Who Decides Appearance: Author or Reader

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Abstract

If a reader accesses a document electronically with aid of a computer then the power of that computer is available to do on-screen viewing, printing, storing, and searching. This moves us immediately beyond what can be done holding a piece of paper. Since the computer is available we might also consider reshaping the document to be more suitable to the reader's needs. However, over centuries, the publishing industry has developed strong traditions and opinions about how to organize the raw material of the document for presentation to the reader in just the proper style. These potentially conflicting points of view offer choices to the on-line systems designers: who decides what the information should look like, the original author or the reader.

Introduction

We are in the early stages of widespread delivery of information electronically. The pioneer developers are learning how best to provide the information to consumers. One axis of choice is the appearance of the information delivered: final form determined by the author or a more dynamic representation of the information that would allow the reader to determine the final form. Some debate has ensued among the early developers and users as to what is the best method, some perhaps forgetting that two views can both prevail and perhaps intermix.

The World Wide Web

The World Wide Web (WWW) is popularizing the Internet. The Web is a network of servers on the Internet which all obey a common protocol to supply information to users equipped with compatible client software. A document language call Hyper Text Markup Language (HTML) is a simple format in which the information providers can supply their material for computer viewing. HTML and the WWW protocols provide for the simple yet elegantly powerful feature that a simple click on the screen view can cause the client software to request more information for viewing, from any WWW server in the world. This allows, at one time, the viewing primitive needed for simple menu systems as well as a powerful hypertext linking facility.

HTML currently provides means to deliver text and images to the client screen. The text can be organized into headings and paragraphs and provision for emphasizing phrases with bold or italic text are provided. The text is flowed into the viewing window by the client software and the user has some control over this process including choice of font used and the size of the characters. The viewing window may be sized to the user's preference and the text will be reflowed to fit that particular window size. Images can be included in the GIF format and placed within the text. The main point for this discussion is that two users can view exactly the same HTML file on their screens and yet their screens can look quite different because of those user's preferences.

Portable Document Format

Another approach to delivering electronic information is provided by the Portable Document Format (PDF) invented by Adobe Systems Incorporated. This format underlies that companies' Acrobat™ products and it is derived from the PostScript™ Language. PDF is a "final form" document representation and holds a document as a set of pages each of which is a rectangle of fixed physical dimensions. Material is placed precisely onto the page rectangles during the authoring process and the viewing user does not normally change that. The user navigates the document by pan and zoom controls and can follow "article threads" for longer reading sessions.

This final form format has great appeal to the traditional publishing industry. That industry prides itself on the ability to organize information in an eye catching and user-practical manner. In this setting, to tell the designer of published material that the viewing reader will be free to reorganize the material in rather arbitrary ways, would be abhorrent. Material with high graphic content, such as brochures, just don't lend themselves to alternative representations or re-flowing.

Information on the WWW

As noted before, the popularization of Internet has been dramatically accelerated by the World Wide Web (WWW) which, as initially conceived, has two major features: the HTML document language and the standardized servers around the world. Besides fetching HTML files for menu selecting and hypertext information viewing, the user can also find and download files of other types such as PostScript Language documents, Excel* or Lotus* spreadsheets, etc. using the client software and the WWW servers. In fact, the facility is available in most WWW viewers to start up an application program that could display, print or otherwise process the file downloaded. If the program is already executing this new file can be handed off to the running application.

This hand-off capability, in some sense, brings all desktop computer applications and file types into the WWW. Of particular importance to this discussion is the fact that one can download PDF files and cause them to be viewed with the free Acrobat Reader or other PDF applications that

are driven by a WWW client viewer. This means that information on the WWW can be supplied in HTML or PDF or many other formats depending on the desires of the information provider. If one has information that is best reflowed by the reader then HTML can be used to represent that. If one has information where the author's design and formatting are vitally important, that information can be represented in PDF.

These capabilities are what is available today and one is seeing the WWW servers filling with more and more information in HTML, PDF and some other formats.

A Next Step—Choices

In what has been discussed above, the web of documents or files on the WWW servers is composed of HTML files forming a web of interlinking hypertext references, with PDF and other files formats being downloadable at the end of a search. In the topology of the WWW these nonHTML files are dead-ends or terminal nodes in the graph. No references leave them, only downloading references come to them.

The Portable Document Format, like HTML, does have hypertext linking capability. One can link together any set of documents with point-and-click references if those documents are all disk-file-accessible to the PDF viewer. Adobe Systems is extending the PDF hypertext linking capability and is offering plug-in extensions to the Acrobat software so it can send requests to WWW servers identical to those sent by HTML viewers and thus will receive files from the servers that may be HTML, PDF or those appropriate to some other application. In fact, the initial implementations of this feature will rely on the HTML viewers to do the server interractions on behalf of the PDF browser. Web linking within PDF will allow an HTML viewer and a PDF viewer to be co-equal and this will allow PDF files to generate WWW menus and hypertext documents and not be just terminal data files. Thus the choice of author format or reader format can be extended into the whole fabric of the WWW.

An Issue of Granularity

The world doesn't have to decide if information will be provided as formatted by the author or designer or provided in a way that is customizable by the viewing person. Both approaches can be accommodated and the information provider has a choice on a file by file basis. Those pieces of information where formatting and style matter a great deal can be represented in PDF whereas those pieces of information where the flexibility for the viewer to modify the information presentation is paramount can be represented in HTML. This provides choice at the file or document granularity.

In a web consisting of both final form and flow-able information, the viewing mechanisms described above have the viewing person using a WWW browser to look at the HTML files and an Acrobat browser to look at the PDF files. In a part of the web consisting of highly intermixed material one will be switching back and forth between the WWW browser and the Acrobat browser frequently. Might it not make more sense to have one browser with dual capabilities? By the time this paper is presented such viewers should be available.

So we will have WWW browsers that can fetch and display either HTML or PDF files. Either kinds of files can contain hypertext links and provide the menu and hypertext functions. What about choice at a finer granularity? Does it make sense to have a common file format that within it has the choices of final form versus formatting flexibility? It seems likely that this may be yet another step that will be taken but the author is not prepared to make projections as to when such a file format might be available. Mixing formats designed with clear and contrasting objectives into one format is not a simple or clean task. It may be that the difficult compromises needed would nullify the benefits.

How to Choose?

What should an information provider consider in choosing which format, today HTML or PDE into which to format the information in question? Of course there are two extreme and clear cases. If one has nothing but text, it is rather long, it has little or no accompanying nontextual material and the reader is very interested in the content and will likely be reading the material on-screen, then representing that information in HTML seems to be the clear choice. If one has information rich in graphic content such as an advertisement or a promotional brochure, then the choice is clearly PDF. If the content is varied, including text, images, and line-art or graphics, and if the inter-placement of pieces of that material with each other is important to the information, then again PDF is the clear choice.

One other consideration impinges this decision: processing requirements within the client browsing software. At this point, because of the rich nature of PDF and because of the rather simplistic capabilities of HTML, it probably requires less processing power to display HTML than it does PDF. However, if one were to be a strong advocate of HTML and, as is planned, extend it to be more powerful, more in the spirit of full SGML, then this processing picture will likely tip strongly in the other direction.

Allowing the user to control the format and style of the information being viewed means that the delivered information is represented more as to the content and structure and less as to its form. That is, it is important to know a given string of words is a paragraph than it is to know that a white space usually occurs before and after the material. It is these presentation choices that we desire to preserve for the viewing person.

As developers of SGML presentation software well know, it is difficult to convert sophisticated information whose structure is known, to a particular final form presentation while obeying some guidelines or rules imposed on the final form. Enhancing HTML to be a more powerful and expressive markup language may be a breaking burden to the viewing software developers. If so, then leaving the time and processor consuming formatting activities to the authors may be the right choice. Doing that activity once, preparing the material for quick and easy repeated viewing by hundreds or thousands, will seem to be a wise economy.

Another choice point is the ease with which information now available electronically can be put into either the

HTML or PDF representations. Today it is very straightforward to create PDF files since they can be created automatically from PostScript Language files. Most of today's published information is, or could be, represented in the PostScript Language since that language is the primary interface to imagesetters and printing presses as well as desktop printers and proofing devices. However, more means for generating HTML files are being developed each day including the ability of popular word processing programs to generate HTML directly.

Summary

The world is at the threshold of exciting electronic times. Electronic distribution of information in a dramatically widespread manner reaching into nearly everyone's life is inevitable and the introduction of this era is accelerating. We are now making choices along various dimensions as to the details of this information delivery. One choice is who decides the appearance of the information. We conclude that this choice will remain one that does not need to be made once for the whole industry, but can be made at a relatively fine granularity by the information providers. The first gross steps along that spectrum are now being taken with the choice in the use of HTML and PDF. It will be interesting to see at what granularity the issues settle out. Will HTML sub-sume the expressive final form power of PDF? Will PDF be extended to include more reader adjustable features for the display of the information thus subsuming a big appeal of HTML?

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