure 8 shows, but in fact the detailed information displayed for these images could be included inside the texts as the texts and the images are exactly the same as the detailed information displayed from the selected texts. The different eras in the British History show different information from the pictures and the texts, while it only occupies very little space which could easily be ignored by users.

⁴ <http://timerime.com/en/timeline/779360/British+Literature+History>, 2010

⁵ <http://public.wsu.edu/~campbelld/amlit>

⁶ <http://www.pbs.org/wnet/americanovel/index.html>, Mar. 2007

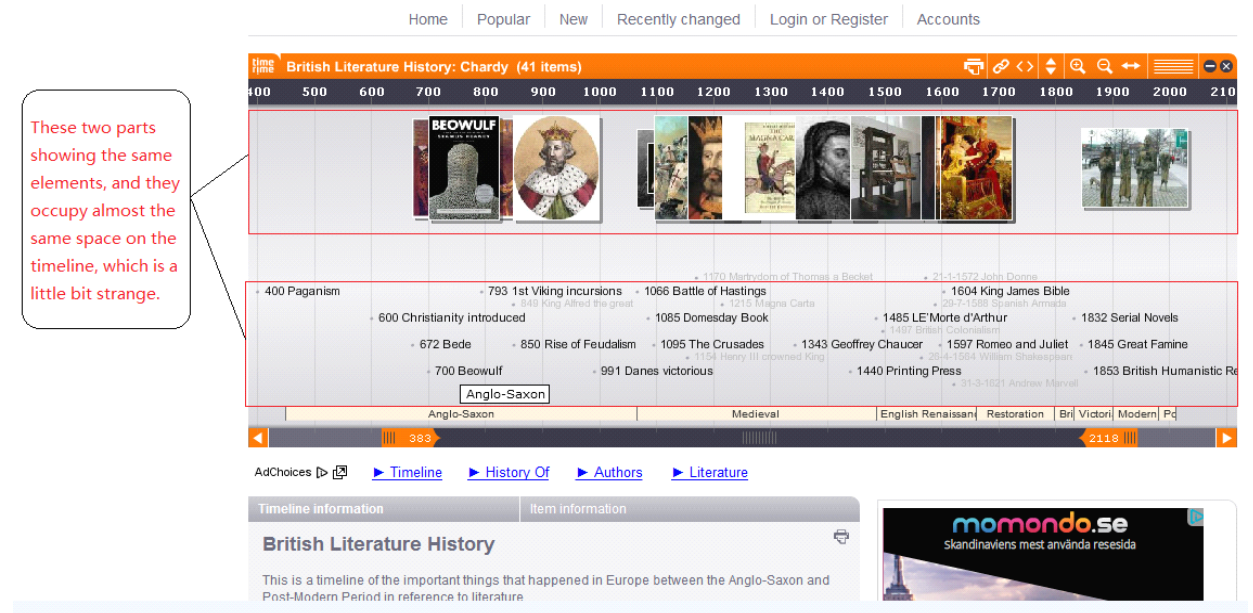


Figure 8: The occupy space for texts and images of British Literature History

Besides the structure of this British timeline, the colors used on this webpage are also confusing in some way. It is good that the color of the selected events/ literary work/ people in the timeline would change to another color. Because the change of color could be seen as a kind of pre-attentive processing: which is a good way to help search for information (Ware 2012). However, this color change for the search identification conflict with the frame color around it. Thus the users might be disturbed the frame color rather than focus on the selected objects. The colors used for the background and the colors for some texts inside the timeline are nearly the same on the screen, thus it is rather hard for users to see these special events if they don't move their mouse over these texts. The reasons why the events/literary work/people have been assigned with different colors are confusing, since there is no clue about why some of events/literary work/people are assigned with gray while others are assigned with black. The zoom in/out bar is easy to be misused as the scrolling bar and the zoom bar are placed on the same place with almost identical colors, too.

Even though there are problem with this timeline, it is easy to search for the targeted information. And this part of the website is well designed in accordance with Ware's recommendation. In this timeline, the designers have designed the color with pre-attentive processing in mind and the pre-attentive processing is addressed in order to make the selected target more obvious for users to see. Furthermore, the display for the time period for the events/literary work/people also works, since a black triangle with orange line will be displayed exactly below the timeline in order to show when the selected events/literary work/people start and when they end in the timeline.

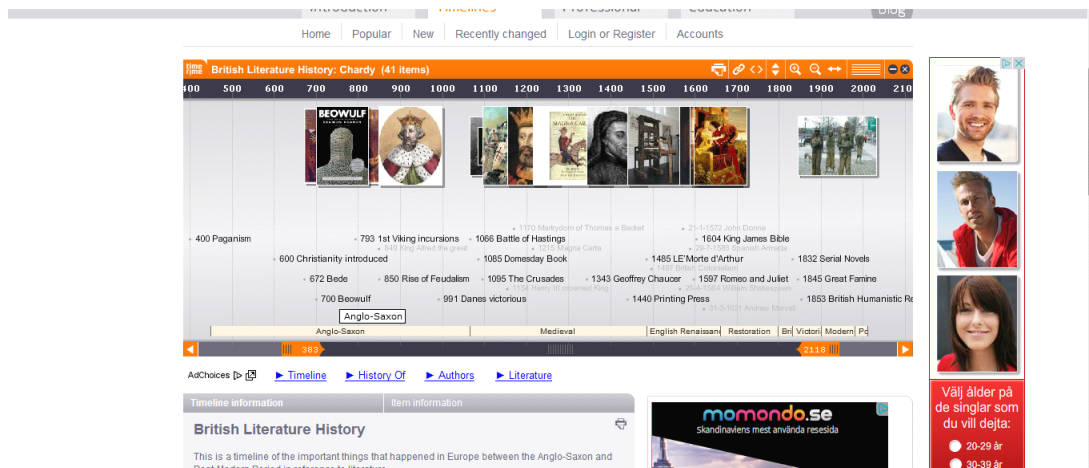


Figure 9: An overview of the main page of British Literature History

3.2 Brief Timeline of American Literature and Events: Pre-1620 to 1920

Brief Timeline of American Literature and Events: Pre-1620 to 1920 has a similar format as the Wikipedia as shown in Figure 10. This website separates the timeline into 17 short time periods on its home page and then lists Political and Social History events together with Literature events in tables during this time period after users clicking on the certain time period. Besides the two kinds of events mentioned above, this website also provides 4 clickable time periods for Literature, Music, and Movies from 1890s to 1920s in tables as additional information for users.

This website uses hyperlinks a lot. The colors used in this webpage are good, because the texts with the same colors basically have the same property: normal texts are assigned with black; hyperlinks are assigned with blue; the hyperlinks that have been clicked are assigned with purple.

In addition, the structure of the display of the information for other historical events and literary work is also very logical. Different periods of time have been separated by the table, and the detailed information for the history/literary work is also displayed in the form according to their occurring time.

However, since this website uses both its own database as well as a lot of other websites for its hyperlinks, the style of the website changes a lot. It would be confusing for the users because they might not know whether they are on another website or whether they are still on this website. The change of the style also destroys the consistency design guideline (Mandel 1997). The search function does not work sometimes and some of the hyperlinks link to out-of-date web pages. All these things

are problematic and need to be improved and fixed in order to provide better service for the users.

Additionally, the structure of the table on the main page needs to be improved. The title and the search function are inserted into this table, which is not consistent with the time period. The information displayed for the Literature, music and movies part could be separated into another table, the titles for the movie part and the history part should be placed somewhere else rather than in the same row or line as the time periods placed in the table.

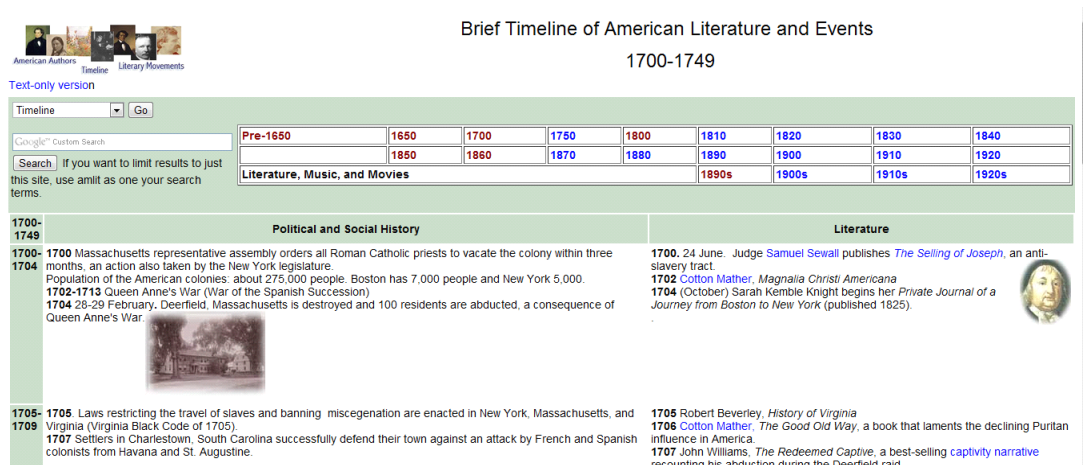


Figure 10: An overview of the detail page of Brief Timeline of American Literature and Events: Pre-1620 to 1920

3.2 The American Novel

The American Novel timeline displays movements, novels as well as events during the American literary history. This timeline is slightly different from the other two timelines mentioned above because it also includes three drop-down boxes for detailed selection for target groups on the top of timeline frame. What's more, the images for the novels and the introductions to the events would not be shown on the timeline until the users move their mouse over the certain text frames on the timeline. The general structure of the American Novel contains three drop-down boxes and texts for movements, novels and events as three different parts as shown in Figure 11.

The structure of The American Novel is good in general. It separates the different part of the timeline with the help of lines and frames. The drop down boxes and the display for the timeline are easy to be distinguished according to their frames. Different movements, novels and events are arranged vertically and they have been separated by lines. The time period has been designed horizontally. Dotted lines have been used for indicating the start time of the movements etc., which makes it easy for users to see the exact start time of the specific events. Additionally, the alignment of

the start and end of the frames are the same, which also promotes visual clarity according to Mandel.

The colors used by the The American Novel website are OK for users to read. Even though the green and gray are not contrast colors, the texts in the background are still easy to be identified. Additionally, the background color used for this American webpage is good for background (Johansson 2010). Moreover, the gradient background used in this website also makes the texts used for different events more easily to distinguish.

For searching the target information, this webpage uses pop-up images and texts, which is easy for the users to see as these pop-up things could be seen as dynamic. These dynamic things could be easily identified by people according to Ware.

The American Novel website could be seen as a mature webpage that is designed for the timeline. The organization and the colors used on this webpage are all follow the design guidelines as described above. There is still some improvement needed for this webpage. As this website also uses hyperlinks that link to both its own web pages and some other web pages, the consistency of the website is also destroyed in some way as mentioned previously. The detail pages display the novels etc. in random way rather than display the novel things according to their time. This could also be seen as a destruction of the consistency of the webpage because all other information displayed on the main webpage is allocated according to their occurring time.



Figure 11: An overview of the main page of The American Novel

All three timelines are simple timelines that are designed based on the time. There are also some other complex timelines that are designed based on both the time and space. The detailed information provided by this kind of timeline is somehow similar to the previous timeline. The only difference might be the location of the thing placed on the timeline would change due to their occurring places. Some people might feel the

information would be richer for them. However, the focus of the timeline shifts between time and space. Whether the designer should be more focused on the time or whether the space should be more focused or whether both time and space should be focused on need to be taken into consideration carefully. As short term memory was limited to about 7 things (Miller 1956), whether the space part would make the memory stick stays uncertain. Thus whether it is good for the timeline to contain both a space aspect and a time aspect stays uncertain, too.

4. Methodology

Possible methodologies related to this project have been considered. Technological solution such as how to set up the website; visualization solution like what colors could be used on this webpage and the resolution solution such as which data collection method could be used in this project etc. have been reviewed and are presented below even though they might not be used in the development process of this project.

4.1 Technological solution

The way of developing a website could be either using the existing website template, or developing the website style and then trying to apply for a domain for this website. The previous way is rather easy, as designer only needs to fill in different part into the template. However, the style and the functions might be limited since the change of the template would be somehow difficult.

Using Wix⁷ as an example, there are different models for different usages of the website. However, there is no web template perfectly matching the topic of this project. According to the amount of the templates, the designers need to dig deeply into almost all of these templates in order to find one that fits this project best. Designers also need to know how these web pages work in order to make the website work as they want. Since the templates all are “completed” in some way, the designers could change photos or frames easily once they get used to the web design page.

However, on the other hand, the “completed” template of the web pages also has some problems. As mentioned before, the designers could change the texts and the images quickly once they get used to this website. However, the basic structure would always be the same. It is easy for designers to be trapped into the given frame. Thus these templates might limit designer’s inspiration so that the final result might not be as good as what designers expect. Furthermore, many of the templates could not support inserting the searching function. Thus the problem of how to applying the search function for this project would also occur during the design process.

Developing the website by our own will give more freedom in designing the functions and style of the website, but how to upload it onto the internet might be a problem, then.

Designers could insert the target structure and the search function easily into the webpage once they are familiar with the website development process. Thus there

⁷ <http://www.wix.com/about/us>, 2014

would be no “limitation” for the designers’ inspiration. However, designers need to work hard on developing the different functions for the website and then combine these functions together. Thus the designing process is not going to be the “filling in” process that could be easily done as when designers choose to use the web design template.

Publishing the website onto the internet might be a problem after the whole design finished. Most of the websites need to be paid for if they are going to be published onto the internet. Even though there are some free websites that could be published onto the internet, the limitation for the usage of these websites is quite serious in some way. These websites pose some limitations on their use therefore most of time the developed web pages would be more likely to be a blog rather than a formal website.

Another aspect of developing the website might be how to allocate the information. Basically, the problem of how to arrange the information be arranged could also be solved in two ways. The website could either fetch the data from the database by SQL code or it could use the hard coded database.

The previous method might be difficult when the developer does not have so much programming knowledge about the database. That means previous learning for programming would be a must for developers. Thus if the amount of data is small, the search function may not worth the time it takes to learn how to make it.

The latter way is more suitable when the amount of data is small. This method is somewhat simpler compared to the previous method. As typing the data into the program could be seen as some kind of “re-doing” work rather than actually understand how to fetch the targeted item for some “other” places. However, this method might not be a good way when the amount of data is huge. When there is a huge amount of data, the data itself would occupy a lot of space and the other functions existing in the website might slow down for offering the space for the loading of the data.

The search function also needs to be considered as it is an important component in the web design. There are different ways of searching for the targeted items such as binary search, list search etc.. Which search method would be the best one for this project stays uncertain since this website prototype has not really come to the technical part in this project. Whether we should use the binary search, or whether we should use the list search or so on needs to be discussed and compared in the future if the prototype needs to be developed into real web pages.

4.2 Visualization

The main page of the website might only have title, timeline and search bar, according to Miller (1956), people could not remember too many things on one page, this website should only contain the most important elements on its page.

As this webpage is designed for the display of the Swedish literary history, a lot of information such as time of publication of the literary work, the author of the literary work, the publisher of the literary work, the publish place of the literary work etc. need to be displayed on its timeline. However, the designers could not display all of them both due to Miller's magic theory as well as because of the difficulty of searching for the detailed information. Thus the most important information such as publication date and the author of the literary work might be the only things that should be displayed on the timeline.

For time of publication of the literary work, there are still some potential problems that need to be solved. For example, some of the literary work was re-edited by some other persons after their publication date. Thus how to display the versions of these literary works is another componential problem that needs to be kept in mind. Whether it is good to use the colors to show the relation between these literary works, or whether it is good to use the dotted lines to show the relation between them or whether there are some other good methods to show the relations is going to be tested during the future development of the project.

In order to help users find the detailed information, once they click on the exact time, the work would either jump out dynamically or the color of the selected item would change. However, taking color blindness into account, currently the dynamic way might be a preference. Moreover, in order to keep consistency for this website, hyperlinks that link to external websites are not suggested to be used in this project. The detailed page would basically have the same structure as the main page. Some introduction for these literary works might be shown on the detailed page if this kind of information could be collected easily later during the development of the project.

The basic color for this website might be black and white or blue and yellow, as they are contrast colors according to Johansson (1998-2010). Using these colors for presenting the information might be easy for readers to read the texts as mentioned by Johansson. The latter contrast colors would be a preference as these colors also represent the colors for Sweden. Typically, the important texts might be assigned with bigger sizes in order to make them attract people's attention more easily.

4.3 Prototypes and resolution

This project used the interaction design model during the develop process, as designers would like to jump forward and backward to fix the new problems and improve the quality of this project continuously. Typically, during the whole development of the project, different prototypes such as paper prototypes and digital prototypes such as Fluid UI web page, Photoshop, Microsoft SharePoint etc. were used a lot for better communications between participants and for the easy change/fix/improvement of the design itself.

There are many methods that could be applied for the resolution of the project. According to Methods check list, All the methods such as Participatory evaluation, Assisted evaluation, Heuristic or expert evaluation, Controlled user testing, Satisfaction questionnaires, Assessing cognitive workload, Critical incidents and Post-experience interviews could be used for testing the project. Among all these methods, interviews, especially the expert interview and end-user interview, might be the preferred methods to apply during the whole process of the website development.

Since it is highly possible for the designers to collect the feedbacks by using these methods, it would be more easy for the designers to analysis these data in order to improve this design continuously. However, during the actual development process, the author mostly used open discussions before the prototype finalized due to the time limitation. The development for the digital prototype started at the middle of the project after the basic elements for the website had been decided. After the website had been finished, interviews were finally used in order to get feedbacks from users to help the author analyze and reflect on her own design.

5. Time plan

Time planning schedule has been made before the implementation of this project. The ideal time plan shows as the following schedule. Unfortunately, due to the illness of the author, the appointment time for the interviews and some other reasons, the real time exceeding the deadline of this ideal planning a lot.

During the first two weeks, the focus of the process is on the literature review. Literature that relates to the project such as materials about visualization, materials about how to design the websites and materials about the reading psychology etc. will be collected and scanned in order to get some background knowledge about how to design the timeline for the website. Some designed timelines will also be checked and analyzed at the same time in order to give some inspiration for this project.

Some basic designs of the structure of this website have been designed with the help of Balsamiq Mockups⁸ and paper prototypes for latter discussion in the project. Some detailed solutions for this design such as how to show readers about the work that related with each other etc. have been considered. These solutions would also be discussed latter during the meeting.

The design of the website is going to be done continuously. Open discussion and perhaps with some interviews for the regular improvement of the timeline would be done at the same time during the design process. From the 5th week of this project, the website of the timeline is going to be set up thus hopefully the design would be applied onto the website. From week 5 to week 12, the work would be more related to the design itself as well as how to develop a website with the search function. At this time, not only the design part but also the practical part about developing the website would be the topics for this project. Resolution for the developed website would be done within around 2 weeks after week 12 when the website design has been finished. After the resolution, something about the design of this website would be re-done in order to make this website better. This improvement would be done within around 1 or 2 weeks.

The report of this project would be documented continuously. After the improvement of the final design of this project, the thesis for this project is going to be finished within around 1 to 2 weeks. The preparation for the presentation of this project would be done at the same time as the writing process of this project.

⁸ <http://balsamiq.com/products/mockups/>, 2014

6. Process

6.1 Preparations for developing the project

Before doing this project, the author has checked several design guidelines such as design guidelines, visualization theory, reading psychology etc. as show in the theory section in order to set the basic guidelines for the design of this project. Different types of timelines have been reviewed and analyzed with the help of these guidelines for inspiring the author as show in previous section, too.

Different kinds of timeline displays such as displaying the timeline itself with the help of Microsoft excel tool, using timeline chart maker tool to display the chart of timeline or creating the linear timeline chart with the help of image editor tool have been taken into consideration. Different timeline tools such as Microsoft Office Excel 2003, SmartDraw, Tiki-toki.com website, Timeline Template, Project timeline, Timeline Maker Professional and Timeglider website etc. have been tried to store the data and display the timeline for giving the author some general impression on the basic structure of the data retained in the Litteraturbanken website.

Unfortunately, most of the tools do not work well for the display of timeline. Several problems were encountered since Microsoft Office Excel 2003 does not work for the timeline due to the mass of data and the ambiguous time of the provided data. Timeline chart maker tool such as SmartDraw could not be installed. Tiki-toki.com website works for time point, but it fails to apply long time life scale for the authors. Timeline Template needs to be paid. The version of excel is out-of-date and could not be used for creating the right chart. Project timeline could be used but the theme is different thus how to allocate the authors and works would not be an easy thing. Last but not least, linear timeline chart could not be created because the amount of time goes over the limitation of the file.

The author finally decided to use the Timeglider website as a kind of help tool to display the information of the authors and works for the timeline website since it has functions on both displaying the authors' lifetimes with a time scale and the works' publication dates with a time point. It is a mature timeline website so that many functions exist in this website such as the mouse move over actions and the zoom in and zoom out function etc. inspired the author a lot for the development of this timeline prototype.

After doing the analysis of different kinds of timelines and deciding the website tool for usage, different prototypes have been made for the development of the website prototype as the following subsections show.

6.2 First Iteration – basic structure of the prototype

The very first prototype for this timeline is the design of the basic timeline structure. The author got inspired from The American Novel timeline and used Balsamiq Mockups for drawing different kinds of frames as show below.

The most important aspects for the timeline are the authors, the work and the publication date of the work at that time. Thus how to allocate these three aspects is a serious topic for this prototype. The author tried to separate these aspects thus the timelines have been cut into two: the author and the novel section as shown in Figure 12, or three sections: the author section, the novel section and the version section as shown in Figure 13.

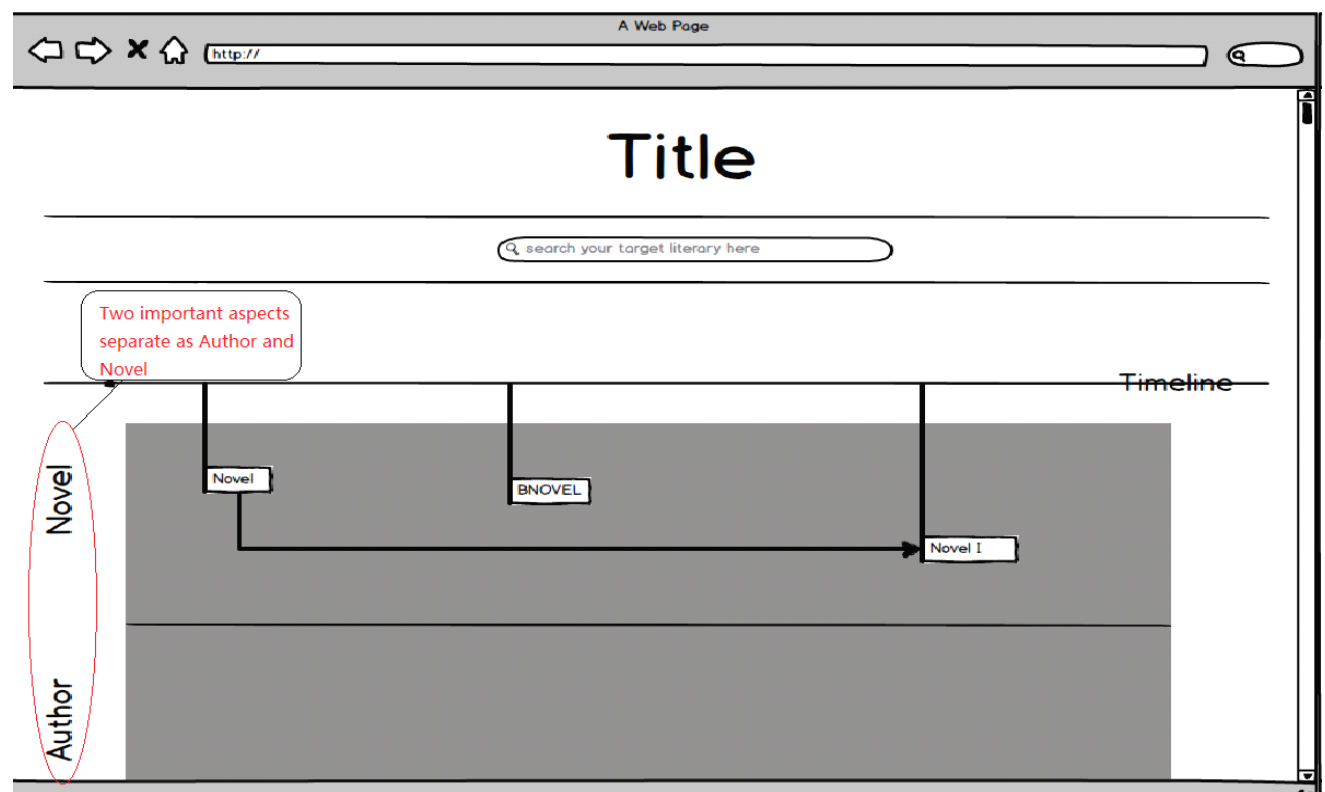


Figure 12: Prototype one - Important aspects on the timeline

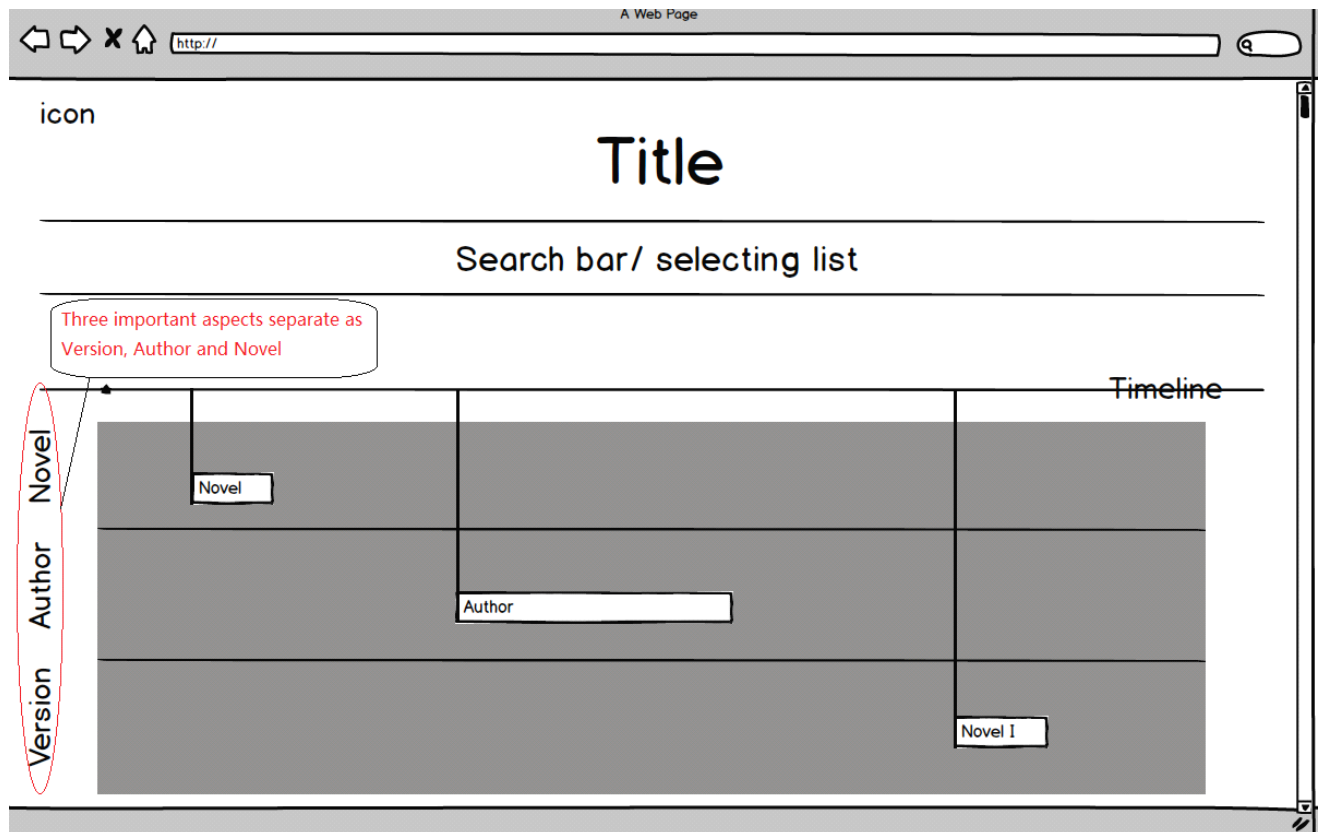


Figure 13: Prototype one - Important aspects on the timeline

In this prototype, the author designs two different structures of the timeline as Figure 14 shows. One structure is the common horizontal timeline as most of the timelines display, and the other structure is the vertical timeline. The direction of the texts in these timelines was decided to be horizontal as Figure 14 shows since most people read the texts in the order from left to right. The vertical timeline created because the display order for the authors and works at Litteraturbanken web pages is vertical. The author had a strong preference of using vertical structure of timeline in order to keep the consistency of the reading order at this time. Thus this kind of structure was picked up and several latter prototypes have been developed vertically as the following sections show.

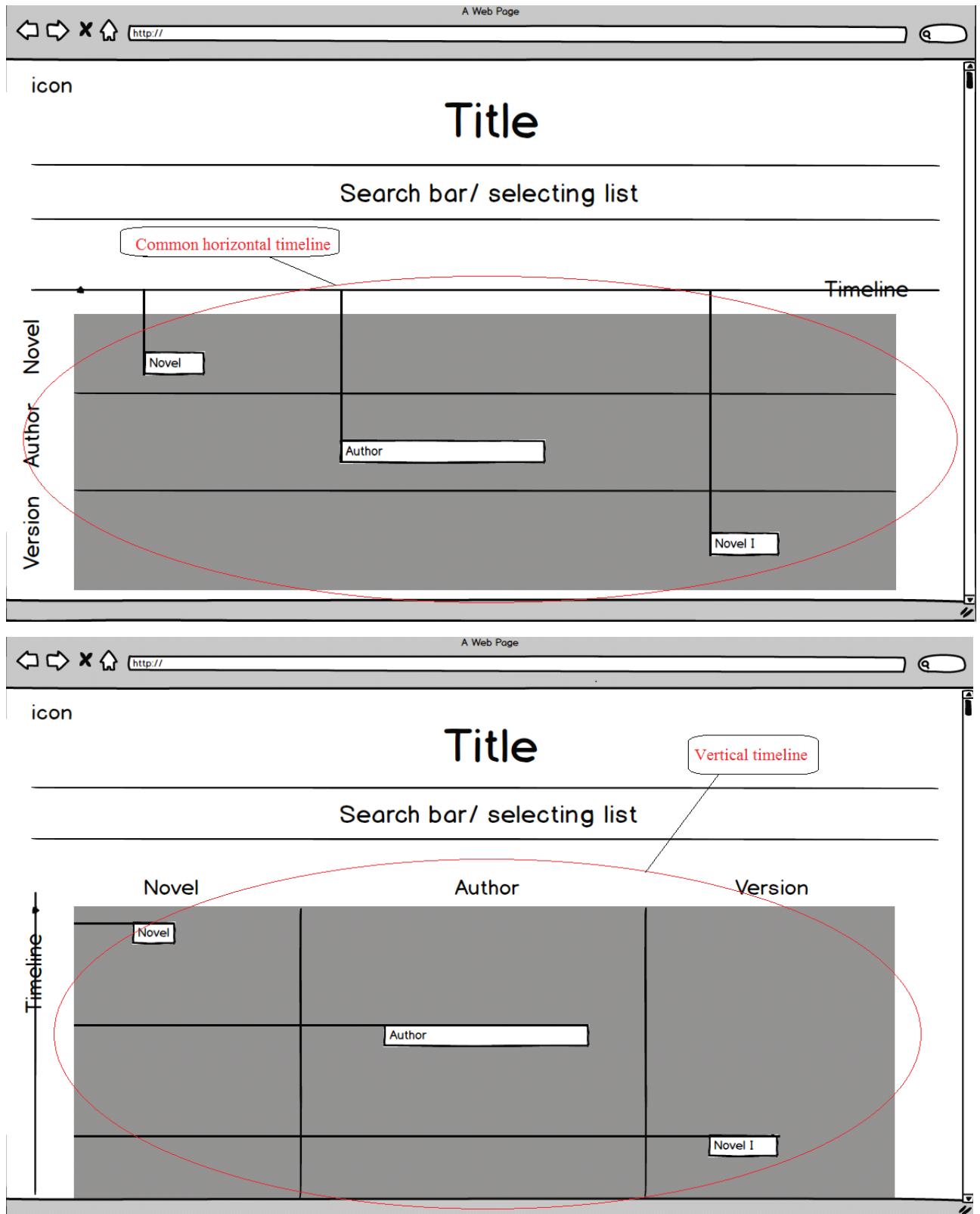


Figure 14: Prototype one - Horizontal and vertical structure prototypes

The lines used in these prototypes indicate the starting time of the work/author. There would always be a thin line that links the starting time of the work/author and the exact time on the timeline above as shown in Figure 15. This could be rather helpful

according to the author's experience as users do not need to switch back and forward between the time and the work. Therefore, their focus would always be on the important/interesting information they want to follow.

Moreover, as the display of the relationships between the authors and works and the relations between the related works are also important topics in this project, in order to show the relationships between the authors and works as well as the related works, the author used the arrows to show the related objects as shown in Figure 15. The re-published work would be pointed with an arrow from its previous version and the works would be linked with the arrows to their authors, too. So it goes more easily for users to see the related information with the help of the arrow links. However, this idea was given up finally after the check of the data due to the huge number of authors and works. The arrows might even destroy the whole structure of the timeline as there might not be enough space for displaying the arrows, the lines, the links and the authors and works all together on the limited web page.

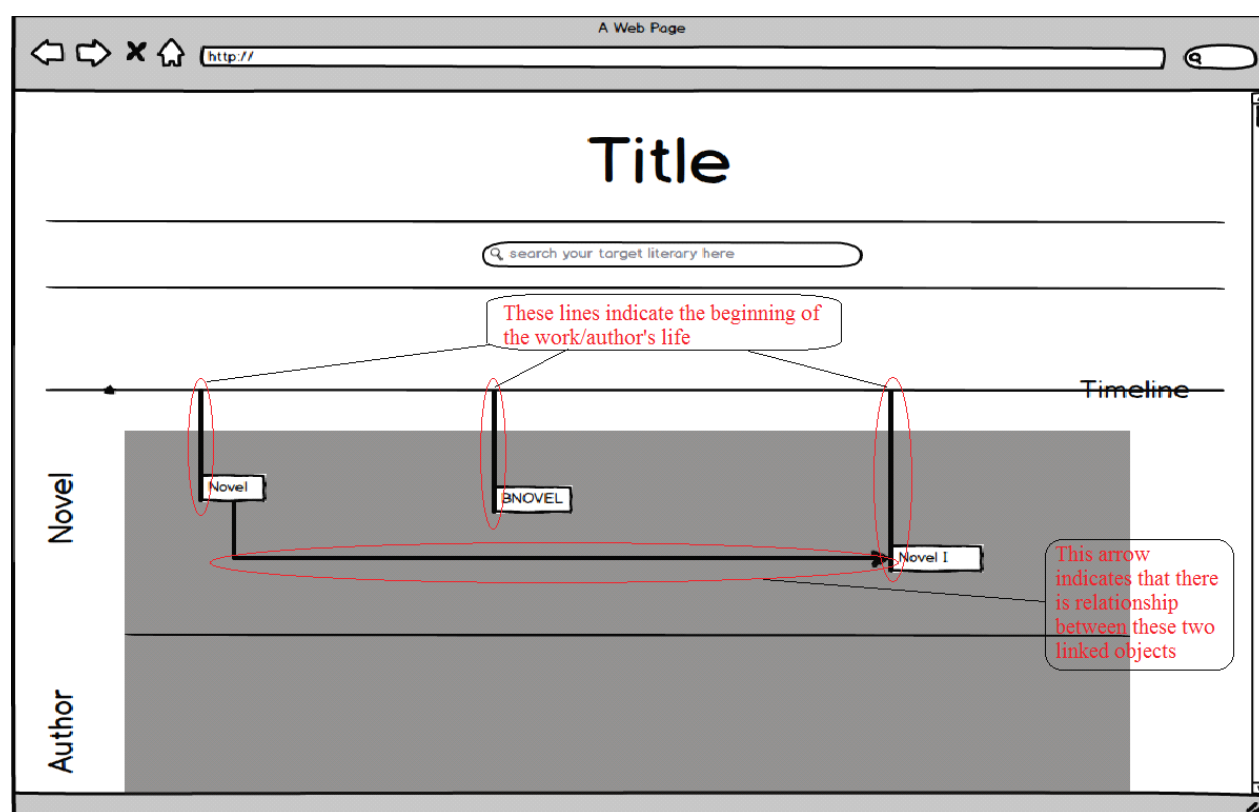


Figure 15: Prototype one - Indicate start time for the work/author's life and relationships between different objects

Last but not least, the search function has also been considered at this time. As the pre-attentive processing stated in the previous theory section, the author decided to set the searched characters with different colors in order to make the searched words to be easier for users to find. The searched characters would change into another color in the timeline and other characters would stay the same as Figure 16 shows. At this time,

what color should be finally used for the searched characters has not been decided yet, and the color used in this structure prototype changed later into red for keeping the consistency with the other Litteraturbanken web pages as the latter sections show.

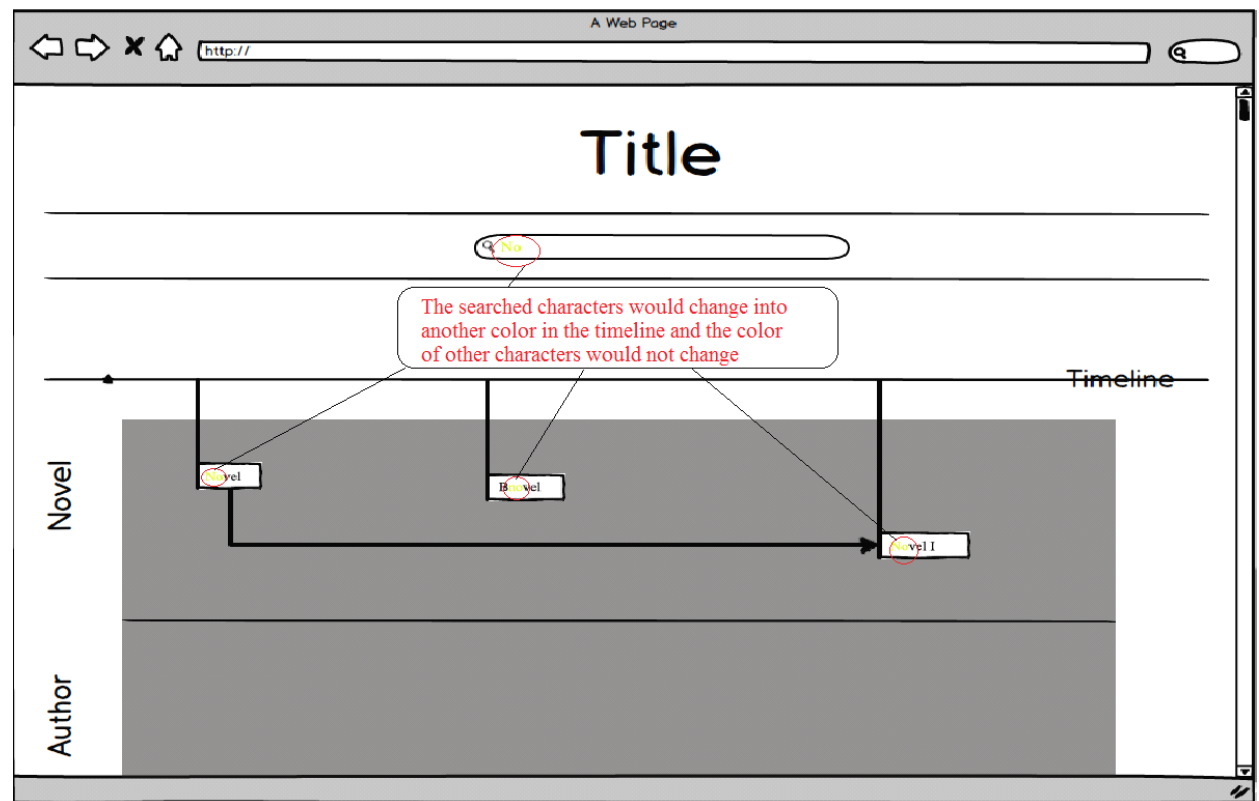


Figure 16: Prototype one - Search functions of the prototype

6.3 Second Iteration - detailed design for the first Iteration of the prototype

After the basic structure design of the first iteration, the author checked Litteraturbanken again, discussed the basic structure design with another programmer who studied computer science and filled in detailed design ideas into the prototype as figures show below.

The first designed page from Figure 17 was made on Fluid UI web design page. But the author finally gave up making a prototype on this website because the elements that could be used on this website are not designed for making timelines. Many potential things that would be useful for the prototype (such as transparent background) could not be used on this design tool. Therefore, Photoshop 7.0 replaces this Fluid UI website and the other web page prototypes were created on Photoshop.

Författare

Titlar

Epub-filer

Presentationer

Aktuellt

Rättigheter

Om LB

In English

Kontakt

Hjälp

Statistik

Sök i verk

Alla författare Samtliga verk Alla mediatyper

Sök titlar

Timeline

SAOB ::: Dalin

Slå i Svensk ordbok

A B C D E
F G H I J
K L M N O
P Q R S T
U V W X Y
Z Å Ä Ö

Det här är en alfabetisk lista över alla de titlar som Litteraturlbanken har att erbjuda, med länkar till text, faksimil- eller pdf-versioner av verken. - Samtliga verk visar titlar på hela verk. Samtliga titlar inkluderar titlar på dikter, noveller etc.

This Alphabet is used for searching authors/works with the first character of their names the same as the selected letter in the alphabet.

Figure 18: Prototype two - Classification of the authors and their works according to their names

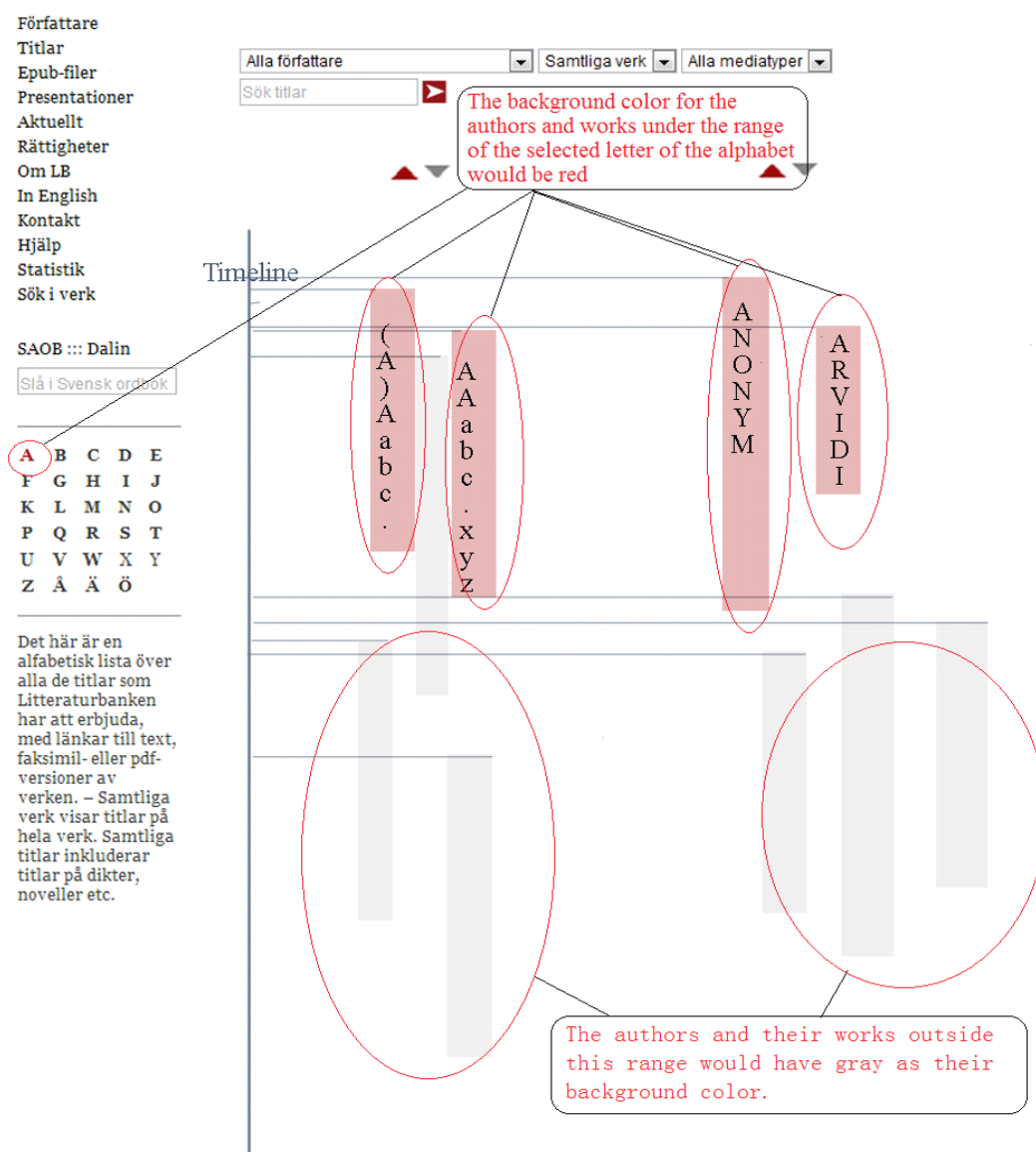


Figure 19: Prototype two - Colors for background frames according to the selected alphabet

Another important design idea of these frames is about the association of the authors and their works. The author created two concepts in this frame as we can see in Figure 20 and Figure 21. The first concept is that the related authors and works would be set with the same color as Figure 20 shows. And the other concept is that the related work/author would appear once when the user click on one special author/work on the timeline as shown in Figure 21. However, these two ideas were given up finally on the final prototype because the actual data occupy a lot of space on the timeline. Thus if use the color for identifying the relationships between authors and their works, the number of colors might be more than hundred and it would be rather difficult to recognize the differences between these colors. The second idea would occupy too

much space and the timeline would have risk of overlapping authors and their works together with each other if there is not so much space on the timeline.

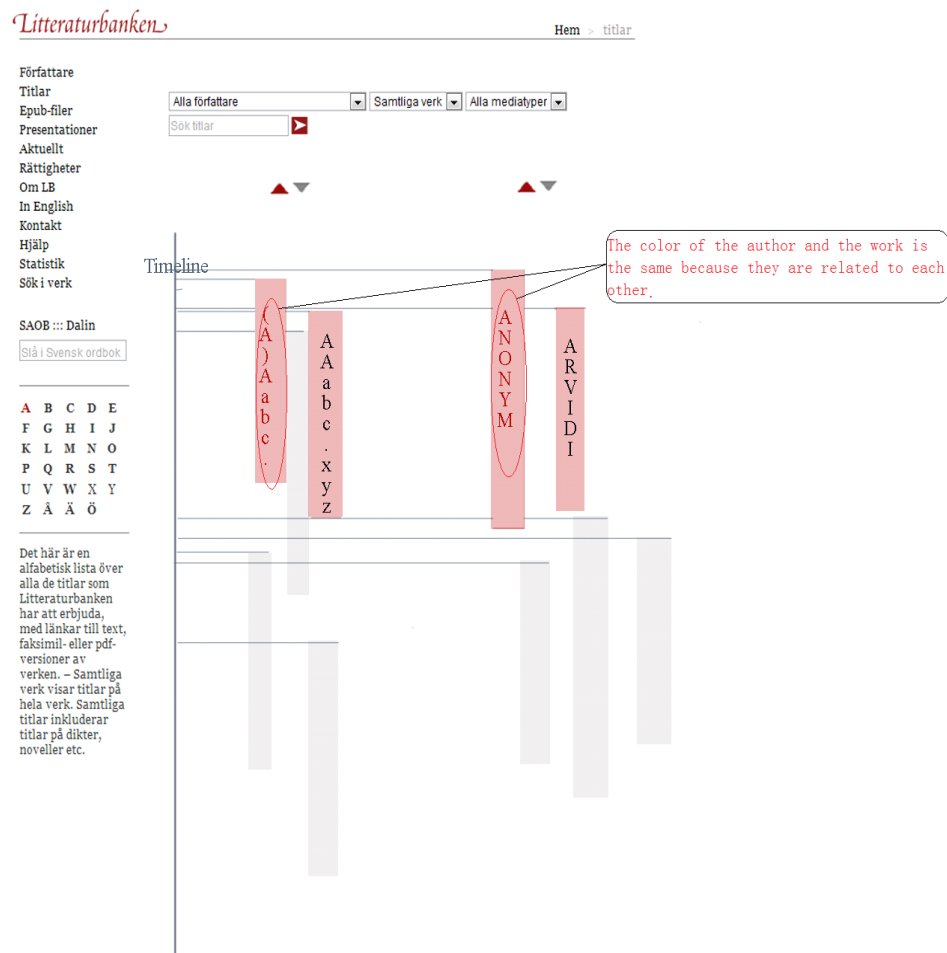


Figure 20: Prototype two - Using color to indicate the association of the authors and their works

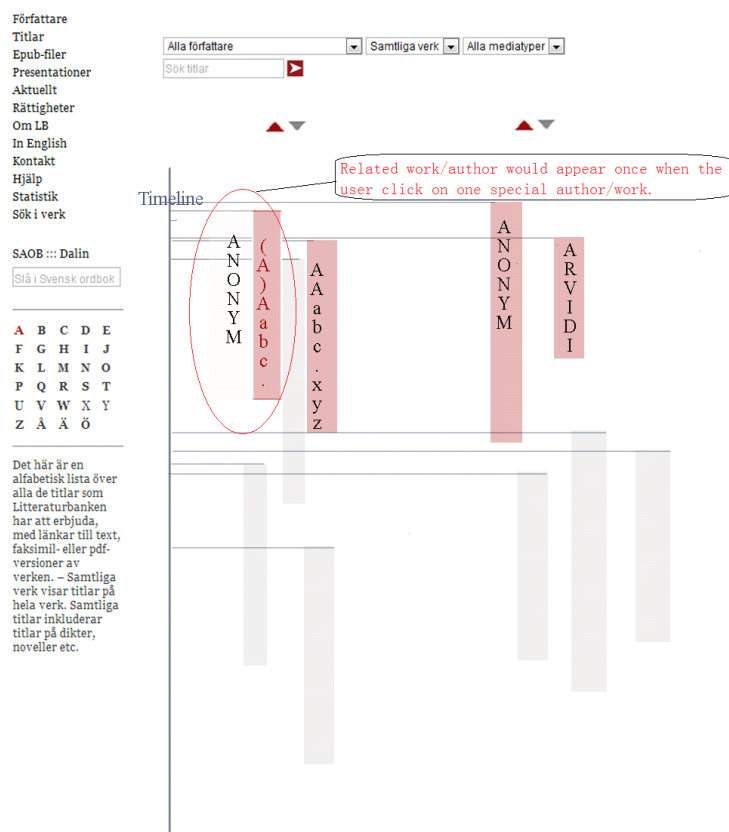


Figure 21: Prototype two - Using pop up windows to indicate the association of the authors and their works

The other components on the designed frames are almost the same as they are used on other Litteraturbanken website as the selected objects would change into red, and the triangle bar would still be there for allocating the order of the authors and works as mentioned previously. All these components were kept unchanged for keeping the consistency of this timeline web page with other web pages on Litteraturbanken website.

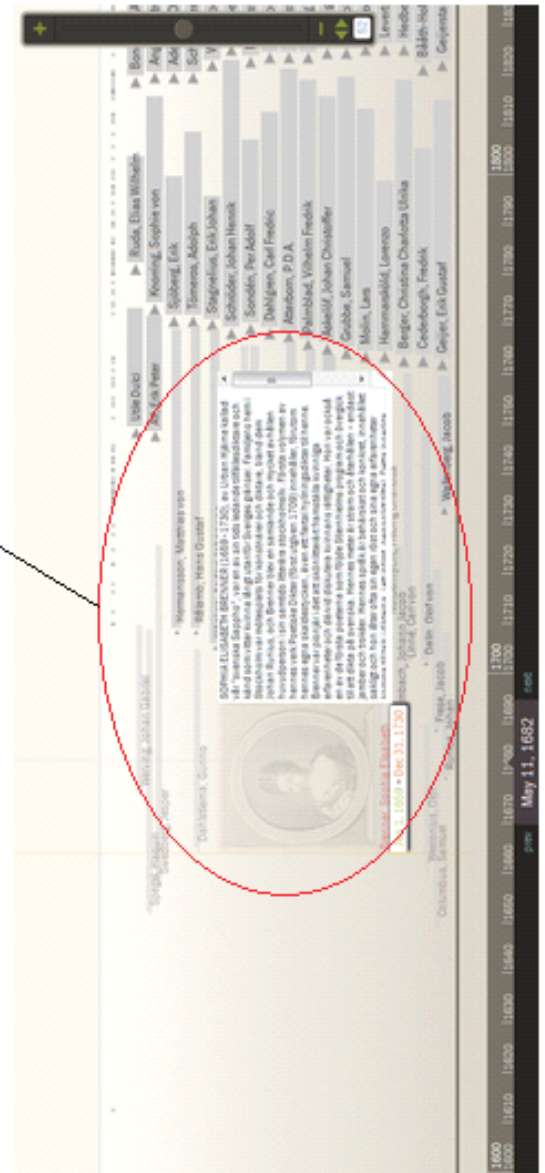
6.4 Third Iteration - Combine the data with the design concept

After the concept design of the timeline structure, the head of Litteraturbanken recommended the author to combine the data with the designed structure in order to see the possible result about how the real web page could look like. Thus the author used Timeglider website as the assistant tool as mentioned before since it has most of the functions that needed by the author. The real data designs in the following section, however, are quite different from the previous concept design prototypes and the author had to re-design the structure of the timeline web pages because when the data was filled into these prototypes, the structures of the concept design were almost all

At this time, the author used Photoshop 7.0 and Microsoft SharePoint for designing the flow chart of the timeline web pages. These pages include the main page, the author page, the double timeline page and the search page. These design prototypes are generally the same and the author only changed some “bugs” existing in the prototypes (such as the position problem of the images etc.) and add some more functions into the web pages (such as the mini map tool that used for indicating users where they are etc.) and they shown in Figure 22 and Figure 23 below.



When the user moves mouse over the author, the detailed information would be shown.



Author page - when mouse move over the particular author

Det här är en lista över de författarna som är representerade i litteraturbanken. Listan är alfabetiskt och kronologiskt blicks på såväl som avsnitt för avsnitt för att sortera om den ordning som passar bäst.

Double timeline page

All Swedish work from 1200s to 2000s show here. The color of the related works of the selected author would be different from other works.

Double timeline page - when mouse move over the particular author

Figure 22: Prototype three - Old version of the data and design combination prototype

In the old version of the combination prototype, the positions of the images and the clarity of words and images were problematic as shown in Figure 22 because the author was not so familiar with how to edit images in html files. The ideal design is that the images should be positioned on the left side of the whole frame rather than the right side and the users should be able to see the images and texts clearly on these prototypes. And the space set for the timeline and the left guide bars which users could click in order to go to other webpages are also problematic as the timeline occupies much more space than the guide bars.

Images that show how the authors looked like were added to these prototypes because the author wants to include more detailed information about these authors in the timeline. Furthermore, some users might also be interested in the literary works written by the particular author they selected therefore another timeline was created on the double timeline page. However, just using one time scale could not meet the requirement of displaying both authors' lifetimes and publication time of the literary works on the timeline due to the different time scales between authors lifetimes and their work, so another time scale was added to this webpage in order to show both the selected author and his/her related work on the double timeline page.

Författare
Titlar
Tidslinje
Epub-filer
Presentationer
Aktuellt
Rättigheter
Om LB
In English
Kontakt
Hjälp
Statistik
Sök i verk

Gemensamma Författare

1200	1300	1400	1500	1600
1700	1800	1900	2000	inget datum

Anonym

1600	1700	1800	1900	2000	inget datum
------	------	------	------	------	-------------

SAOB ::: Dalin

Det här är en lista över de författarskan som är representerade på Litteraturbanken. Listan går att sortera alfabetiskt och kronologiskt: klicka på pilarna ovanför kolumnerna för att sortera om i den ordning som

passar bäst.

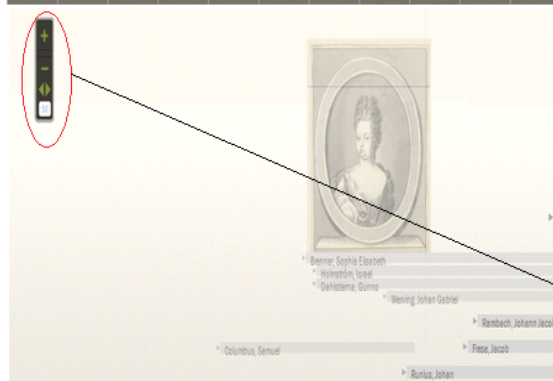
Guide bar will always indicate which web page the users are visiting

Main page

Författare
Titlar
Tidslinje
Epub-filer
Presentationer
Aktuellt
Rättigheter
Om LB
In English
Kontakt
Hjälp
Statistik
Sök i verk

Ord eller fras:

1600s	1610s	1620s	1630s	1640s	1650s	1660s	1670s	1680s	1690s	1700s
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------



Users could click on the plus or minus icon to zoom in or zoom out on the timeline/ minimap as they want.

Author page



Author page - when mouse move over the particular author

Litteraturbanken

Hem > Tidslinje > Gemensam Författare 1600 > Brenner

Författare
Titlar
Tidslinje
Epub-filer
Presentationer
Aktuellt
Rättigheter
Om LB
In English
Kontakt
Hjälp
Statistik
Sök i verk

SAOB ::: Dalin

Det här är en lista över de författarskap som är representerade på Litteraturbanken. Listan går att sortera alfabetiskt och kronologiskt: klicka på pilarna ovanför kolumnerna för att sortera om i den ordning som

Ord eller fras:

1600s 1610s 1620s 1630s 1640s 1650s 1660s 1670s 1680s 1690s 1700s

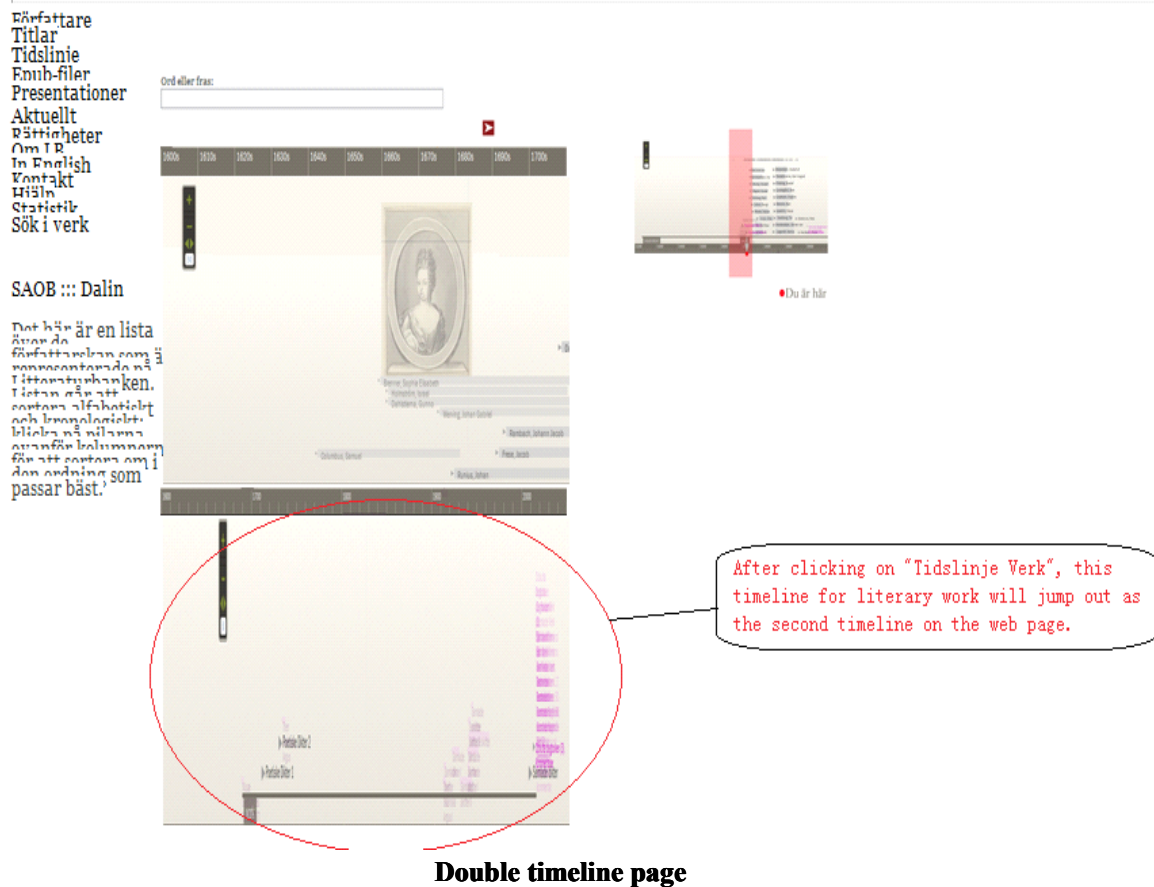
Brenner, Sophie Elisabeth
Jan 1, 1659 - Dec 31, 1730

Werning, Johan Gabriel
Rambach, Johann Jacob
Frese, Jacob
Columbus, Samuel
Runius, Johan

Tidslinje
Verk
Personliga
Sida
Relaterat
Verk

Mini map shows which time period and which author the user is selecting.

Detail page - when mouse click on the particular author



Double timeline page

Figure 23: Prototype four - Latest version of the data and design combination prototype

The latest version of the prototype adds the guide bar that shows users about their locations on the web pages. The author also classified the Swedish authors into anonymous and known authors as they could be seen as two different kinds of authors according to the author's opinion. There could be more classifications for the authors such as gender, publish versions etc. However, due to the limitation of the time, the author only applied these two categories here.

On the author page, the author gives up the mouse move over window about the author's personal information as shown in Author page in Figure 22 because this information would occupy too much space on the timeline and it would obscured the other authors' names. Therefore, once when the mouse move over the author, the picture of author would jump out, the author's name would change into red color and the lifetime of this person would be shown on the timeline. Instead, another web page with three icons "personal information", "related work" and "timeline work" would show up when the users click on the image of that person. Links to the web page of the personal page of that author, links to the web page of the work written by the author and links to the web page that shows the author's works together with his/her

own would jump out according to the users' selection on these buttons. Typically, the anonymous authors would skip the buttons mentioned before for the known authors. The users would directly go to the page that shows the work written by the anonymous because it is even not possible for anonymous authors to create personal pages and work related pages.

A mini map is also a plus that was designed in this version. This idea came out when the author had open discussion with other staff that working for Litteraturbanken. We all agree this mini map could help the users to identify their locations on the timeline just like a mini map in a game, which might be helpful for users.

The flow of these web pages is almost the same. The simplest one is that the user goes from main page, and click on the time period he/she is interested in. Then he could select the author according to his/her requirements. After clicking on the target author, the user would either be guided to the author's personal page, or the author's work page or the author's work timeline together with the author's timeline. The user could of course jump back and forward between different web pages according to his/her needs. Moreover, the user could also click on the work on the timeline to get into the online version of the work if he/she wants.

Besides the combination designs of the prototypes as mentioned before, the author also designed specially for the search function as shown in Figure 24 since search function is an important issue for most website and the users using Litteraturbanken might use this function a lot.



Figure 24: Prototype four - Search prototype of the data and design combination prototype

On the searching web page, the users could search for anything they are interested in. The related results would show on timeline together with a searching list displayed

right lower side as shown in Figure 24. All words match the search keyword would be set a red transparent background on the timeline to indicate that they might be the searching target. The users could also click on the “show On timeline” icon in the searching result list and the website would guide he/ she to the web page with a rather big timeline that only related to the selected author/author’s work.

6.5 Development of prototypes and research questions

At the beginning of this project, the goal of this project is developing a finished webpage for Litteraturbanken website. Therefore the research question is simply how to display a timeline for literary work and authors on the Litteraturbanken website. At this time, the author cared more about how different elements could be displayed on the web pages so that the newly developed webpage would be both attractive and useful for different people to use. The original questions mentioned in the introduction section were created at this time and this focus did not change until the real data prototypes had been created.

After finishing doing the concept prototypes and trying to fill data into the concept designs, the author found that none of these concept designs could be used because the huge amount of data would destroy them: the texts would overlap with each other and lines used in these concept designs would block the words in most of the cases. Furthermore, the author found it is difficult to develop a tool for displaying the data by herself within such little time, the existing timeline tool timeglider.com was then decided to be used for displaying the data in the real data design prototypes. And because the prototypes should be possible to display on the website, the author used the webpage developed tool for making the real data prototypes.

Due to different developing tools, the concept designs and the real data design prototypes differ a lot. The author could not decide which prototype should be used because both of them have outcomes and shortcomings. Furthermore, since the two developing tools are not compatible with each other, it is difficult for the author to combine these two different kinds of prototypes into one prototype.

After the finishing of the real data design, the author did interviews with three potential users. And all of these users reflected that the prototypes focus too much on the consistency guidelines and therefore they lack creativity. Therefore the author realized that there might be conflicts between the guidelines and the designer's creativity, as using guidelines might restrict designers with different rules while keeping creativity requires the designers to think abroad and jump out of the box.

The final developed prototypes are quite different from the expected ones. Many functions could not be activated because the author is not familiar with the web page

developing tools. Furthermore, as previous mentioned, it is difficult to move from concept design to real data design and the concept design and the real data design could not be combined with each other due to the incompatibility problem. The designer had to give up developing a finished webpage for Litteraturbanken website and switch the research question from how to display a timeline for literary work and authors on the Litteraturbanken website to what problems may occur during the developing process of designing a timeline. And the new research questions are:

What problems can occur in the process of designing a timeline?

What suggestions could be given to designers after the occurrence of these problems?

7. Result

After the design of the prototypes mentioned before, the author had interviews with three persons. Questionnaire has also be created and used during two of the interviews. Among these interviewees, two of them are females and one of them is male. These three persons come from different backgrounds thus their opinions are quite different with each other as below.

7.1 Interview with Designer working at Chalmers University

The first interview was done with a designer who is currently working at Chalmers University. She is a rather creative female and she has huge numbers of ideas and concepts about designing different kinds of things. Moreover, she could give feedback rather quickly when people are showing their designs or prototypes. Therefore, the author gave up using questionnaire during this interview. Instead, open discussion and non-structured interview was made when the author was doing the interview.

The feedback I got from this interviewee is not positive. There are still many problems existing in the latest prototype. Several words were used by mistake in Swedish because the author could only use translation tool for finding the Swedish words about the target meaning. Thus for example the "Gemensamma Forfattare" is not right for common authors and "Sök Resultat" should be "SökResultat" according to the interviewee's suggestion as shown in shown in Figure 25. What's more, the interviewee also thinks the "Relatterat Verk" and "Tidslinje Verk" seems to be unclear to understand for users if they have not used this timeline web page before. The "Relatterat Verk" is ambiguous for her as according to her understanding, related work should be all the works that have relationship with the author. But the web page only guides users to the works written by the authors. So the interviewee suggested that this "Relatterat Verk" should be change to written work instead.

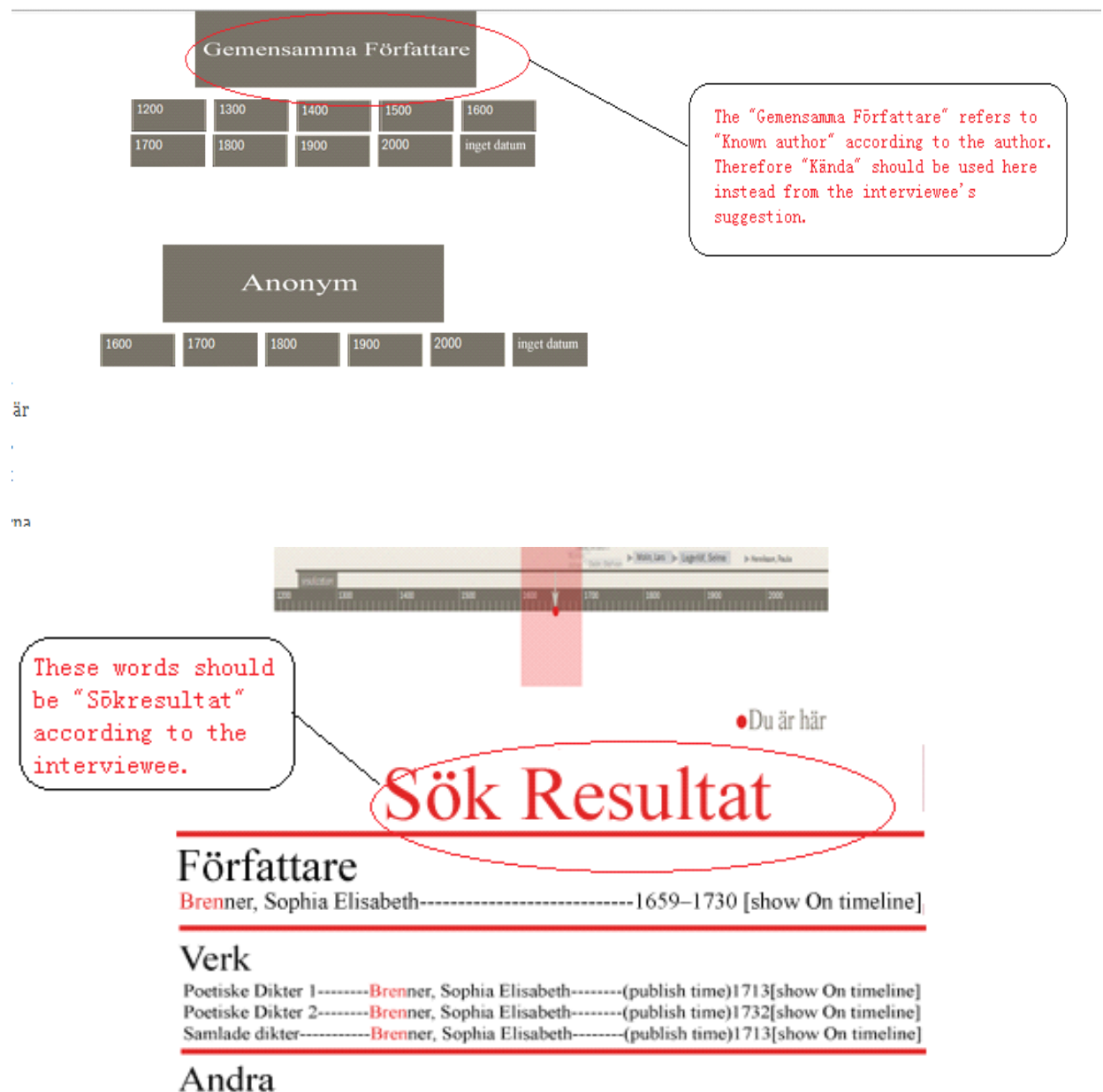


Figure 25: Wrong words used in the latest prototype

The interviewee did not like the space arrange next and colors used on this timeline web pages as according to her, the order of the time scale at the home page is not comfortable for her to watch and the titles used for the classifications of the authors its background seems to be clickable but they do not work. More colors could be used for distinguish the data rather than only red, black and gray colors.

What's more, the size of pictures and timeline texts were scaled in a strange way and they should be made into normal size rather than the scaled ones as they are currently

as shown in Figure 26. It is strange for her to be guided to the database work of the authors rather than place all the information together on the author's information page. The work written by the author is expected to come out the same time as the author when the interviewee used this web page and the images of the authors should be displayed only when the mouse move onto them. Besides these problems, the web page seems to be focused too much on the authors; the work could not exist independent without the author, that's rather strange for this interviewee.



Figure 26: Text and image problems existing in the latest prototype

Generally, the first interviewee is not satisfied with the structure of the webpage. From her point of view, this webpage is bounded by the data thus it is not the real design. And the possible imagination for this website is limited thus the prototype is somehow between the design and the programming. Furthermore, the website focus too much on the author than the work according to her as previous stated.

7.2 Interview with Editor working for Litteraturbanken

The second interviewee is working as an editor for Litteraturbanken. He had different kinds of ideas on how the timeline website should be designed. The author used

half-structured interview in this case because the editor's reaction to the questions are rather good. During this interview, the interviewee not only answered the questions from the questionnaire but also pointed out his own ideas on different aspects of the timeline design prototype as shown below.

The interviewee stated that some functions of the prototypes do not work as he wished as he tried to click on different authors in the timeline but then found that it does not work as there is only one author clickable. He also found the sizes of the texts are a little bit smaller thus it is difficult for him to see them clearly. The editor also felt confused with the zoom in and out buttons and preferred to use scrolling instead of using these clickable icons. For the mini map part, he thinks this map is rather helpful but the position of it is not good in this prototype. Instead of separating the mini map with the timeline, he suggested to combine the mini map with the timeline as shown in Figure 27. "The size of the timeline and texts might be much better if they are combined with each other," the editor addressed this point several times during the interview. The prototype seems to be only the first step according to his opinion as many functions have not been activated.

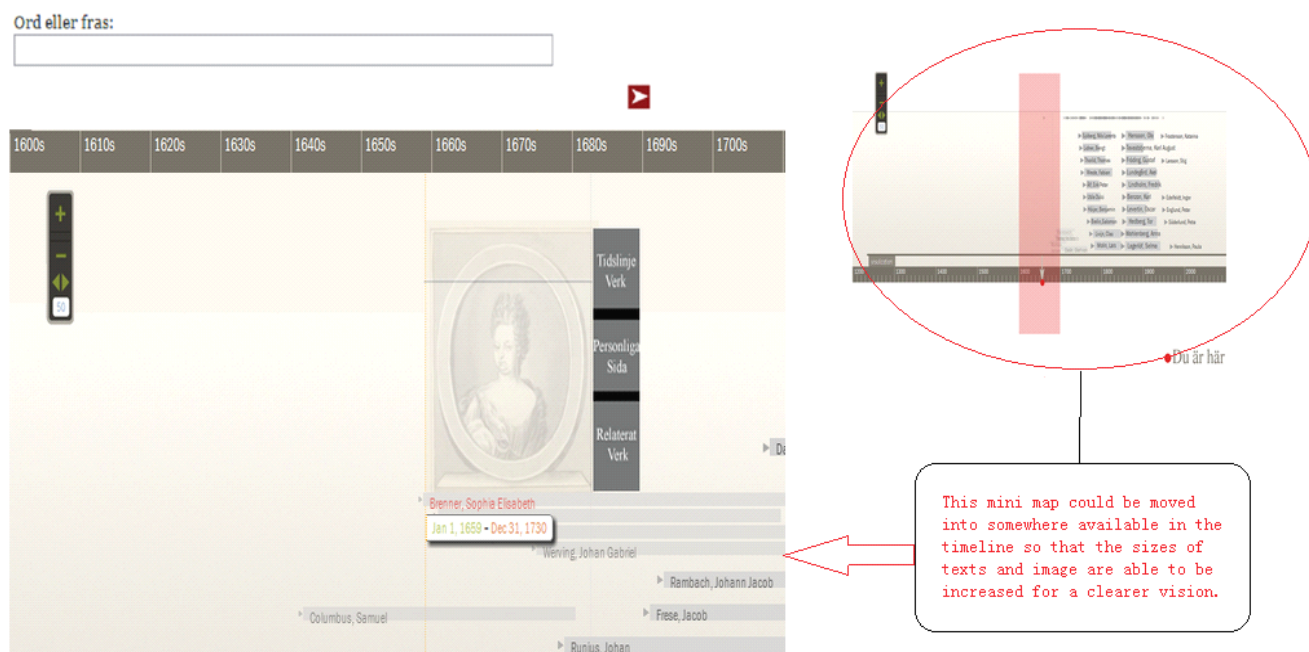


Figure 27: Suggestion of the combination of the mini map and timeline

Furthermore, the interviewee also said that the time periods of different authors' lifetimes and works are not so easy to see. He got inspired from the yellow dotted line that indicated the time of the works/authors' born times. Thus according from him, it might be a good choice to indicate the location of the mouse with the yellow dotted lines, which means that the yellow line could be moved with the movement of the mouse then as shown in Figure 28.

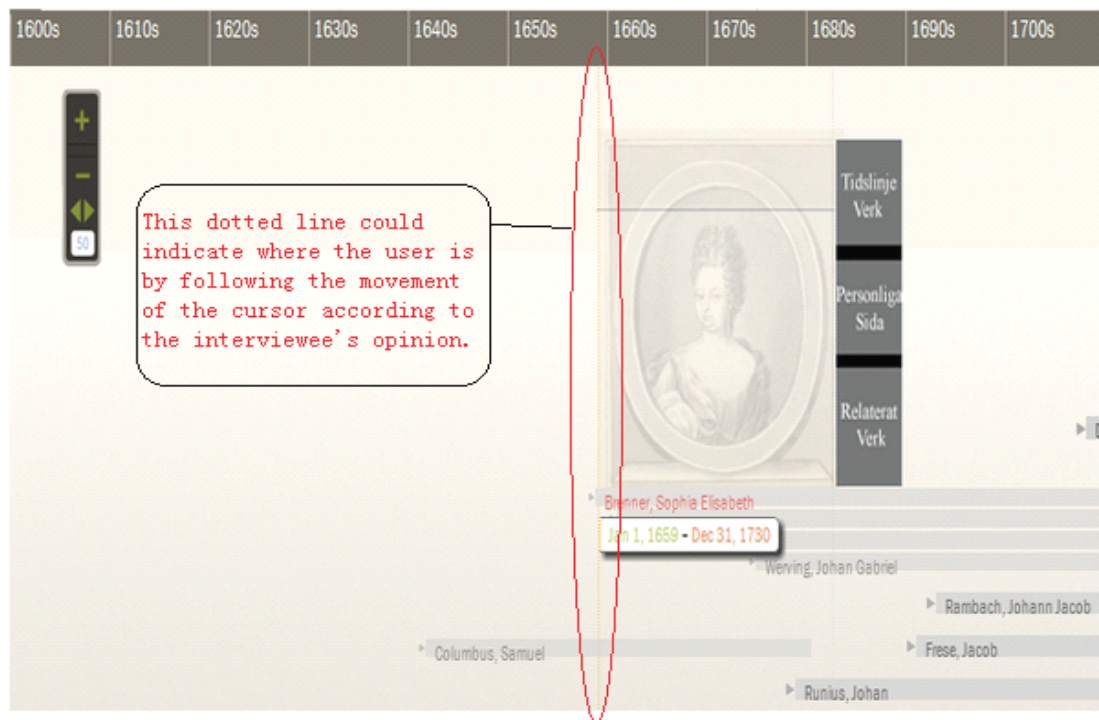


Figure 28: Suggestion of using the dotted line instead of the mini map

The interviewee has not used the similar website before thus the questions related to this kind of topic on the questionnaire could not be answered. The interviewee thinks this prototype has a lot of potentials and it could be improved a lot as many functions have not been activated yet. Moreover, he addressed the website could be rather helpful once when it has been done because he is rather satisfied with the basic structure of this prototype as “It is rather easy to understand these web pages and there is no complex actions need to be done for receiving some target goals” according to what he said during the interview.

The interviewee does not think this prototype is consistent with Litteraturbanken and itself as it has not been totally finished according to his opinion. But it is rather easy for him to understand this prototype as the prototype does not have difficult and complex actions according to his mind as mentioned before.

This interviewee also gave some suggestions on the words used in this timeline such as the "On" should be "on" etc. The horizontal words would be easier to read and it is better to use whole sentence as it used in this prototype currently according to his opinion.

The mini map and the search list are helpful and useful according to his mind. But the interviewee preferred to use scrolling rather than the button as it is now as mentioned previously.

This website is not so good since the interviewee said that many functions have not been really activated, but he would like to see the finished one and then try the finished prototype according to this interview.

Overall, this interviewee thinks this prototype would be a successful one since it is on the first step of the development process. This prototype has potential to be developed into a successful website once this design and development process finally finishes.

7.3 Interview with PHD student studying at Göteborg University

The third interviewee is a PHD student who is studying at Göteborg University currently. This interviewee is passive thus the author used half-structured interview and only asked questions on the questionnaire.

This interviewee is not satisfied with the prototype at all. For her, this prototype is unfinished and bad. The texts are rather difficult to distinguish and the reasons for why different components are located on different positions of the timeline are ambiguous. The interface is not user friendly enough and the colors used in the prototype are not good enough to distinguish for different kinds of objects.

The interviewee has used timeline tool before and she still prefers the old timeline website she used both because of the nice interface as well as this prototype has not been finished yet. But she would like to try this prototype if it is finished. Typically, she stated that the mini map is not so useful for her and she thinks the button is better than the scrolling way of zoom in and zoom out. She addressed that the reason why this timeline website was created for this Litteraturbanken is ambiguous, too and the reason why it needs to be created should be explained in the thesis because she didn't see so many differences between the timeline and the existing web pages that have already been used in Litteraturbanken website.

8. Discussion

This project covers a rather broad range from website design, prototype developing to user testing etc. For the website design, it includes literature review, previous tool testing, concept design, frame design etc; for the prototype development, it includes program development, image editing etc; for the user testing, it includes observation, open discussion, non-structured and half-structured interview, questionnaire etc.

The author tried to include all of these processes into this project, but due to the time limitation, many concepts stayed superficial. For example, most of these prototypes only have one or two icons which are clickable. Many web pages also need the author's introduction for explaining the detailed information about how different components work for this timeline and why these components should be kept there on the timeline web pages.

Different timeline maker tools were tried by the author during the development process. The original idea on trying these tools is to help the author get a general feeling on how the timeline will look like when the data are filled into these tools as well as to inspire the author in timeline design. However, when the prototype was developed further, the author decided to select one of these tools in modeling the final timeline on the design web page because the author could not create a timeline tool for displaying so much data by herself.

The decision on the selection of the timeline web tool changed the original idea of developing a final product to analyzing the developed prototypes. The style of the web tool differs a lot from the original concept design but the author could not fix this problem due to the programming reason, and the web tool itself also affected the author's design ideas and trapped the author's imagination and creativity on how to design the timeline website.

What's more, as the author is not a real programmer, many functions that should be used in the prototypes have been simplified as mentioned previously and thus the interviewees could not see the finished prototype. That is why all of the interviewees agreed that this prototype is unfinished and this prototype still needs much more work to improve its quality.

Besides the unfinished functions due to the programming problem, many problems still exist in the developed prototypes. The first one is that the literature review was not so successful in helping developing the prototypes. Using reading psychology as an example, this knowledge is not used when developing the timeline prototype because there is no evidence showing which model would fit this project better. What's more, due to the cultural difference, the reading psychology could be rather different after several discussions between the author and interviewees and the author's supervisor. Due to the different shapes of the characters, Western people

could hardly distinguish a special word vertically because these words are usually consisting of separate letters. While some Eastern people do not have such problem because their typefaces are usually pictographic fonts thus do not consist of separate letters therefore these people could understand the meaning of words from different direction much more easily.

Sticking to the different guidelines could cause problems after the development of the project, too. Too many guidelines limit the designers' imagination and creativity in their designing process. The author tried to keep the consistency of the prototypes with the existing Litteraturbanken website, but finally found that the author herself was trapped into this guideline and lost a lot of other possibilities of improving the prototypes. Using colors as an example, the author only used the colors that are used on Litteraturbanken website in order to keep the whole website more consistent. However, there is no evidence that these colors are the best ones that should be used for Litteraturbanken timeline website. The literature review about the contrast color was not very helpful at this time and the possibility for making the colors on the website more excellent was missed.

The consistency of the timeline web pages also brings another problem. According to the last interviewee, these timeline web pages almost have the same structure as the other web pages on Litteraturbanken website, and the functions on the timeline pages are almost the same as the other web pages on Litteraturbanken website. Therefore she did not see the reason why this timeline should be created for Litteraturbanken. The reason for making the prototype like this is because the author wants to keep consistency of the timeline web pages with the other web pages on Litteraturbanken website. But at the same time, this consistency concept also dilutes the characteristics of the prototypes themselves.

The author finally realized that the prototypes developed in this project might be best seen as the first step of the development of this timeline web page. According to these interviewees, this prototype has a lot of drawbacks and it needs to be improved. Fortunately, this prototype has great potential according to the interviewees' opinions as mentioned before and most of the interviewees are showing their interest in the possible finished project judging from their attitudes.

In conclusion, this prototype would only be the first step of the website development. Many functions still need to be activated and many mistakes such as the wrong words used in the timeline tool need to be fixed. The author did not find a good balance between the concept design and the real web page design. That means that once when the real data is inserted into the design frame, some things such as the spatial arrangement of the texts and images and the final results of the display of the website would change, too.

It is difficult to conclude whether the change mentioned above is good or bad, because this change would cause a number of changes of the final display of the website. For example, when the actual data was filled into the concept design frame, the space of the frame is rather narrow for these texts and images thus the timeline website would not be as clean and tidy as the concept design frame. Instead, the timeline website would be a mess and many texts would overlap each other, which might destroy the expected results of the concept design frame. Such changes would not be good of course. However, these changes also entail other possibilities of improving the concept design, too. For example, the mini map that is used for indicating where the users are and the search list for showing all the search results have not been created until the author discussed the prototypes with some other designers. It was difficult for the author to go into such detail about different components that exist in this prototype when there is no real data and the prototype has not been finalized.

Even though the latest prototype tried to have as much data as possible, there is still much more data excluded from the database. Therefore, there would be even more changes if all the data is put into this timeline.

Besides the balance between the concept design and the real website design, the balance between the guidelines and the creative design is also difficult to manage. As pointed out by the first interviewee, the author's design is just trying to keep consistency with the other web pages of Litteraturbanken. This leads to the result of losing the possibility of making much more creative designs for the timeline from the author's own ideas. The contrast colors, for example, were not used in the prototypes at all and other structures of the timelines have not been tried in the prototypes because the author put too much focus on keeping the consistency aspect. All of these reduce the potentials that might exist in the website prototypes and make the prototype somewhat boring and monotonous from this point of view.

Generally speaking, the prototypes would not be a failure as many people have seen their potential, both according to the interviews as well according to the open discussions even though they are unfinished and there are still many details that need to be considered. What's more, as shown from the title, these prototypes would only be the first step of developing the Litteraturbanken website. The prototype also indicates many potential problems such as too much attention on the consistency guidelines etc. that might occur in the future development process. These problems would deserve other designers' attentions and the problems could also be used as some kind of reminder so that other designers would try to prevent such situations such as relying on the guidelines too much when they are developing these prototypes further in the future.

9. Conclusion

Even though it seems from the interviewees that there is no big difference between the timeline created in the prototype and the other web pages of the Litteraturbanken website, the potential advantages of the timeline itself should not be ignored.

According to Hines as mentioned in section 2.1, he also believes most of the timelines appear less complex than pure texts in a visual respect, which might make it easier for users to relate events and their corresponding time. Using the Författare page developed by Litteraturbanken as an example, even though the designers have created the order function used for displaying the order of the authors according to their life time, users might still feel it is difficult to form an idea about the general concept of how these authors' lifetime are structured without using the timeline. It might become even worse when the users would like to know both the authors and the literary work at the same time without using timeline. A lot of texts need to be used for explaining the relations between the authors and their works on web pages. However, by using a timeline, the indication of such relations could be easy to make visually such as using the same colors for the related components and so on.

After the project design, the author finds that there is no sufficient way for displaying timeline for literary and authors on the website and many problems could occur in the process of designing a timeline. For example, how to keep the balance between the concept design and real data design and how to keep the balance between the guidelines and the designers' own concept are rather difficult to manage according to the author's experience. The concept design and real data design and the guidelines and the designers' concepts would always conflict with each other. If the designer wants to be more on his/her own, he/she may care more about the concept design and his/her own concepts. However, the practical work of the final design might be reduced a lot. Using the concept design in previous section as an example, these design frame prototypes is more in line with the author's own taste in that case, but when the author tried to make it more realistic, the whole structure of the frame was nearly destroyed due to the huge amount of data. Moreover, when the designers focus more on the guidelines and the real data design, they will run the risk of not being "creative" enough even though their designs may be more user friendly. The latest prototype made by the author is more user friendly than the previous frames (as it could really work in some way), but it lacks imagination and creativity according to the interviewee's reflection.

Furthermore, the balance between the concept design and real data design and the balance between the guidelines and the designers' own concepts are rather difficult to manage because it is not possible to decide which of these aspects that should get the most focus. Designers have a practical preference and may want to focus more on the real data design or they may want to follow guidelines to keep their designs to be more acceptable by users. While some other designers may insist on their own

concepts so they may care more about the design itself as the first interviewee mentioned in the previous result section. And there is no answer to which kind of design would be better in this case.

Therefore, it may be difficult to decide the balance between the concept design and real data design and the balance the guidelines and the designers' own concepts. The best way of displaying a timeline for literary work and authors on the website stays uncertain after the completion of this project as the ideal timeline which is both practical and attractive for users to use on website has not been developed in this project yet and the final prototypes developed in this project are two un-compatible different kinds of prototypes that have many functions inactivated.

As mentioned previously, the original research problems of *How to display a timeline for literary work and authors on the Litteraturbanken website? How to balance the concept design and the real data design? How to balance guidelines and the designers' own concepts during the project development process?* seems to be difficult to answer clearly since the author has not successfully developed a final product. But the new research questions of *What problems can occur in the process of designing a timeline? What suggestions could be given to designers after the occurrence of these problems?* could be answered clearly after the finishing of this project.

The difficulty of balancing different aspects in the design process, misuse of web tool, useless literature research and lack of programming or designing skills may all occur during the timeline developing process. These problems give the author some suggestions that could be useful for her future design. The first idea is that a formed team with well scheduled programmers and designers might be needed to prevent many of these problems as they could remind and help each other from different aspects during the designing process. Another idea is that the designers should try different types of design rather than focusing on one idea so they will have more opportunities in their final design. Furthermore, the designers should notice the differences between the concept design and the real data design as well as the conflicts between the guidelines and their own creativity. Designers should always keep their preference of whether they want to be more focused on guidelines or whether they want to keep more of their own idea and whether they want their final product to be more practical or whether they want their product to be more concept design in mind. Last but not least, the designers should always go back to the beginning of the design and dare to throw away all the design concepts that go too far away from the original idea so that the final prototype will not differ a lot from the expected ones.

9.1 Future work

There is still much more work need to be done for the future work. The functions existing in the current prototype need to be elaborated and implemented. Other data about the authors and works stored in the database need to be filled into the timeline. The colors used for Litteraturbanken website could be re-thought and the current structure of the timeline could be re-done so that this timeline page would not rely too highly on the authors. All these aspects could be improved in the future for the further steps of developing the timeline web pages for Litteraturbanken when other designers continue developing the timeline in the future.

References

Courage C., Baxter K., 2005, *Understanding Your Users: A Practical Guide to User Requirements Methods, Tools, and Techniques*,

http://ac.els-cdn.com/B9781558609358500373/3-s2.0-B9781558609358500373-main.pdf?_tid=93f4e28c-2c6a-11e3-ab70-00000aab0f27&acdnat=1380832381_c7dd82a9c_cf8d1977b0e766e1ddb3d02.

Fogg B J, Marshall J., Laraki O., Osipovich A., Varma C., Fang N., Paul J., Rangnekar A., Shon J., Swani P., Treinen M., 2001, *What Makes Web Sites Credible? A Report on a Large Quantitative Study*; CHI '01 Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, pp.61-68.

<http://dl.acm.org/citation.cfm?id=365037>

Hasan K. T., Abdullah S. S., Ahmed R., Giunchiglia F., May 2013, *The History of Temporal Data Visualization and a Proposed Event Centric Timeline Visualization Model*, International Journal of Computer Applications, Vol.70, No.27

Hines A., 2006, *Using Timelines to Enhance Comprehension*,

<http://www.colorincolorado.org/article/13033/>

Johansson D., 1998-2010, *Colors on the Web*

<http://www.colorsontheweb.com/colorcontrasts.asp#>

Karam G. M., 1994, *Visualization using timelines*, ISSTA '94 Proceedings of the 1994 ACM SIGSOFT international symposium on Software testing and analysis, pp. 125-137.

Litteraturbanken The Swedish Literature Bank, 2014,

<http://litteraturbanken.se/#!/om/inenglish>

Malm M. 2013-12-30, *Thesis: Visualizing Literary History*, E-mail

Mandel T., 1997, *The Golden Rules of User Interface Design*, The Elements of User Interface Design, John Wiley & Sons

Methods check list, 2013,

<http://ixdcth.se/courses/2013/tda486/sites/default/files/files/Methods%20check%20list.pdf>

Miller, G. A., Mar. 1956, *The magical number seven plus or minus two: Some limits on our capacity for processing information*, Psychology Review, Vol 63(2), pp.81-97.

Nielsen J., 2000, *Designing for the Web*,

<https://www.cs.umd.edu/class/spring2012/cmsc434-0101/Notes11-WebDesign.pdf>

Pandya A., Mulye A., Teoh S. T., Jan. 2011, *Enhancing Online Timeline Visualizations with Events and Images*, Konferenshandlingar Visualization and Data Analysis 2011, Vol. 7868, Num. 1

Rayner K., Pollatsek A., 1989, *The Psychology of Reading*, Psychology Press.

Rogers Y., Sharp H., Preece J., 7th Juni. 2011, *Interaction Design: Beyond Human - Computer Interaction*

Rubin J., Chisnell D., 4th Aug. 2008, *Handbook of Usability Testing: How to Plan, Design, and Conduct Effective Tests*, PART I, page 22,

http://www.google.se/books?hl=zh-CN&lr=&id=LyLSSg_a5kQC&oi=fnd&pg=PR7&dq=Usability+test+denfintion&ots=jOuRF94tPE&sig=teEHFxOv_xwYROZGSkxrJkgPb4Y&redir_esc=y#v=onepage&q=Usability%20test%20denfintion&f=false

Tauscher L., Greenberg S., July 1997, *How people revisit web pages: empirical findings and implications for the design of history systems*, International Journal of Human-Computer Studies, Vol 47, Iss 1, pp.97–137.

<http://www.sciencedirect.com/science/article/pii/S1071581997901257>

Visualizing Literary History, 2013-12-20,

<http://www.ixdeth.se/courses/2012/ciux02/news/52>

Ware C., 2012, *Information Visualization: Perception for Design (3rd Edition)*, Morgan Kaufmann.

Wiklund M. E. , P.E., Kendler J., Strohlic A. Y. , 2011, *Usability testing of medical devices [electronic resource]*, CH.1 , page 2,

<http://www.crcnetbase.com.proxy.lib.chalmers.se/doi/pdf/10.1201/b10458-2>.

Yang J., Ginige A., Mayr H. C., Kutsche R.D., 2009, *Information Systems: Modeling, Development, and Integration: Third International United Information Systems Conference, UNISCON 2009, Sydney, Australia, Proceedings*, page 445,

<https://books.google.com.hk/books?id=npT5GkSm2TQC&pg=PA446&dq=waterfall+model&hl=zh-CN&sa=X&ei=JRiUVLWcOsPXygPQjICIAw&ved=0CDwQ6AEwAw#v=onepage&q=waterfall%20model&f=false>

Appendixes

Questionnaire used during project

1. Have you ever used a website similar to this prototype before? (timeline websites)
2. When did you use such a website? For what reason?
3. What do you think about this kind of website? Advantages and disadvantages? What components do they usually have? Why do they have such kind of elements according to your opinion? Is it good or bad to have such kinds of elements?
4. What is your general feeling of using this website? Is it a good experience? Is it helpful when you are using it?
5. What do you think of the whole style of the prototype? (Is it consistent with the Litteraturbanken website? Is the webpage consistent with itself? Is it easy / difficult to use/understand the prototype?)
6. What do you think about the structure on the prototype? (Is the space between different staff reasonable or is there anything should be improved? Is the flow of the webpage reasonable or is there something strange?)
7. What do you think about the texts on the prototype? (Is there somewhere rather difficult to see/understand? What do you think about the direction of the texts? Is it better to use Abbreviation or is it to use the whole sentence for the “show on the timeline” and “publish time”)
8. What do you think about the different components of the prototype? (Will the mini map really help you if you use this website? Is the zoom in/out better to have the icon like this or is it better to using scrolling to zoom in/out? Is the search help list helpful once when you are using the search page?)
9. Will you use this webpage if it is developed? (How do you thing this webpage? Terrible, Not so good, Neither good nor bad, Good, Excellent)
10. Does this prototype differ a lot from the webpage you used before? Do you think the difference is a good thing?
11. Possible improvement for the website? (Is there something missing in this prototype or is there something not clear enough?) Do you prefer the website you used before or this kind of prototype?