SophieServer: The Future of Reading

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Abstract

Sophie is an easy-to-use authoring tool that enables its users to combine various media into a new kind of book. With SophieServer, an extension to Sophie, it is now possible to share Sophie Books with readers all over the world. Readers can share their knowledge and discuss their insights with the community. For that, virtual book-clubs offer guided tours that can be prepared, attended, commented, and evolved online by interested members. Alternatively, readers can just enjoy Sophie books, reading them within their Web browser.

1 Introduction

1.1 Sophie

Sophie [9] (cf. Fig. 1) is one of the projects of the Institute of the Future of the Book [4], a self described "think-and-do tank investigating the evolution of intellectual discourse as it shifts from printed pages to networked screens". Sophie allows users to easily create books that contain any sort of media on hand — text, images, sounds, videos, and animations. Sophie does for media what a physical book does for text and images: using Sophie, authors can create multimedia books. That said, it is not just a mere wrapper for digital media: Sophie differs from other platforms for electronic reading in that it puts equally powerful control over both form and content into the author's hands.

Sophie is media-agnostic: all media are the same inside Sophie. A book can be created based on a long piece of text, like a traditional novel. It is also possible to create a slideshow, based on a series of photographs, but augmented with audible spoken text or a soundtrack. Sophie aims at having a low enough threshold for non-professional users to create media-rich dynamic content without being required to learn a full-fledged multi-media programming language.
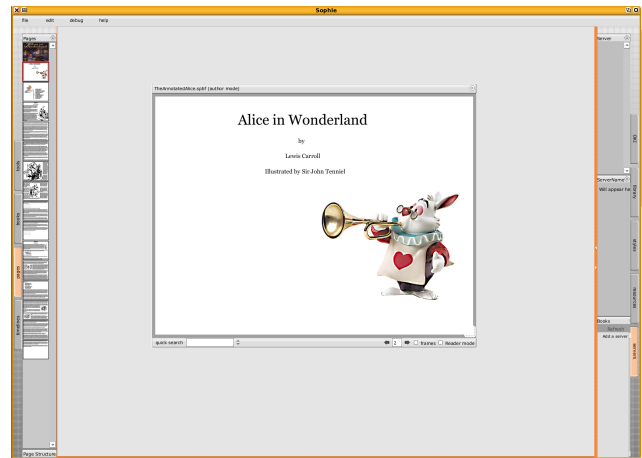

Figure 1. Sophie

1.2 SophieServer

The SophieServer project stems from the idea that Sophie and Sophie Books exist in a networked environment. SophieServer provides a place for Sophie Books on the network, letting users search for interesting Sophie Books or publish their own books directly from within Sophie.

On the SophieServer platform, books are unique media objects that can be read as well as written. *Writing* in this context means the process of *annotating* any kind of media contained in a Sophie Book. Such annotations are much harder or even impossible to achieve in other digital media; e. g., marking or commenting a specific point in a given song on a CD. Many electronic book formats also do not support annotations, the precursor of Sophie, TK3 [7], being an exception.

SophieServer enables readers to annotate any kind of media in a Sophie Book. Text passages can be annotated with a comment or reference to another book. Audio tracks can be annotated by using timelines and time-based events like pages turning at specific times (a slideshow), text or

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graphics popping up on top of movies at specified moments, or audio playing ten seconds after a page opens. Each reader can create their own set of annotations to the book being read and store these on the server so other users can read them.

1.3 Virtual Book Clubs

Book clubs, also known as book discussion clubs, are groups in which people meet to discuss books that they have read. Members meet, e. g., in private homes, libraries, bookstores, or even over meals in restaurants. Given the extended outreach of persons due to the Web, the idea of an online book club stands to reason.

SophieServer provides the basis for a community platform revolving around Sophie Books. On virtualbookclub.org (cf. Fig. 2), users are able to discuss books and annotations via chat or an instant messaging system. So-called *Guided Tours*, tours through or reviews of books prepared by interested community members, are a unique feature of SophieServer.

The following sections provide an overview of virtualbookclub.org and introduce selected aspects of SophieServer, such as annotations, user management, rankings and guided book tours. Finally, the paper provides an outlook on future work.

2 Overview

This section gives a detailed introduction to several features of virtualbookclub.org. It first describes the basic structure of the Web portal and continues with guiding the reader through the functions and features by means of some typical usage scenarios.

2.1 Basic Structure

Figure 2. virtualbookclub.org

The virtualbookclub.org web portal is divided in three main areas (cf. Fig. 2). The main space is taken by the *books area* where books can be searched for and read. The *communication area*, located to the right-hand side of the screen, provides functionality for annotating books, managing contacts and communicating with other users. The *control area*, located at the top, contains the main menu bar and the login window.

2.2 Reading Books

Reading books is obviously the essential function of virtualbookclub.org. On the start page, virtualbookclub.org proposes a randomly chosen set of books, which can be found in the middle of the Web portal screen (cf. Fig. 2). A click on one of the thumbnails opens a book. There is access to recently uploaded books and information about the latest Guided Book Tours in the *news area* on the left-hand side. In order to find a specific book, e. g., by its title or author, the book search function of virtualbookclub.org can be used. The desired book can be navigated using the arrow buttons displayed below the book (as marked in the bottom part of Fig. 3). Between the arrows, a page number to be jumped to directly can be entered.

Books on virtualbookclub.org can be annotated with text, providing additional information or commentary. Every text passage appearing highlighted was annotated by a virtualbookclub.org member. Hovering over the highlighted text passage will make the annotation appear (for an example, see Fig. 4). The annotation feature will be described in detail in Sec. 5.

Figure 3. Reading a Book

Members of virtualbookclub.org can comment and rank books. Comments can be found in the *communication area*, on the right-hand side of the virtualbookclub.org portal. The

comments window shows a list of book titles and the number of comments made on each book. Registered virtualbookclub.org members can share their insights with others by the means of ranking books, making comments or annotations or even presenting books to others in Guided Book Tours. That way, reading becomes a social experience.

Books ranked equal to or higher than a defined threshold are listed as favorite books. The threshold can be defined by each user in their private settings. virtualbookclub.org keeps track of favorite books and recently read books for faster access. Both lists are available in the book search.

2.3 Public Actions

Currently, the books on virtualbookclub.org are made by users for users. Using importers, materials from archive.org and Project Gutenberg can be used to make out-of-copyright works available through virtualbookclub.org. Consequently, some books may be found worthier to read than others. On account of this, every virtualbookclub.org member can rank books. Such book rankings help other users to identify interesting and appealing books on virtualbookclub.org.

Users often want to share their insights with other readers and give some more significant information to the book than just a high or low ranking. For that purpose, the aforementioned annotation features can be used. It is also possible to comment entire books to give information on the book in general, whereas annotations are closer to particular text passages.

For any book, when opened, comments already given are visible in the communication area. Here, it is also possible to create new comments. The user types in a headline and the comment's text and clicks on 'Apply'. A user can edit their own comments with the 'Edit' button below the comment's text, or delete comments with the 'Delete' button.

Since each registered virtualbookclub.org user can comment books, comments' qualities can be expected to vary. To allow for filtering out low-quality comments, comments can be ranked, as books can (cf. Sec. 4.1). Via the ranking buttons, a user can rank all comments made by other users. The sort option 'Rank' can be used to let the best comments appear at the top of the comments list. The option 'Date' brings the newest comments to the top, while 'Author' sorts the list of comment according to the alphabetical order of the comments' creators.

Comments on particular text passages can be created by marking the passage in question and creating a new annotation . The user can fill in a heading and the annotation's text. To see an annotation, they hover over the marked text, which will cause the annotation tooltip to appear. It shows the annotation headline and the annotation body. In addition, it displays when and by whom the comment was cre-

ated, and how it is currently ranked.

Figure 4. An Annotation

Any user can edit or delete their own annotations, and rank other users' annotations. While reading a book, a user can choose which annotations or, more precisely, which marked text passages they want to see.

2.4 Communication with Other Readers

Reading books on virtualbookclub.org differs from reading books in a real library, where everyone has to be as silent as possible. On virtualbookclub.org, readers have the opportunity to communicate with others via the chat feature while reading a book. There is a "lobby" channel for general discussions. Moreover, each book has its own chat channel which it is linked to. Users automatically enter and leave channels pertaining to books they currently read.

Besides discussing with users currently online via the chat channels, messages can be sent to other users via e-mail . Each user is required to enter an e-mail address upon registration. Every user has a contact list, from which e-mail recipients can easily be selected. To add a contact to their contact list, the 'Search for user' function can be used. Selecting one or more of the found user names and clicking 'Add to my Contacts' will make the selected user names appear in the user's contact list.

2.5 Guided Book Tours

As mentioned above, virtualbookclub.org provides a number of functions to share insights on books among users. Ranking, commenting and annotating books can be very informative, but are limited: only some short facts can be expressed in an annotation, any only a general evaluation on a book can be expressed in a comment. Delivering a deeper insight into the book is not feasible this way.

A virtualbookclub.org member can participate in Guided Book Tours. In a Guided Book Tour, users are guided through one or more books by another user. virtualbookclub.org synchronizes the book view of all tour participants with the guide's view.

The tour list in the virtualbookclub.org portal shows the currently running Guided Book Tours. Selecting one of them and clicking on 'Participate' will synchronize the

user's book view with the guide's. During the Guided Book Tour, the guide posts comments into the chat channel associated with the tour. All tour participants can post questions and own thoughts as well.

3   User Management

As SophieServer provides a Web portal, it requires management of different users and keep all application data persistent and accessible in parallel from multiple clients. To provide community functions such as chat or user-to-user messaging, a communication system is required as well. Privacy is also an important goal, since virtualbookclub.org users post personal data online. This section describes how SophieServer handles users, communication, data storage and protects user privacy.

3.1   Registration of a New User

To become a member of virtualbookclub.org, the user-to-be has to register. To complete the registration process, some websites require only an e-mail address and a password, others a whole set of personal data. SophieServer keeps the registration process as easy as possible, so only an e-mail address and user name are required to become a virtualbookclub.org member. The user name is required to allow for a more personal addressing of the user, and to hide the user's e-mail address from other users. System messages, lost-password reminders or messages from other users are routed by the system. After a user is registered with a unique user name and valid e-mail address, they will receive an activation e-mail with an initial password. The activation e-mail prevents identity theft.

3.2   Protecting User Privacy

People around the world excessively publish private data on the net. Still, privacy is a very important good. Some communities do not care about privacy protection and security, but SophieServer claims to keep its users' personal data as confidential as they want. This is why registration only requires a user name and an e-mail address, but, e. g., no first or last name. The e-mail address is the only sensitive information the user has to provide for SophieServer. So SophieServer has to protect only this one piece of information.

The e-mail address is never shown on any of the portal web pages, except in the user's own profile page, which is inaccessible to other users. User-to-user messaging is done by tunneling the message from one user to another via the SophieServer infrastructure.

If, in the future, more personal data is required to improve the community experience, this is easy to implement, but users should have full control over who can see which details of their profiles.

3.3   Communication Between Users

All Web communities share the feature that their users communicate with each other. Frequently, simple Web fora are used or a mailing system is implemented. SophieServer provides two kinds of direct communication, the first being a real-time chat that can be used to have live discussions on books. The chat is a primary feature needed for the Guided Book Tour described in Sec. 6.

The second way of inter-user communication is the messaging system, which is also used for informational and organizational messages from the system. As mentioned above, privacy is a core concern, so users do not know others' e-mail addresses; all communication is routed through SophieServer. Still, sending messages is kept easy: to send another user a message, the sender only needs to know the receiver's account name. Immediately after sending it, the receiver will be sent an e-mail from SophieServer containing the message.

A further way of conversation, although not primarily intended for user-to-user communication, is the annotation function. Users can reply to an annotation they find in a book by means of adding another annotation.

4   Ranking

Ranking is commonly defined as a process of positioning items such as individuals, groups or businesses on an ordinal scale in relation to others. SophieServer supports three rankable components: books, book comments, and annotations. The next paragraphs will describe what these rankings are suitable for and how they work.

4.1   Book Ranking

On SophieServer, users have the possibility to rank a book in general. There are three colored buttons which are labeled 'Good', 'Ok', and 'Bad'. A user can click one of the buttons according to their opinion to cast a vote. After that, the ranking buttons disappear. The field representing the current total rank and the number of users who have already cast votes for a given book are updated accordingly. A user has to be logged in to cast votes.

Users who have ranked a book positively have the opportunity to easily find this book again in their favorite books list by choosing a reasonable favorite book threshold. This threshold can be defined in the user settings. Users can also sort books in search results according to their respective ranks.

4.2 Annotation Ranking

SophieServer users can provide background information or a comment which is associated with a particular element of a book, e. g., a text passage or a movie. Users who rank a book express whether an annotation contributes valuable background information or not. An annotation is ranked in the annotation tooltip by clicking one of the three displayed colored ranking buttons (cf. Fig. 5). This action can only be performed when the user is logged in. A user can cast their vote only once to prevent the community from misusage. Also, a vote cannot be revoked.
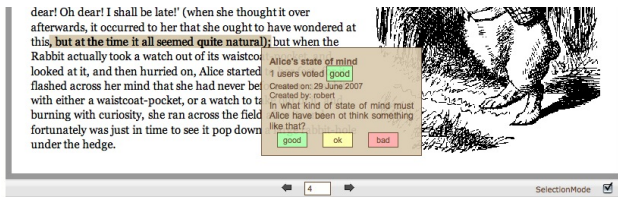
Figure 5. Annotation Ranking Interface.

Users also can filter the annotations which are displayed. In the Books Area, below the book, a selection list providing filter categories is shown. One of them is 'Show only best annotations'. By selecting that filter, only annotations ranked well will be shown.

5 Annotations

Annotations are as old as reading itself. Ever since people have been reading texts, particular parts of texts have been highlighted, or notes have been written on page margins. Annotations are very helpful to add additional information to the text — e. g., sources for more information, or details about the background of the current passage. Even just marking a passage to be read again or to be considered later on can be achieved by simply highlighting that passage.

Creating and using annotations is reasonable and helpful, but traditional text annotations have always been intended for use by the one who made them. The only way to use others' annotations was to borrow a book and hope that another reader had made some possibly helpful annotations. This is obviously not very effective. A borrowed book may be full of annotations which have no use at all for a given purpose. Wordy annotations flood the page with information that may be completely useless. There is no way to remove those annotations or fade them out for some time. Bad annotations cannot be blanked out, even if they do not provide any useful information at all. So, it would be good to rank an annotation and blank out those that have a bad rank.

All this is possible on virtualbookclub.org. Annotations can be added, edited and deleted. Annotations made by others can be blanked out, ranked and filtered according to their rank. In the following, this feature of the portal and its usage are described.

5.1 Viewing and Filtering Annotations

Multiple view modes can be selected for annotations. Available options are: 'Show no annotations' which hides all annotations, 'Show all annotations' does not hide any annotations whatsoever, 'Show only best annotations' which shows only annotations exceeding a certain ranking value that can be set by each user separately, and 'Show my annotations' which shows only those annotations the current user created. As the user selects one of those options, the text annotations on the current page will be updated accordingly.

5.2 Creating an Annotation

To be able to create an annotation, a user must be logged in. Annotations can be created by selecting the text to annotate. After clicking the 'Create new Annotation' button, a new window appears on the Web page (cf. Fig. 6). Headline and content of the annotation can be filled in. After clicking on 'Save Annotation', the annotation is saved on the server and is now available to all users. The button 'Drop annotation' cancels the creation of an annotation.
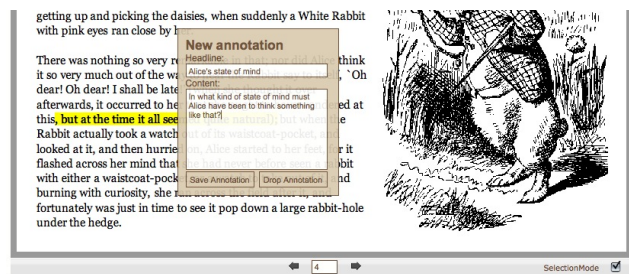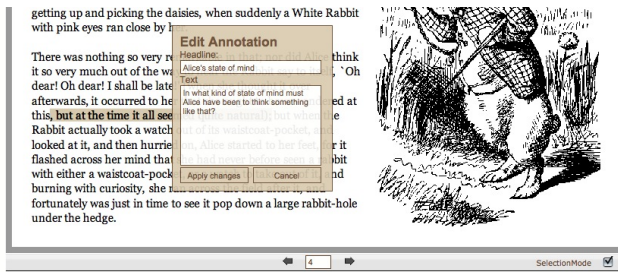

Figure 6. Dialog for Creating a New Annotation

Annotations are always public. No further actions are needed to share annotations with other virtualbookclub.org users. Whether a user is able to see annotations of other users depends on the annotation filter setting they have chosen.

Users can edit annotations they have created themselves. Obviously, a user has to be logged in to perform this action. To keep a good overview about the annotations created by a user, the annotation filter 'Show my annotations' should be used. The annotation tooltip window provides a button

reading 'Edit'. Clicking this button opens a form in which annotation details can be edited (cf. Fig. 7).

Figure 7. Dialog for Editing an Existing Annotation

6 Guided Book Tours

The Guided Book Tour is a special and unique feature of SophieServer. SophieServer exploits features available in modern, so-called "Web 2.0" applications to a great degree to establish an actual interaction among multiple virtualbookclub.org users. Instead of using asynchronous communication facilities to inform other users about particularly interesting passages of a book, e. g., e-mail or chat, a user can now exploit the features of SophieServer Guided Book Tours.

A Guided Book Tour follows the idea of one person leading other people through a book. The leader turns pages for the participants and comments on particular text passages or tells the others interesting facts about the book. All members of such a Guided Book Tour are able to chat with each other. Should the need arise to extend a Guided Book Tour over several books, the leader can choose these books easily while preparing a Guided Book Tour.

A Guided Book Tour has a description, a starting date and time, a starting book and a name. Users will see date and time, the name of the leader and the name of the Guided Book Tour. So everyone can choose to join a Guided Book Tour or to schedule their time to take part in a certain Guided Book Tour.

6.1 Preparing and Leading Guided Book Tours

Guided Book Tours are only available for users who have a valid account. The Guided Book Tour menu offers several options. The easiest thing is to lead an instant Guided Book Tour: just a name is required; the Guided Book Tour starts immediately by clicking on the 'Lead' button. For preparing a Guided Book Tour, additional information can be added, such as the precise date and time when the Guided

Book Tour should start. A name and description can also be entered. The default description simply includes the name of the main book of the Guided Book Tour (the tour starts with this book).

Preparing a Guided Book Tour is also quite easy. A Guided Book Tour consists of tour links. These can be seen as bookmarks inside the Guided Book Tour. They have a name which should be easily recognizable by the leader. Additionally, such a bookmark has a book and a page to refer to, and a description. The description is also set by the leader and shown to all participants of the Guided Book Tour when the leader uses a bookmark. The description can be used to explain the passage to which the bookmark refers.

To use tour links, the user enters the name for the link and its description. Now, a simple click on 'Save Link' will automatically add the book and the page the link refers to. Book and page are the ones currently opened.

Leading a Guided Book Tour is very intuitive. In the top area of the portal, the number of participants is shown. This indicates how many users follow a leader's presentation. By clicking on the predefined tour links, the view will switch to the page and book according to the selected link. Additionally, the comment stored to a tour link during preparation will be shown as a chat message at the top of the chat channel with the tour name. This channel is created automatically when a Guided Book Tour starts.

The leader also has the possibility to change the current page without using the tour links. Simply jumping to the desired page as described in Sec. 2.2 will result in all participants viewing the entered page. If the leader has finished doing the Guided Book Tour, they can leave this window and end the Guided Book Tour.

7 Summary and Future Work

For the future development of SophieServer, some adjustments and enhancements are conceivable. To enhance the usability and the comfort of virtualbookclub.org, some community functions could be added or improved.

First, the message system could become an internal message system. At the moment, state messages are relayed over SophieServer. The receiver cannot see the sender's e-mail address because of privacy issues. If a user wants to reply to a message the user has to go to virtualbookclub.org, log in, and add the receiver to their contact list. This procedure is very inconvenient for just answering an e-mail. To avoid this inconvenience, an internal messaging system could be implemented. That means users can read their messages on virtualbookclub.org and reply to them right away.

Second, a group concept could be introduced. There are two possible approaches. The first one is to put the user

into the position to group his contacts by the genre of books the contacts like to read. By doing that, the user has all the contacts immediately available that could be interested in a Guided Book Tour the user wants to hold. It is easier for a tour leader to invite them to the planned tour. Another approach is that users can join global groups considering their interests. These groups could provide a dedicated chat channel and a forum which only group members can discuss in. Both approaches could be realized concurrently.

Third, the users of virtualbookclub.org could get the possibility to provide more personal information on themselves as for example their favorite books, their profession, home country, and their age. So other users can easily find out whom to ask questions about a certain book via message and whether a user is a reliable user or not.

Also, pilot studies of book tours need to be performed to

8 Acknowledgments

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