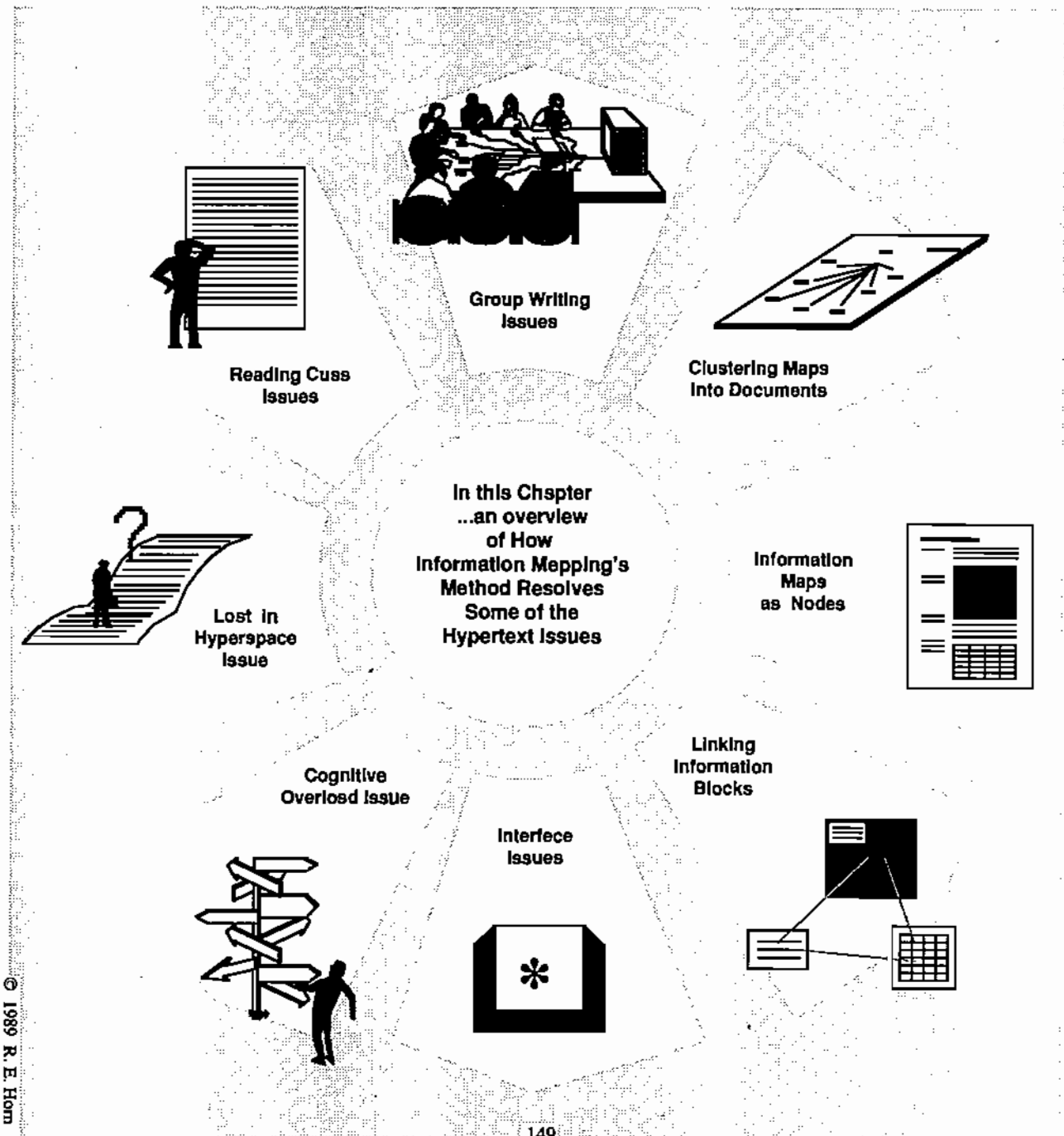


Chapter 5

Resolving Some Hypertext Problems




Overview of This Chapter

How Information Mapping's Method Addresses the Major Hypertext Design Issues

The three major system design issue areas we introduced in Chapter 2 can now be looked at from the perspective of Information Mapping. We will look at nodes, links, and buttons and ask how Information Mapping's method would deal with each.

The Three Major Categories of Design Issues Outlined in Chapter Two

Nodes



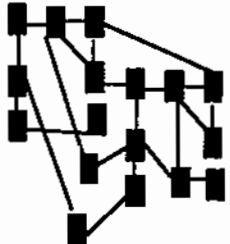
The fundamental questions about nodes we suggested in Chapter 2 were:

- What shall the nodes contain?
- What principle shall we use to determine contents of nodes?
- On what basis should size decisions be made?
- What size specifically should various chunks be?
- Is there any systematic way to determine "natural" divisions of a subject matter that will help us?

see page 40

These were summarized as "granularity issues."

Links




The fundamental questions about links we suggested in Chapter 2 were:

- Which kinds of links to implement?
- How many links should one use?
- How can we implement different hyperlinkage networks of the same node?
- How shall the links be represented?

see page 42

These were summarized as fundamental organization of documents to provide context and meaning questions.

Buttons



The fundamental questions about buttons we suggested in Chapter 2 were:

- What kinds of buttons should be used?
- Where do good interface design principles suggest that buttons should and should not be put?
- How do we prevent users from being overwhelmed by the number of buttons?
- How to distinguish different kinds of buttons?
- What should be the role of graphic icons and words for a particular kind of button?

see page 46

These were summarized as human interface issues.

How Information Mapping's Method Addresses these Issues:

Nodes Information Mapping's method suggests that information blocks Δ are to be defined as the fundamental nodes in the Hypertext network. The information block is the best way of defining the node because of its properties of providing meaningful precision chunking of relationships between sentences. The rhetorical guidelines and standards for constructing blocks and larger units called maps provide the detailed, well-tested approach to analysis and writing hypertext. The block as the smallest node level is probably sufficiently fine-grained for user commentary even if the comment is about a specific single word in the block.

Information maps Δ form a second layer of fundamental nodes. These maps are a clusters of blocks about a related topic that (in general) should be displayed together.

see page 84

see page 94

Links

Links are connections between map name blocks with which they are associated. Blocks can be linked together to form larger nodes called information-maps and these nodes are linked together in hierarchical order to form chapters and larger documents such as reports, textbooks, manuals, etc. Other links connect maps to chapters, chapters to larger documents.

Discourse domains Δ provide the framework for identifying types of blocks needed for different messages and documents in business, science, and technology. We show a full example in Chapter 8.

In addition, structured sets of hypertrail linkages Δ such as prerequisite and classificatory linkages provide important connections that give a meaningful point of view to the subject matter. These Information Mapping and hypertrail linkages are regarded as fundamental. Other links such as comments, critiques and rebuttals are provided under the rubric of argumentation structures.

see page 126

Buttons Within the structured writing context, specific types of buttons Δ will provide an orderly, familiar, useful, and general way of navigating different discourse domains.

see page 8

see page 104

At the Nodes, Blocks and Maps Structure Hypertext

Introduction

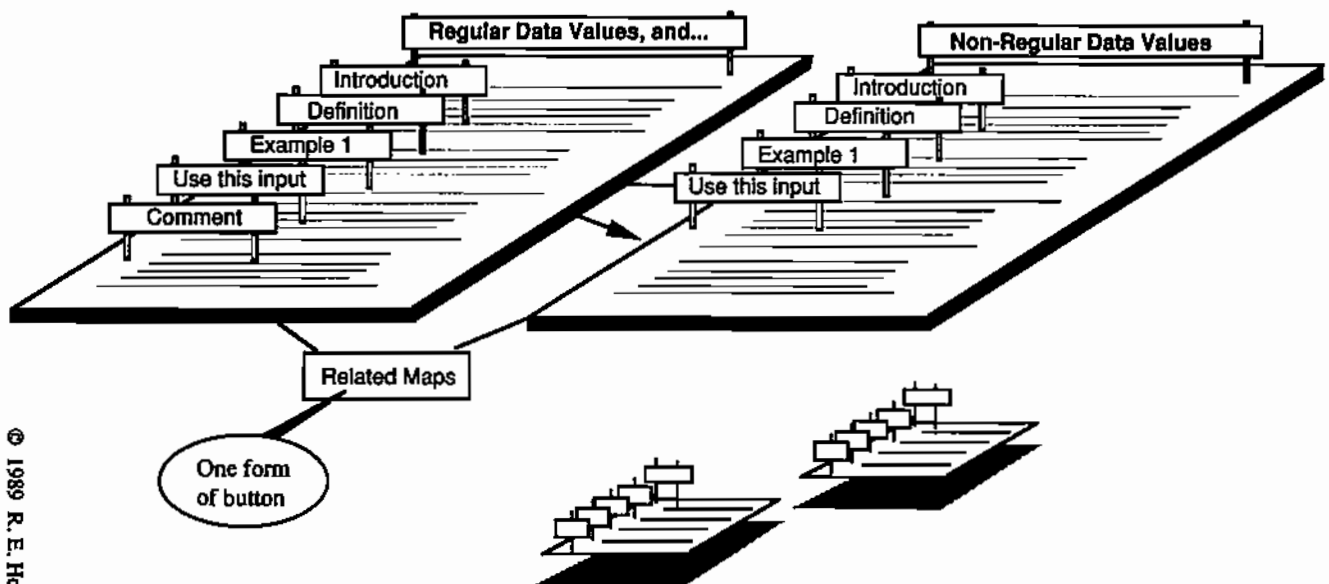
Information Mapping's method provides a powerful and well-tested method for precision modularity that is suitable for defining the size and content of the information at the nodes of hypermedia. On these two pages we show how the blocks and maps appear in hypertext. Examples of this abound in this book—in fact the whole book is an illustration of this concept.

Definition: Structured Hypertext

Structured hypertext is text that is written according to the methods and criteria of Information Mapping's method. The term is intended to distinguish the text from various forms of partially structured or relatively unstructured free association writing.

Example

Here is a schematic of the map on the opposite page



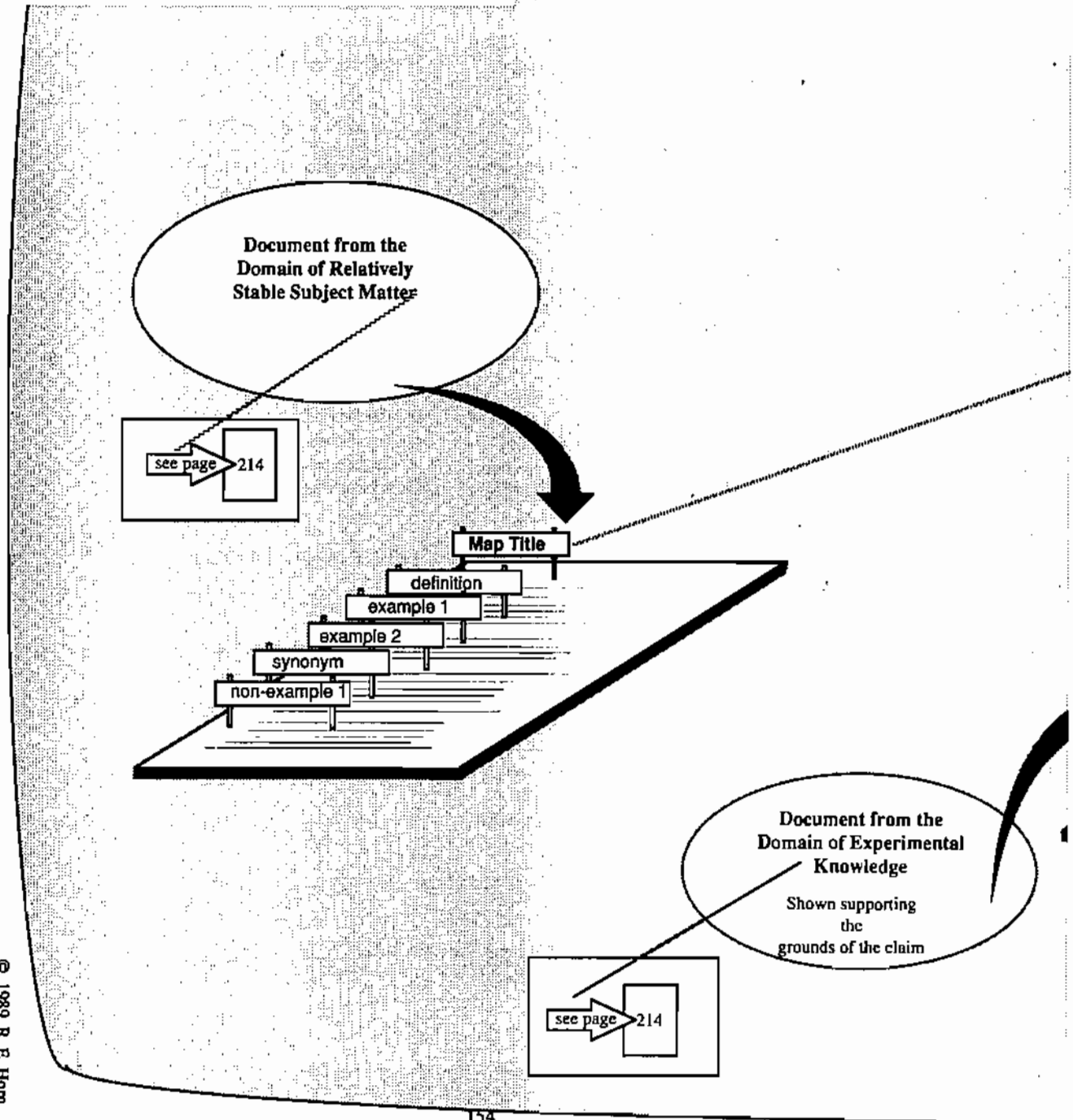
© 1989 R. E. Horn

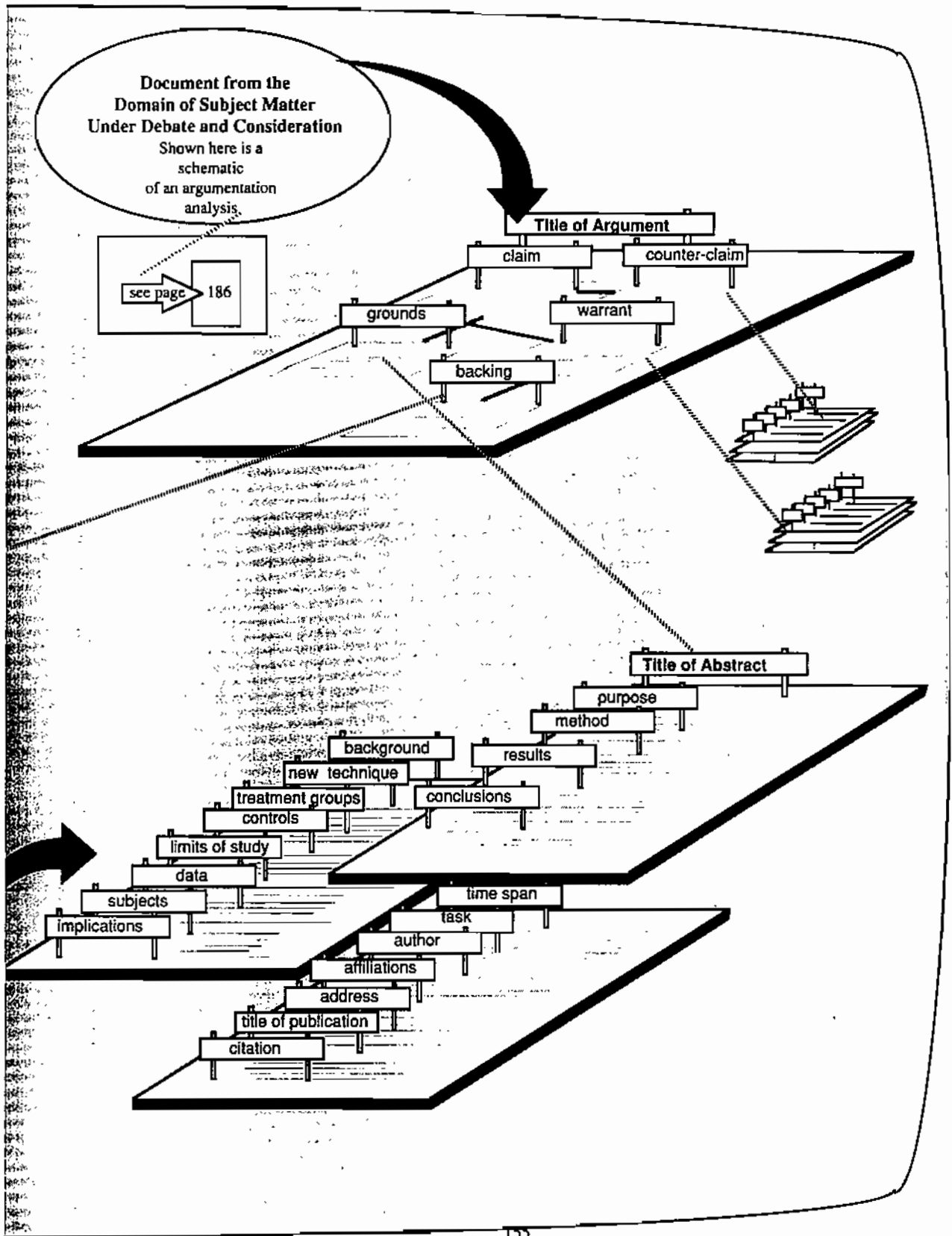
Comparing 17.1.0	Regular Data Values, and . . .	Non-Regular Data Values
Introduction	Some data have patterns. They progress by fixed increments.	Some data do not show any pattern of intervals between the values.
Definition	Data are called regular when the values of a data vector progress from some initial value with some fixed interval to another value, and then optionally from that to still other values by even increments.	Data are called "non-regular" data when they have no systematic pattern of intervals between them.
Example One	Time data show frequent regularities. Samples of blood collected from a laboratory animal every hour on the hour might be called SAMPLEHRS and might look this way: SAMPLEHRS = 6, 7, 8, 9, 10	Most measurement data do not exhibit systematic regularities that are fixed intervals between values, so they are usually non-regular data. Here is an example: LABMEAS - .01, .09, .04, .3
Use This Input Statement	Input with Computed Clause Statement	Standard Input Statement
Comment	This statement permits you to input regular data in a very compact form and is much quicker to type than a normal input statement.	This statement should be used for normal data entry.
Related Pages	Input with Computed Input Statements, 22 Standard Input Statement, 21 Variables, 19	

Clustering Documents From Different Domains

Introduction

With information blocks and maps at the nodes structured hypertext has a form that is considerably more useful than many other possibilities. On this page we show how different forms of blocks, maps, and documents link together to form documents from different domains. On this page, we show schematics of documents from three such domains.





Addressing Lost In Hyperspace and Overload

Introduction

We noted in Chapter 2 that two of the major user issues in the current use of hypertext were problems of knowing

- Where am I?
- Where have I been?
- Where am I going?
- What are my options?

These questions have been generally known as the "lost in hyperspace" problems. In addition, readers have been overwhelmed by too much information and constantly bombarded by overchoice. Information Mapping's approach significantly reduces these two problems. On these pages we will describe how Information Mapping's approach reduces these two problems to manageable proportions.

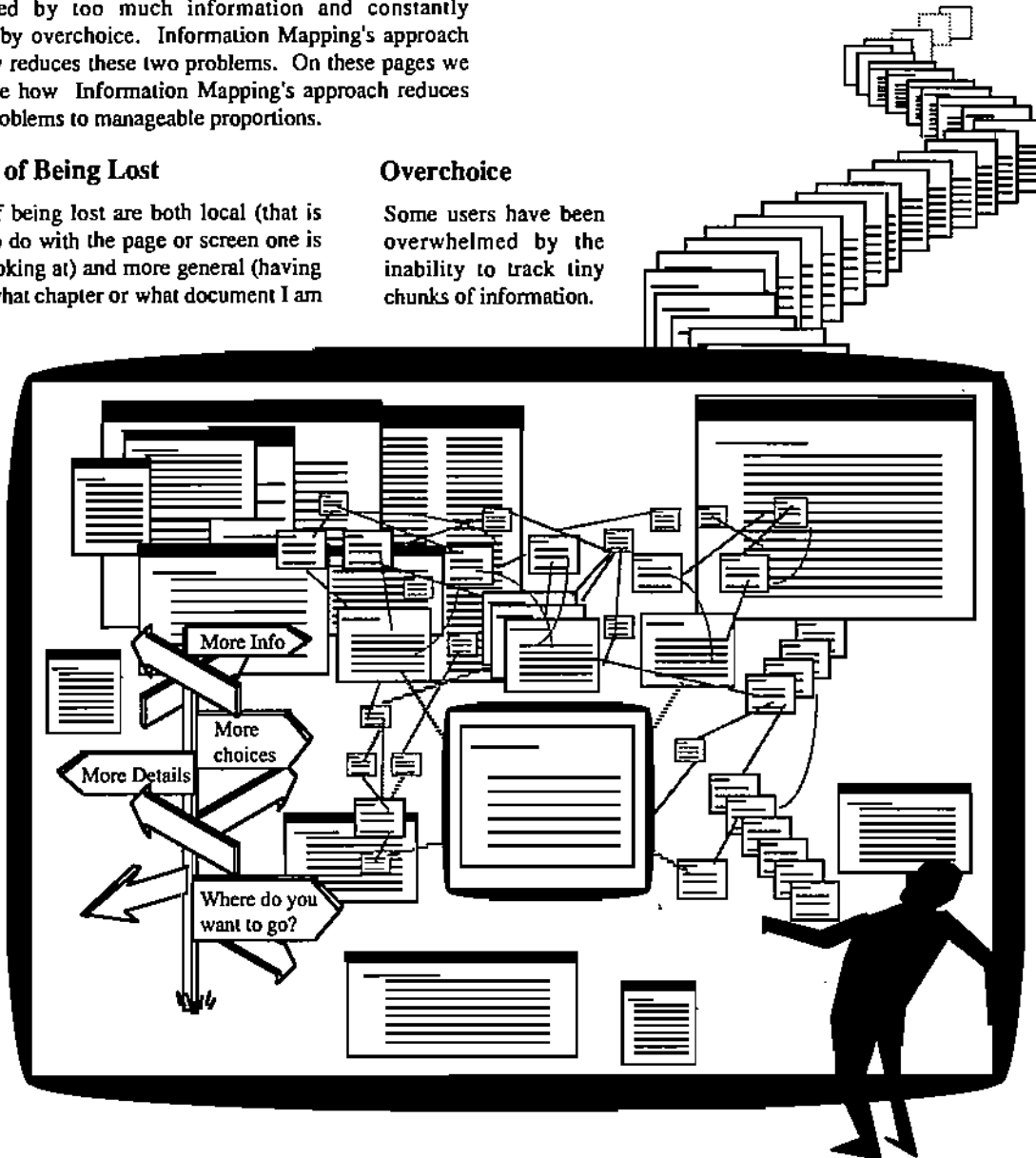
see page 56

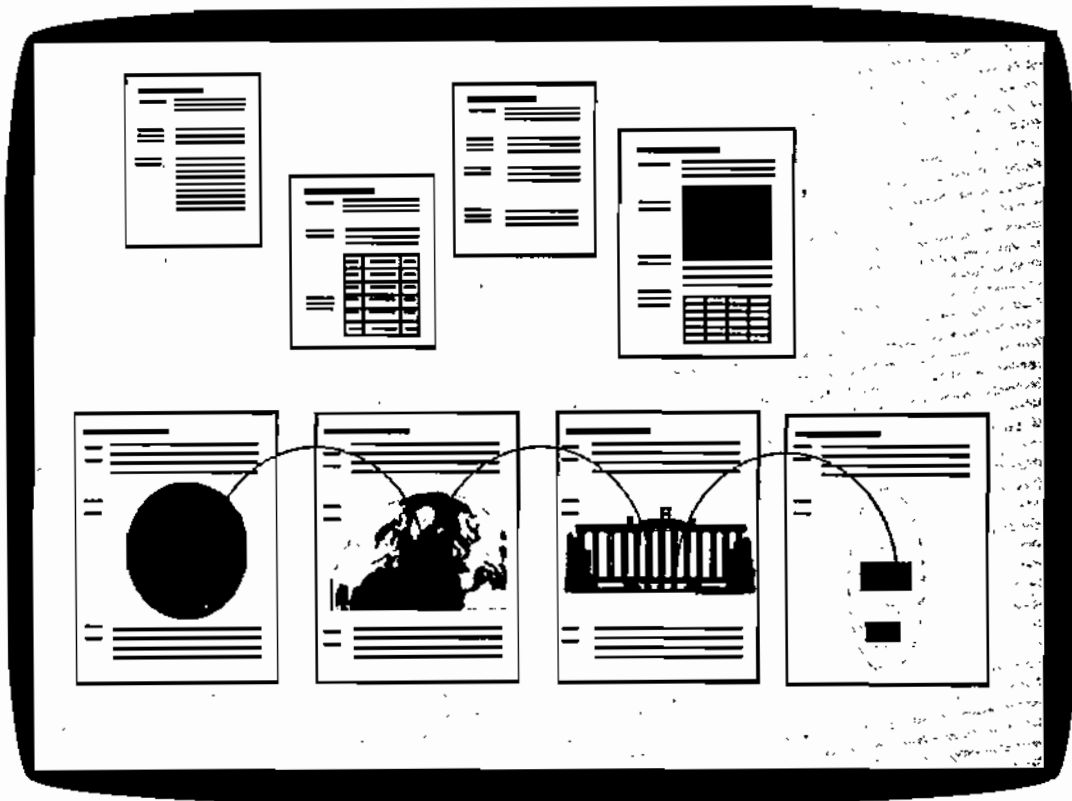
Problems of Being Lost

Problems of being lost are both local (that is they have to do with the page or screen one is currently looking at) and more general (having to do with what chapter or what document I am looking at).

Overchoice

Some users have been overwhelmed by the inability to track tiny chunks of information.





How Information Mapping Prevents Many of the Overload and Lost in Hyperspace Problems

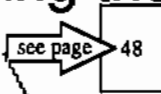
The standards and guidelines of Information Mapping's structured hypertext method introduced such items as

- uniform careful chunking
- uniform careful labeling of each component
- hierarchical structuring and titling of larger structures
- explicit hypertrails of different kinds
- regularly provided overviews, introductions and summaries
- consistency and relevance in all titling and labeling
- table of contents that are created from the labeling and structuring
- important limits as to the kinds of linkages permitted (although readers may -- in some software implementations -- insert any kinds of linkages that are not exhibited to new users unless the new user asks for them)
- similarity of structures across subject matters for different kinds of discourse domains.

The method, while explicitly requiring chunks of information, also provides at all times an explicit context for linking them and a presentation method for assuring that the reader understands the context of the chunks.

Addressing the Major Reading Cues Problem

Introduction



We have already noted that the very nature of hypertext, its links and buttons and the ability to jump from one place to another, may provide many readers, especially poor readers, with more difficulty than they have with ordinary text. Hence, their ability to learn from hypertext may be diminished. Because we want to be able to use the advantages of hypertext

without losing the coherence and discourse cues of normal text, we have suggested Information Mapping's approach. On these pages we show specifically how Information Mapping's method provides solutions to many of the problems that hypertext raises by destroying or disrupting normal discourse cues.

Discourse Cues That Hypertext Destroys or Disrupts

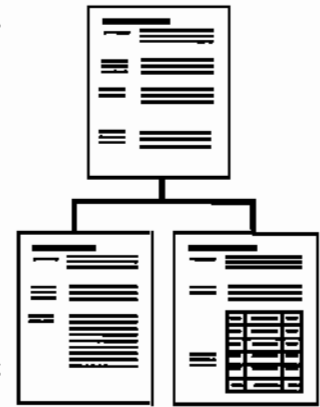
How Information Mapping's Method Deals With These Difficulties

Hierarchical Text Organization

Some research suggests that readers build hierarchical frameworks in their minds as they read. Discourse cues, such as outlines, patterns for subheadings, and tip-off words such as "initially, next, finally," etc. which provide clues to the structure of the text, are disrupted by readers following hypertext linkages.

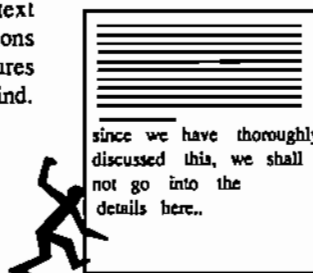


The Information Mapping's method introduces systematic ways of outlining, precise guidelines for providing headings and subheadings, and in general provides significantly more chunking and hierarchical structure to the presentation of text. Moreover, since Information Mapping's method is similar across subject matters, the reader is familiar with what to expect when moving to new content.



Explicit Transitions

Readers traversing hypertext networks run into transitions which link back to structures which may be difficult to find.



Transitions in Information Mapping's method are placed explicitly in highly visible places such as in introduction blocks and overviews. These transition locations are governed by specific guidelines as to how frequently they must appear.



Sequence Signals

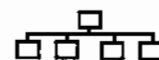
Normal relatively unstructured text may contain signals about organization, such as "there are four types of . . .," but readers traversing hypertext webs may find themselves in the middle of a text which says "fourthly . . ."



Information Mapping's method highlights every sequencing signal by explicitly making visible the structure of the document through a carefully designed framework of labels for all major portions of the subject and by making visible sequencing signals such as "types of, kinds of," etc. The reader can see in this book many of the ways Information Mapping's method accomplishes this.

Example

Four Kinds of Classifications



Discourse Cues That Hypertext Destroys or Disrupts

How Information Mapping's Method Deals With These Difficulties

Contrast and Similarity Cues

Discussions of similarities and differences may be scattered over large areas in conventional text. Comparisons may cover several pages and the reader may jump into the middle of such a comparison.



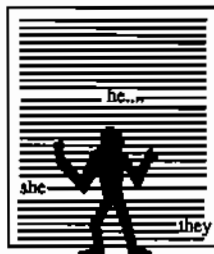
Compare and contrast is done with a tabular arrangement. Either the table is put within a block, or if the compare and contrast is extensive, a complete map Δ will be used to do the comparison.



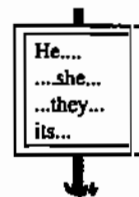
see page 153 for an example

Pronouns, Collocations Cues

Conventional text uses pronouns (they, he, she, we) to refer the reader back to the material the reader is assumed to have read because linear reading is assumed. Readers in hypertext may arrive in such a sequence and not know to what the pronouns are referring.

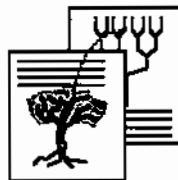


The structured nature of Information Mapping's method and the requirements of its guidelines for constructing blocks to be as self-contained as possible reduces the reference of pronouns outside of, usually, the block which is currently on display and never outside the information map. Therefore Information Mapping's method avoids this problem.



Metaphors

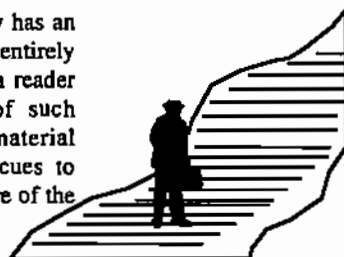
Conventional text sometimes has an extended metaphor running through many pages of text. It provides a useful organization through text but provides difficulty for readers who arrive via hypertext link into the middle of such a text.



Precise analogy blocks permit the use of extended metaphors because they can be linked by an extended example or hypertrail.

Content Schemas

Conventional text generally has an organization which is not entirely evident to the reader. So a reader arriving in the middle of such conventionally written material does not have sufficient cues to orient to the overall structure of the subject matter.



Information Mapping's method, because of its always explicit structure, enables the reader to see the major hypertrail which is organizing the content. And with appropriate facilities in the software, the reader may also be able to see other hypertrails that are available.



Addressing Creation and Maintenance Issues

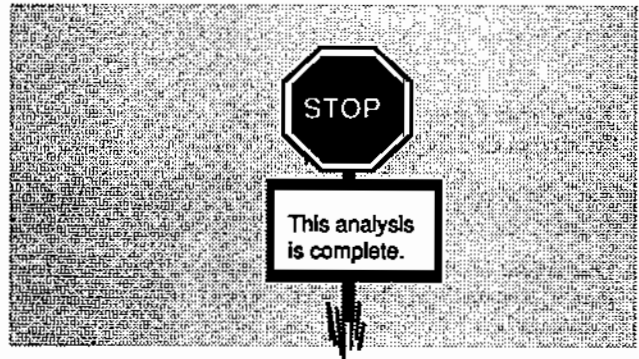
Introduction

We have already noted ~~that~~ hypertext generally increases the amount of intellectual labor needed to create and update knowledge bases. On these pages we make the case that, just as Information Mapping's method has reduced the cost of producing text on paper, it will vastly outdistance less structured approaches in the creation of hypertext knowledge bases.

see page 62

Careful Limits to Text Preparation

Information Mapping's methodology limits the amount of additional text that needs to be done to only that which is absolutely essential and specifiable by the well tested guidelines of the methodology.



Specify Necessary Links

Information Mapping's methodology specifies the particular places and facilitates the creation of specific links.



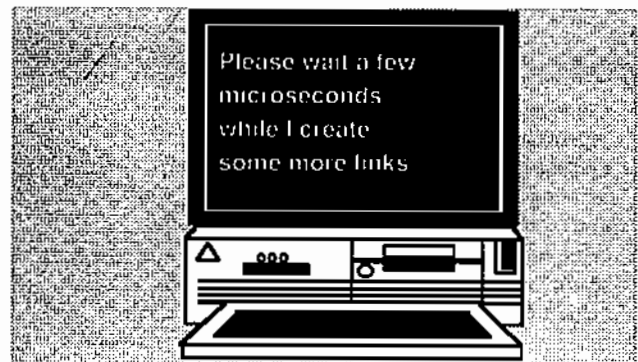
Rational Boundaries on Linkage Creation

While we have indicated that there is considerable cost from proliferating linkages, the specifications developed for Information Mapping's method limits these in commercial situations and will provide hierarchical document structures for hypertrail linkages. This puts required boundaries around the problem of overlinkage.



Permits Greater Automation of Link Creation

The careful definition of the information blocks and information maps will permit higher automation of linkages than would otherwise be provided in automating less structured text.



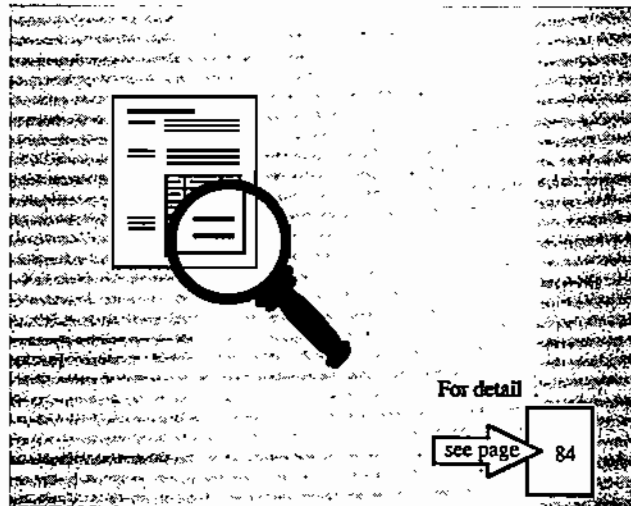
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Additional Quality Control Requirements

Information Mapping's method, because of its specification of quality control guidelines, makes the quality control process of creating text much more manageable.

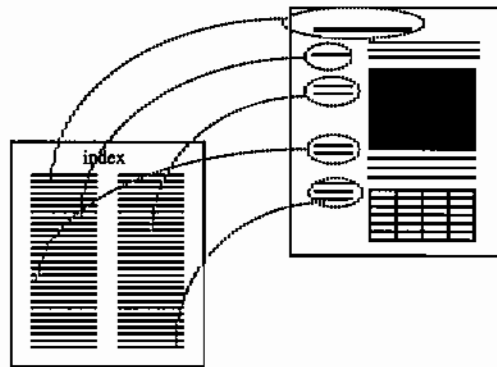
We have noted that the precise definition of components of the text permits establishment of readily determinable standards.

As the reader has noted in previous chapters, the method places a very strong value on managing the size of the message using the "seven plus or minus two" rule of thumb to limit the size of chunks. The method also recommends using strict hierarchies so that every block in a document has an identifiable place.



Rapid Cost-Effective Indexing

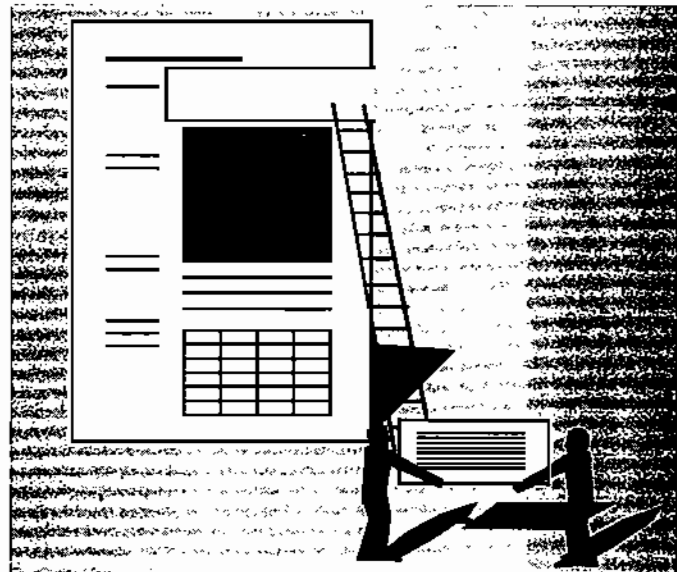
Information Mapping's method will provide the opportunity to do "quick and dirty" indexing of titles and labels, rather than full text. When these have been written according to the guidelines of the methodology, the indexing provides almost the level of quality of a professional indexer. The additional discipline of labeling and tiling blocks and maps, thus, produces significant advantages in the indexing process.



Modularity and Rationality Aids Data Base Maintenance

Because of the careful specification of types of information that belong to specific discourse domains, and because of the modularity of all material written with Information Mapping's method, the updating and revision task becomes much more manageable, efficient, and effective.

It also makes following branches and links that are connected to particular nodes rational.



Addressing Group Analysis and Writing Issues

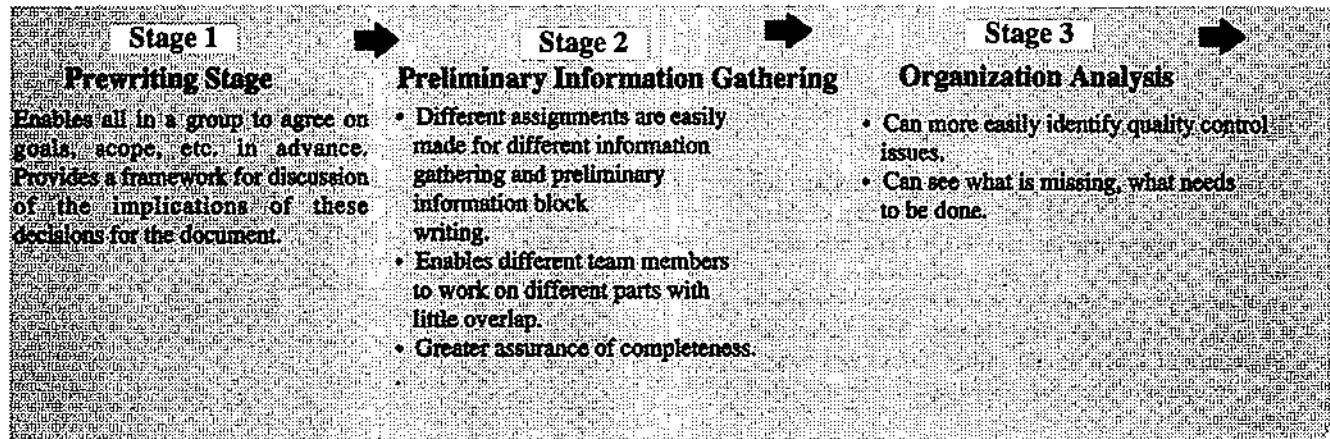
Introduction

Managers have begun to recognize the importance of the many situations where many people have to contribute ideas and actually write portions of a single document. Proposals, plans put together jointly by several departments, task force reports, and documentation systems written by different design groups all share this requirement. As a byproduct advantage, Information Mapping's method provides a framework at the right level of detail for addressing many of the major problems of groups working together.

Major Issue

A major difficulty in group writing projects is that members of the group do not share meanings of key concepts. The method offers assistance in this area.

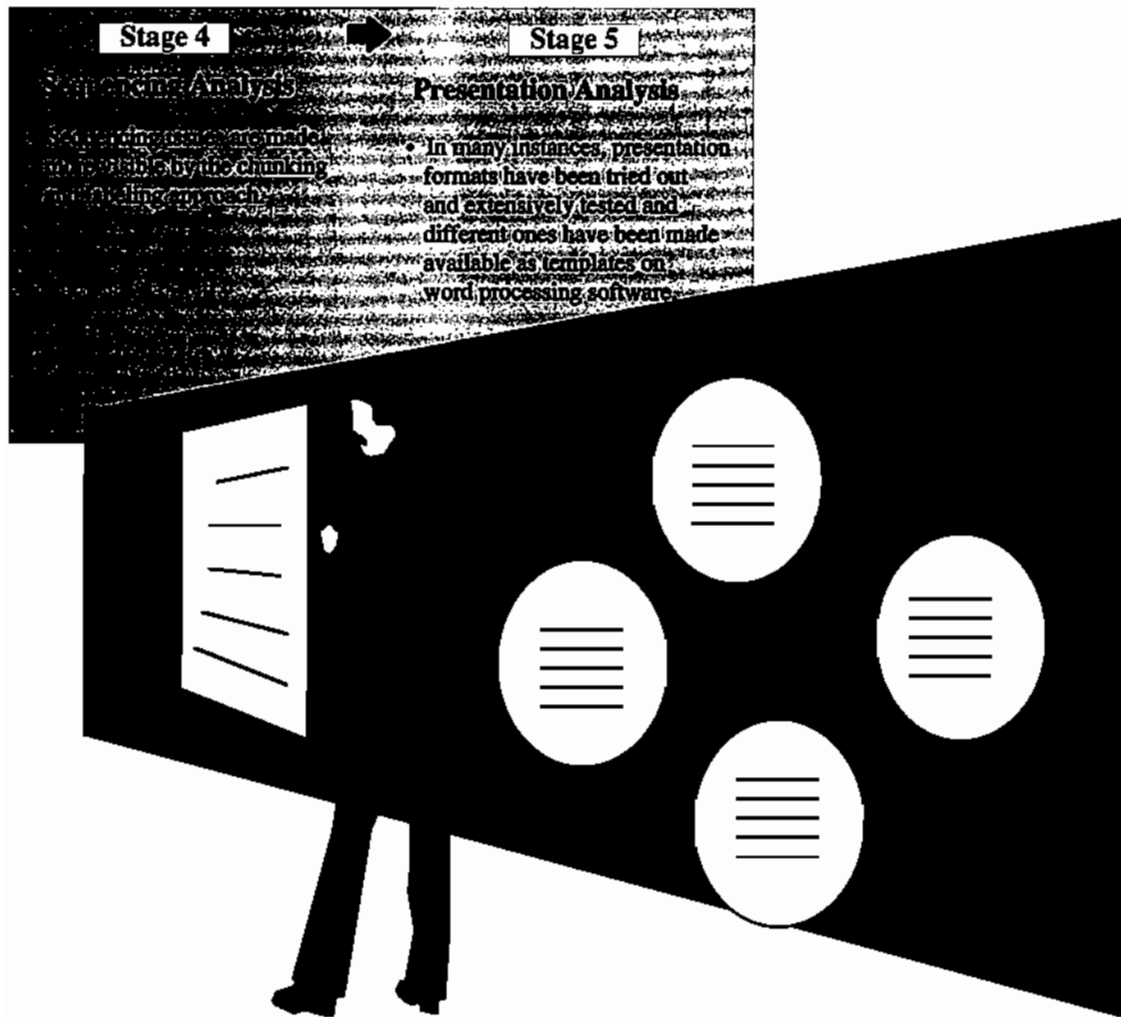
How the Information Mapping Method Helps Groups to Work Together



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Commentary: Problem Analysis

Groups generally don't have so much difficulty with agreeing on the subject matter or with agreeing at the sentence level (i.e., we can generally agree on grammar, syntax, and spelling). They have problems with style. But even more difficult are the problems of context and point of view in the early phases of group analysis projects. Then, dividing the project into parts and giving assignments with little or no overlap becomes the issue. More problems arise when the organization, sequencing and presentation stages arrive. It is here that the Information Mapping method helps the most as we illustrate below. In fact, the Information Mapping method gives the group a common way of looking at the information to be communicated and a common language to discuss that information. Therefore, the process is smoother, and the end product more consistent.

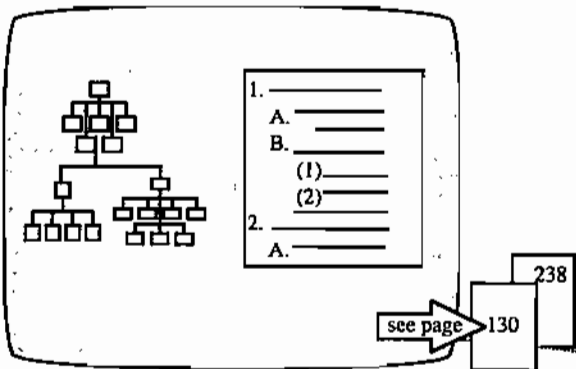


Some Navigational Options

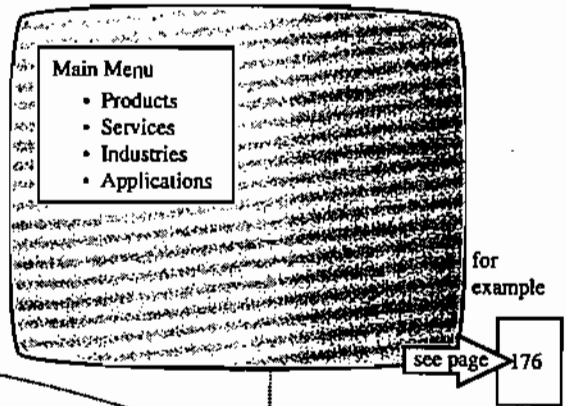
Introduction

Depending upon the needs of the situation and the hypertext software available, the user can access information blocks and maps with many different access paths. Some or all of the access methods described on these two pages could be used in a hypertext system based on Information Mapping's method.

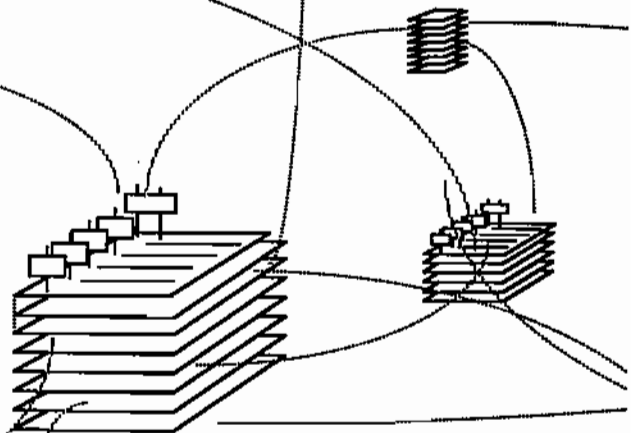
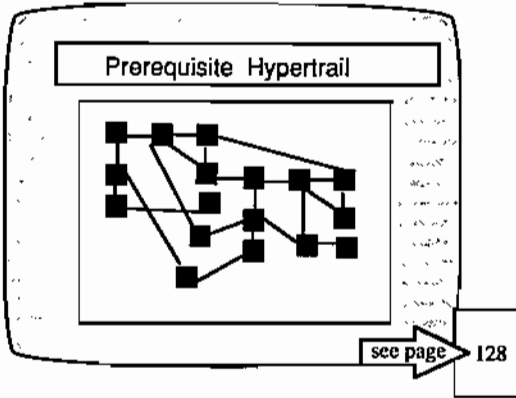
Access Through Hierarchical Table of Contents and Classificatory Hypertrails



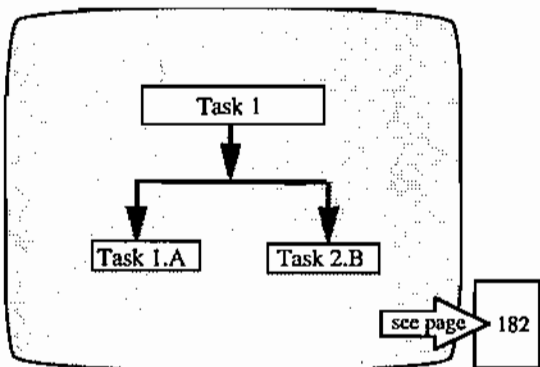
Access by Hierarchical Menus



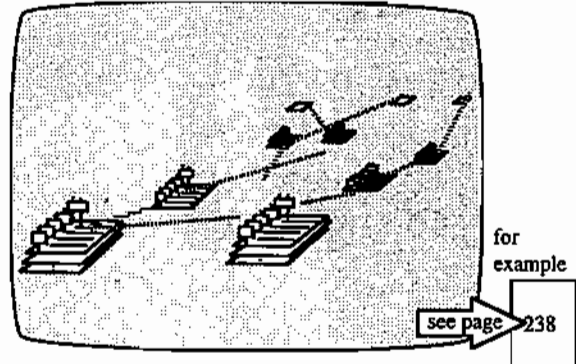
Access by Simple Hypertext Links or Structured Hypertrails



Access by Task-Driven Procedures



Access Through Overviews, Summaries and Information Landscapes



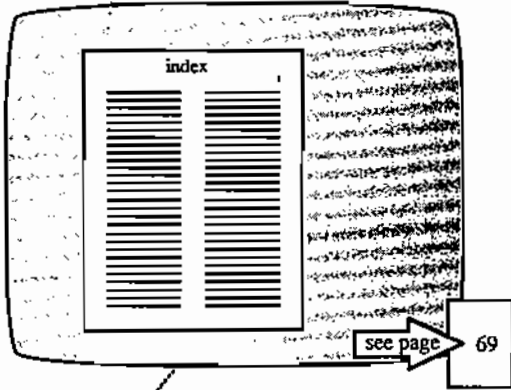
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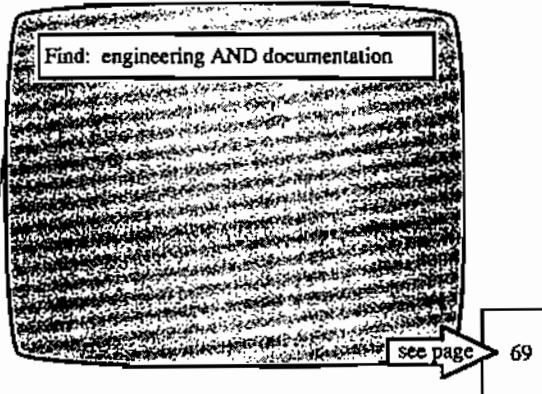
Commentary -- Summary of Chapter

The ability of Information Mapping's method to address so many of the problems and issues raised by hypertext makes it a key tool in every developer's and user's tool kit. The multiple methods of access shown on these pages show how the method facilitates access because of its systematic approach.

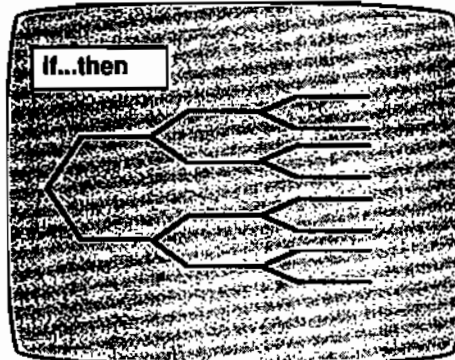
Access by Keyword Index



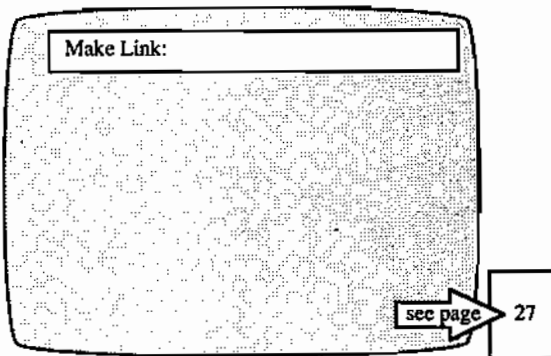
Access by Full Text Search



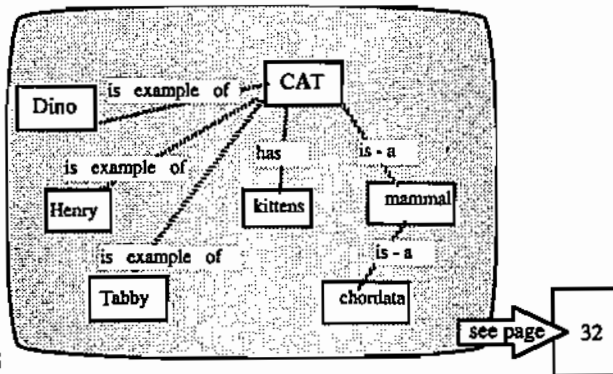
Access Through Paths Suggested by Expert Systems



Access by Personalized Hypertrails



Access by Semantic Networks



Chapter 6. Relatively Stable Discourse: Documentation and Training

Overview of This Chapter 168

Example Pages of Relatively Stable Discourse

Operations and Technical Manuals 170

Personnel Manuals and Policy Manuals 172

Product Knowledge Case Study

Introduction to Product Knowledge Case Study 174

Product Knowledge Case Study: Main Menu 176

Product Knowledge Case Study: Specifications 178

Product Knowledge Case Study: Control Panel 180

Access by Task-Driven Procedures 182