SURVEY ON ELECTRONIC BOOK FEATURES

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DISCUSSION AND SUMMARY

EXECUTIVE SUMMARY

When the survey was launched, opinions were mixed on the value of the survey and opinions ranged from:

"Now, whether this is a useful survey or not remains to be seen. Does anyone expect any real surprises from this?" to *"Given this is all so new, any information would be a surprise."*

The results of the survey based on input from 163 people are somewhere in between no surprise to "Eureka". From an industry perspective, the top ten features (with the exception of one feature, bookshelf) are commonly implemented in the hardware and software used to read electronic book content as well as the content itself and so the industry is providing to customers, the features they want.

Furthermore, it seems that people are not yet interested in extending the design of the electronic book too far from the paper book given the low ratings of features, such as voice navigation, that are clearly, beyond features associated with the paper book.

Yet, while people may not want a radical departure from the paper book, they want to do things with electronic books that are not possible with paper books. For example, they want to "personalize" their electronic book reading experience by changing the fonts, typefaces, and margins, moving illustrations and tables around the page, sizing images differently than text, and so on. In effect, people want to manage the presentation of information within the electronic book. This raises an issue because not only do people want to manage presentation, they want to add content to electronic books they purchased. For example, they may read a related article and want to add that content to the book. Adding content should not be viewed as simply creating an annotation or note but adding content that becomes part of the book and incorporated into the table of contents and index.

Another important point is that while people want to do things with electronic books they could not do with paper books before, they want to do things with electronic books that they can do with paper books. For example, people want "rights" to donate a book to a library, lend the book to a friend, or sell the book. But these "rights" are difficult to manage given that while they could not donate, lend, or sell the same paper book at the same time, it would be possible to do all three simultaneously with an electronic book.

In the same vein, people also want the "right" to read the same electronic book on more than one device, such as a laptop and PDA. The issues associated with these "rights" must be resolved with a combination of business and technology digital rights management solutions which spring from a balance of interests between the consumer and publishers & authors. Furthermore, based on comments by people in electronic forums, newsgroups, and in the press, the "management" of these "rights" must be easy

to use and the "eBook industry" must educate the consumer on how their "rights" are implemented in these solutions.

KEY POINTS

ELECTRONIC BOOKS ARE NOT JUST DEDICATED READING DEVICES

People often perceive an electronic book as a dedicated reading device and not as the content itself. Based on comments and suggestions for additional features gathered from this survey, approximately 20 percent of the suggested features were "hardware" related. Therefore, you can conclude that a portion of the people who completed this survey equate electronic books with dedicated reader devices.

Typical of requested features were improved screen display such as a request to provide a *"foldout screen to increase reading"* to a display screen with *"higher resolution for comic book reading"* and other suggestions for managing how to read from a dedicated reading device by being able to *"flip the orientation of the book to become a reference tool, flip it back to return to conversational format"*.

Along with suggested features, people provided comments such as:

"The survey doesn't cover any physical characteristics of device even though more than 2/3 of the e-books sold are for portable devices…". "I believe that eBook readers should be affordable (under $100) and should allow individuals to format and load their own content. I would like to see something small in size and weight…that has backlighting and larger print and costs under $100."

The problem with equating electronic books with dedicated reading devices is that this perception can lead to measuring the success of electronic book sales (or the "eBook industry") by the number of dedicated reading devices sold. Consider that the success of the video industry is not measured by the number of VHS or DVD players sold but by the number of titles sold. And so should be electronic book sales. This is an important point given the number of people in this survey who want to be able to read an electronic book on many devices ranging from dedicated reading devices to personal digital assistants (PDA) to laptops to personal computers. For these people, electronic books are content they can read on their device, not the device itself.

The "eBook industry" must reinforce the message that electronic books are content and dedicated reading devices are tools that enhance the person's reading experience of electronic books.

PERSONALIZATION OF THE READING EXPERIENCE

People want to control their reading experience by being able to customize the content to fit their needs. The eighth most requested feature was personalization, which was defined as the "ability to change font size, type, and colors used in the book." People through their suggested features and comments reinforced their desire to "manage" how the content is presented to them. Some asked to be able to change the entire presentation using a form of cascading style sheets while others wanted to control how they scrolled through the information with "auto scrolling" as well as a "teleprompter". Others wanted to control presentation of images such as being able to move images around the page, pan and zoom on images, move images from one page to a new page, such as move a table from one page to a new page, and rotate images for viewing horizontally or vertically. They also wanted the ability to collapse a book to an outline format and expand the book based on their selections.

The significance of these suggested features and comments is that people want to control electronic books in a way that was not feasible in the past. Given that the presentation of a book was controlled by the author and publisher; people had few choices other than large print books or specialty printed books with added illustrations or improved topography but now, people want to apply their own preferences to electronic books.

For some genres, especially reference material, many of these features would be important. For example, the ability to pan and zoom a wiring diagram would provide function usually only found in mechanical design programs. The ability to "grab" a table or illustration and place that content on a separate page to view as you read would be very useful for reference books such as an electronic book on stock investment which contains many financial tables.

Besides reference books, people may want to control the presentation of many other genres such as popular fiction. People may want to change the typeface and font to fit their "design" needs and not what the author or publisher designed for them.

SHARING AND READING CONTENT

Almost 41 percent of the features suggested by people were related to usage of electronic books, especially the desire to share electronic books whether by donating to a library or a friend, to loaning the electronic book, to selling the electronic book. Commonly, in the literature and the press, the ability to donate, lend, or sell a book is referred to as first sale rights. When a consumer buys a paper book or a DVD, they have the right to do with that product what they want, which includes donating, loaning, or selling the product, which are also rights that consumers of electronic books want. One person summed up the issue by stating:

"These [survey] features would make the product irresistible, as long as there is a realistic business plan allowing for the rights of first sale."

People also want to read the electronic books they purchase on many devices such as their personal digital assistant, their laptop, and their workstation. As one person suggested, they want the *"ability to view any ebook on any device, same as [my] VCR"*.

People also expressed support for a common standard for electronic books to ensure portability by suggesting features such as "*open formats, not a proprietary format*" to "*a universal ebook format*".

ELECTRONIC BOOKSHELF

One feature that was surprisingly highly ranked, given the lack of references in the literature, was the bookshelf, which ranked seventh among the features. The simple description of an electronic bookshelf is the ability to organize a collection of electronic books into a bookshelf and then be able to search by keyword, topic, and so on all of the electronic books in the bookshelf.

To enable a dynamic bookshelf where electronic books can be added or deleted, people must be able to add electronic books to the bookshelf, build a master index that includes index terms from every electronic book, and then be able to search the collection of electronic books using the master index. From a "rights" perspective, people (or the applications they use) would need the "right" or ability to extract index terms from each electronic book and then build a master index. Digital Rights Management solutions must be flexible to accommodate the creation of an electronic bookshelf.

SURVEY METHODOLOGY

An electronic survey was constructed to determine which features people would like in the design of an electronic book. The survey was designed to be deployed via the Internet in electronic format and the results stored in a database. The reasons for using an electronic survey were to:

- Provide cost effective method to gather data from a widely dispersed population. Other methods to gather requirements, such as a paper survey or focus group, would be more expensive and require longer lead time to complete.

- Enable results to be compiled daily and accurately by using database linked to the survey. Each time a survey was completed and submitted, the data was captured by the database and the results were displayed online. When the survey was finished, the data points in the database were exported to a spreadsheet file. In using a paper survey or focus group, data would need to be manually entered into a spreadsheet, which can lead to errors.

SURVEY DESIGN

The goal of the survey was to gather information as described from the survey introduction:

"Welcome to the Electronic Book Features survey. The goal of this survey is to gather information to identify features that you, as a current or potential electronic book user, would like included in the design of an electronic book, which is defined as content which can be read electronically on a device such as a dedicated reading device, a laptop, personal digital assistant, or workstation."

Therefore, this survey was not designed to provide information on how to design a dedicated reading device, though some features like print or electronic updates, would certainly affect the design of a dedicated reading device, the purpose was to focus on the design of the electronic book content.

The list of features included in this survey was derived from an extensive literature review and from a review of the survey by experts in the electronic book industry. The list of features to be rated required some choices to be made as there is tradeoff between offering too many features and too few features to be rated. One disadvantage of an electronic survey (as well as a paper survey) is that the more pages (number of screens) the person must go through to the complete the survey, the less likely they will complete the survey. The first survey contained 53 features and after review, the number of features was reduced to 48. (The expert review led to some features being deleted while other features were added.)

Still all in all, the survey was quite lengthy and the fact that many people suggested additional features and provided comments is an indication of the interest that people have in their desire for electronic books that meet their needs.

In order for people to rate the features, they must understand what the feature is and how the feature can be used. Thus definitions of each feature were provided on the survey. Some features like application link and thickness indicator may not be well understood by people and must be defined for their benefit. Other features may have more than one meaning and a definition is needed based on the context used in this research. For example, a watermark is sometimes defined as an electronic marker used to verify or track the ownership of an electronic book but in the context of this research, the watermark is defined as a graphic or text that appears across a paper page of text.

In addition to listing the features with definitions, another key aspect of this survey as well as any survey is the rating system used. For this survey, a Likert type scale was used for people to rate each feature based on how important that feature was to them. The scale used in the survey was:

5 = Very Important
4 = Important
3 = Neither
2 = Somewhat Important
1 = Not Important.

A consideration when collecting data is what to do with the data where the person did not rate the feature. There are typically two solutions: delete any empty data points or arbitrarily assign a value to the data point. In this survey, the default was set to three and

the survey instructions stated that if a person did not rate the feature, the feature would be assigned a value of three. Some of the people who completed the survey expressed concern that this method would taint the survey results but data analysis shows a normal distribution of the data.

SURVEY PARTICIPANTS

Participants for the survey were targeted from a population defined or limited to people who had:

- attended a conference on electronic books.
- belonged to a trade organization where the primary activity is associated in promoting electronic books and electronic publishing.
- conducted and published research on electronic books.
- belonged to professional association or group that consists of authors, editors, and others who are likely to create electronic books or read electronic books.

By using the above definitions, the population was limited to people who can provide input based on experience with electronic books.

STEPS TAKEN TO CREATE AND DEPLOY THE SURVEY

Here are the steps used to create and deploy the survey:

1. Features were selected from a literature review and definitions were developed for each feature.

2. The features and definitions were peer reviewed for clarity. Changes were made to feature names and descriptions based on this review.

3. The survey was constructed and tested for ease of use and to validate that the data was correctly recorded.

4. The survey was reviewed by eight experts selected from the electronic book industry. The data gathered from the experts resulted in additions and deletions of features, changes to definitions, and changes to make the rating system easier to understand.

5. The survey was again tested to validate that data was recorded accurately and then posted to the OEBF website for people to access.

6. Invitations were sent out and the survey was completed within a two week period.

7. The data gathered was exported from a database into a spreadsheet where the data was analyzed to rank the features. Other data was collected but is not presented in this paper, such as standard error and standard deviation. These data points were used to validate the results of this survey.

8. The results of the data obtained from the eight experts were compared with the results from this survey and the results were similar though the ratings of features from this survey were slightly higher than the ratings of the eight experts.

9. After the data had been analyzed, the database and survey were deleted to ensure the privacy of the people who completed the survey. Additionally, the mailing lists used to invite people to participate in the survey were also deleted.

LIMITATIONS

POPULATION SAMPLE

The people who were invited to complete this survey could be classified based on their careers and interests as being novice to expert readers of electronic books. The reason that novice to expert readers of electronic books were selected is that anyone who reads a book is a potential reader of an electronic book. Thus, sampling a population of all people who read books would be problematic. Furthermore, and the most compelling reason to target readers of electronic books, is that these people are more likely to provide meaningful feedback on the features they believe belong in an electronic book. While the survey instrument included a description of each feature, some features such as a table of contents would be readily understood by most people who read paper books, but a feature such as personalization might not be well understood.

Thus to obtain precise feedback, this survey targeted people who had most likely read or were planning to read an electronic book. And importantly, the people who responded to this survey are certainly representative of the customers who buy electronic books.

ACCESSIBILITY

Though this survey included some features, such as text to speech, which support accessibility of content by those who are visually impaired, the results of the survey are limited by the population. Some participants did comment on the need for features such as "selection of high quality synthetic voices to read text aloud". Simply put, it would not be appropriate to say there is no support for accessibility based on this survey.

SURVEY RESULTS

MOST DESIRABLE FEATURES

The top ten features from a total of 48 features were:

1. Open to Last Page Viewed
2. Title Page
3. Text Search
4. Bookmarks
5. Table of Contents
6. Page Numbers
7. Bookshelf
8. Electronic Updates
9. Personalization
10. Progression Bar

LEAST DESIRABLE FEATURES

The bottom ten features from a total of 48 features were:

39. Stamp
40. Video Timeline
41. Reader Comment Form
42. Audio Timeline
43. Three-Dimensional Effect
44. Video Search
45. Voice Navigation
46. Audio Search
47. Watermark
48. Bulletin/Chat Board

RATINGS AND RANKINGS OF FEATURES

Below are the ratings and rankings of each feature in the survey. The total number of people who completed the survey was 163. The data was ranked based on the mean, which was derived from the rating scale of 1 (not important) to 5 (very important). In

addition to rating 48 features, people also were asked to recommend additional features they wanted included in an electronic book and were also asked for comments. People suggested a total of 148 features and provided 41 comments and these features and comments were commented upon earlier in this paper.

Feature and Definition (n=163)	Rank	Mean	%
Open to Last Page Viewed. Open book to last page viewed.	1	4.49	90%
Title Page. Full title of the book, author, and publisher. May also include edition notice if a revised book.	2	4.45	89%
Text Search. Provide users ability to search for text ranging from a simple word match to Boolean operators (such as AND) to fuzzy searches for concepts.	3	4.44	89%
Bookmarks. Enable users to create and view their own bookmarks.	4	4.43	89%
Table of Contents. Provide list of headings in the book.	5	4.34	87%
Progression Indicator. Indicate position within the book.	6	4.33	87%
Bookshelf. Arrange books in a collection and search a collection of books.	7	4.25	85%
Electronic Updates. Load or update a book via electronic means including wireless	7	4.25	85%
Personalization. Ability to change font size, type, and colors used in the book.	9	4.20	84%
Progression Bar. Used to indicate position within the book. Can be selected to move forward or backward within the book	10	4.03	81%
Tabs. Provide users with a visual indicator where a new chapter or division/section begins	11	3.90	78%
List of User Defined Notations. Access a list of annotations, bookmarks, highlights, or other information that the user created.	12	3.87	77%
Highlight. Markup words or sections of a book.	13	3.86	77%
Print. Provide users with the ability to print a page, series of pages, or entire book.	13	3.86	77%
Export Text. Export or copy text from the book to another application.	15	3.78	76%
Dictionary. Enable users to access the definition and pronunciation of a word by double-clicking on the word.	16	3.73	75%
Headings. Indicate importance such as headings to supplement chapter and division/parts/section headings.	17	3.67	73%

Index. List of key terms.	18	3.63	73%
Annotations. Make comments in the book. Can also export the annotations into another format such as a word processor.	19	3.60	72%
Headers. Include text such as book and chapter title that appear at the top of each page. Also referred to as running heads.	20	3.49	70%
List of Illustrations. List of figures and illustrations presented in the book.	21	3.42	68%
Figure Captions. Include text such as page number that appears at bottom of each page.	22	3.40	68%
List of Tables. List of tables presented in the book.	23	3.38	68%
Text to Speech. Ability to search with a search tool. Can be a simple word match search or can include Boolean operators (such as AND) and other search techniques such as fuzzy search.	23	3.38	68%
Graphics/Illustration. Search for graphics and illustrations and for data within graphics and illustrations	25	3.32	66%
Media Cross-References. Cross-references to all media elements including audio, graphics, text, and video. For example, a cross-reference link from within a video clip to related text.	26	3.25	65%
Book Cover(s). Front and back cover of the book.	27	3.23	65%
Thickness Indicator. Provide users with a sense of how thick the book is.	27	3.23	65%
Audio. Support for music or voice clips to be played.	29	3.13	63%
Navigation History List. List of headings that were recently accessed.	30	3.03	61%
Application Link. Link to applications such as a spreadsheet or calculator directly from the book. For example, a textbook may include a calculator application for completing exercises.	31	3.00	60%
File Attachment. Ability to attach a file, such as a text file created with a word processor, to the book.	31	3.00	60%
Personalized Recommendations. Dynamically organize content, especially with anthologies and textbooks, based on user searches or browsing patterns.	33	2.94	59%
Forms. Provide users with electronic forms such as an order form for a related book, updated book, or to obtain permission to copy or quote parts of the book.	34	2.92	58%
Thesaurus. Access to electronic thesaurus directly from within the book.	35	2.89	58%

Book Review(s). Enable users to view book reviews written by professional book reviewers as well as other users. Users could also write their own reviews.	36	2.85	57%
Popups/Flyovers. Provide access as the cursor passes over the text to comments or information, such as a footnote, to supplement text.	37	2.79	56%
Video. Ability to play video clips from within the book.	37	2.79	56%
Stamp. Enable users to place a graphic such as a rubber stamp, to indicate the book is for review, confidential, or the mark the book with the user's name.	39	2.68	54%
Video Timeline. List of all video elements in the book.	40	2.60	52%
Reader Comment Form. Provides users with ability to send author a comment or critique on the electronic book by submitting an electronic form.	41	2.59	52%
Audio Timeline. List of all audio elements in the book.	42	2.58	52%
Three-Dimensional Effect. Provide depth to text or graphic including rotation, angle, and texture.	43	2.56	51%
Video Search. Search for video clips or data within video.	44	2.55	51%
Voice Navigation. Navigate the book using voice commands such as go to page x or go to heading, bookmark, and so forth.	45	2.54	51%
Audio Search. Search for audio clips and for phrases or words within audio clips.	46	2.53	51%
Watermark. Graphic or text that appears across page of text.	47	2.39	48%
Bulletin Board/Chat Room. Enable users to post comments about the book or related topics for other users to read and respond to each other. Users could also chat with other users in real-time about the book.	48	2.26	45%

FUTURE RESEARCH

Below are some suggestions for further research based on recommendations provided by people who completed the survey as well as by the limitations of this survey:

ASK "PAPER BOOK" READERS TO RATE THESE FEATURES

Ask people, who have never read an electronic book, to rate the features presented in this survey and compare the results with this survey. Since these people would represent future electronic book customers, it would be worthwhile to compare their ratings with the people who participated in this survey. It could be hypothesized that people who have never read an electronic book would rate familiar features such as print, table of contents, and headings higher than features like "personalization" which the people who participated in this survey rated highly.

SURVEY AND COMPARE THE GAMEBOY AND BABY BOOMER GENERATIONS

This survey could be administered to populations based on age and demographics as suggested from the survey:

Results of this survey would be more meaningful if they were grouped according to a profile of respondents and the type of content they are interested in. For example, educational, fiction, news, biographies, reference, etc.

There is some speculation in the literature that the "Gameboy" (perhaps, in a nod to one of our sponsors, we should use the term Xbox instead of Gameboy) generation will be more receptive to electronic books than "Baby Boomers". This survey could be administered to different age groups (such as high school and college students) to compare the difference and/or similarity of ratings based on age. Further demographics such as education, number of books read per week, month, and so on could be captured and compared through correlation analysis. But given the speculation that high school and college students are more receptive to electronic books, a study where the survey compared ratings based on age would seem to be productive and important to identifying what features future consumers want in their electronic books.

DETERMINE WHETHER GENRE AFFECTS THE RATING OF FEATURES

People who completed the survey suggested that the genre or type of electronic book they read would affect how they rated the features. Here are some comments from the survey:

1) Obviously requirements for fiction and non-fiction are wildly different - perhaps the two should be distinguished. 2) Some things I might want in a reference book, but others in fiction so my answers aren't consistent. 3) The survey might be better if you made the distinctions among types of books. There are so many types of books, types of reading, that I can't imagine the results will be meaningful. While the OEB's focus on all books is admirable, it is misleading and confusing to try to think about features for all books at one time.

Comparing the ratings of people who read fiction versus reference materials may well provide a different top ten list of features. For example, people who read a text on economics may well rate the ability to highlight text higher than people who are reading a mystery novel. Conversely, people who read a mystery novel may rate a progression bar higher than those reading an economics text. After all, when reading a mystery novel, people want to know how many more pages they need to read before they find out who did it, but with economics, the fiction never ends.

FINAL COMMENT

Perhaps the most important feature not included in the survey but suggested by one of the participants was:

The reader [person] is rewarded with simulated dog-eared page corners after reading the book a couple of times.

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