PUT THE DIGITAL INTO DIGITAL PUBLISHING

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Much digital publishing is limited to convenient distribution of what are in effect fixed paper documents. While this is useful, the new medium can do so much more; we should exploit these possibilities. These remarks present a kaleidoscope of ideas, none of which individually are new but that might collectively define a new paradigm:

• Hypertext documents, citation networks. Have a thread of high-level overview sections with the possibility of drilling down into detail at any place.

• Show graphical representations of the overall flow of ideas or the relationships of concepts or other entities presented in a document, with links from the graph into the text. (Within limits, such graphs can be produced automatically).

• Alternate versions for different readers: by difficulty; by language; a spoken version for the blind; textual, tabular, graphical representations.

• Use animation where appropriate, especially in educational documents.

• Compose personalized documents for the reader. For example, once could have a text base on statistical methods, where each topic is treated at several levels (such as for readers who know calculus and those who do not) and where each method has examples from several domains. Given a reader's background, subject domain, and learning goal, the system would then sequence of topics that build on each other (using prerequisite relationships and didactic relationships among topics). Select examples from the reader's subject domain and voila there is a personalized statistics textbook. More generally this requires sophisticated algorithms for document structuring that are driven by an ontology of topic relationships

• Make mathematical formulas and procedure description live in the sense that they are executable, such as linking a statistical textbook to a statistical software package. More generally, provide tools to process data presented in a document.

• Provide a live link from a text that gives data to one or more databases so that the data are always up to date. Or create whole documents from a database, such as creating a textual family history from a genealogical database.

• Provide links from terms in texts to a thesaurus / ontology where the concept the term represents can be seen in its hierarchical context, with a definition, examples, and other information.

• Highlight certain types of terms. For example, in a newsreader highlight person names, political party names, other organization names, place names, an times, each in a different color under user control.

• Provide tools for readers to work with documents. For example, allow readers to make private or public annotations, creating a discussion forum around each document.

• Provide fine-grained search of text databases; find whole documents and find specific passages or facts within documents.