

# Information Design: Maximizing the Power and Potential of Electronic Publishing Equipment

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**Abstract** – The new advances in electronic publishing systems and technology offer opportunities to dramatically cut the time and cost of producing documentation. These innovations ultimately increase the amount of information available. Yet this fact only underscores the critical need for new ways to make that end product information (documentation) more usable, accessible, and effective. The technology must be combined with the tools of information design. Using techniques based on current cognitive research, information design structures and predigests the content to increase end user comprehension, productivity, and effectiveness.

## AUTOMATION VERSUS COMMUNICATION: THE INFORMATION OVERLOAD PROBLEM

Recent developments in publishing technology make it easier and cheaper to produce more paper faster. But this additional paper can only lead to information overload. People have a limited capacity to absorb information. Memos and reports go unread, product documentation is not used, help screens are difficult to comprehend, course materials fail to aid learning, because the text is unstructured, too hard to read, impossible to skim, and too long anyway. As a result, people omit details, make serious errors, and finally, escape or give up. Unless we find new solutions, the current explosion of technologies will only automate the process – producing more of the same problems faster.

## TECHNOLOGY ALONE IS NOT THE ANSWER

By itself, an electronic publishing system can do little to improve communication, the ultimate effectiveness of

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the end products. If users still cannot find the information they need, if comprehension, learning, and quick reference are difficult, then the documentation has failed and the electronic publishing system is not delivering maximum benefits to the organization. The solution is combining the production efficiencies of electronic publishing with the communication efficiencies of information design.

The purchase of publishing technology cannot be seen as an isolated decision. Potential customers are realizing that the purchasing decision involves research, needs analysis, installation, conversion, networking, training, maintenance, support, and also restructuring their current development and production process. Although these customers study the technical aspect of their purchase, they understand very little about the factors which improve the communications effectiveness of the equipment and end product. The following paragraphs discuss these principles, tools, and guidelines under the umbrella concept of information design.

## INFORMATION DESIGN: PREPROCESSING INFORMATION

Information is structured data. In other words, the raw data of information only become usable when given a structure, organization, and form.

The time and effort required to read and understand is considerably reduced if the content (data) is prestructured. The reader's productivity increases, and the sender gains further control over the end message communicated. The most direct, efficient, and effective means of prestructuring is the use of visual information structures. The role of the information designer is to work within the constraints imposed by human cognition (human information processing/filtering, figure 1) and the needs imposed by the data, receivers (end users), and use environment. Information designers must create structural forms with the following attributes:

- **The most efficient:** require the least effort on the part of the receiver to convert the content into usable information

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- **The most accurate:** allow the sender the most control over the communication: its order, structure, end use, and correct application, as perceived by the receiver

Information design then becomes a task of using the visual tools (preprocessing or prestructuring techniques) appropriate to the data and end user. Good information design will structure information to improve communication and learning rate, and increase the capacity to

absorb information. The reader can then process more information, in less time, with better understanding.

From this perspective, the page becomes a structuring device. The page organizes data into usable information through visual (preprocessing) tools and techniques. These graphic structures allow the user to skim (filter), order (queue), group (chunk), and relate (abstract) information, through visual cues rather than verbal text. The chart in Table 1 summarizes these techniques.

**Table 1**  
**Visual Tools for Preprocessing Information**

<b>Preprocessing Technique</b>	<b>Definition</b>	<b>Visual Preprocessing Technique or Tool</b>
Chunking	Grouping: breaking information into manageable chunks (packages)	Spatial organization and structure Well-defined, coherent page format Sectioning through white space, rules, type change, color, section dividers
Queuing	Ordering: information hierarchy	Head level hierarchy and relative importance through <ul style="list-style-type: none"> <li>- position</li> <li>- spatial proximity</li> <li>- size</li> <li>- typographic size and weight (blackness)</li> <li>- color</li> </ul>
Filtering	Differentiation: layering information for easy access and scanning	Perceivable order and differentiation through <ul style="list-style-type: none"> <li>- placement on the page</li> <li>- easy-to-scan headers</li> <li>- in-text heads</li> <li>- bulleted lists</li> <li>- numbered procedures</li> <li>- visual cues and icons</li> <li>- summary tables</li> </ul>
Multiple access	Choice of information mode (proposition, string, image); parallel processing; multitasking	Mixing modes of communication: <ul style="list-style-type: none"> <li>- text (strings)</li> <li>- procedures, formulas (propositions)</li> <li>- tables</li> <li>- diagrams, illustrations, screens, images</li> <li>- charts, graphs</li> <li>- icons</li> <li>- conceptual graphics/maps</li> </ul>
Abstracting	Creating a relationship or framework	A framework relating all the elements, which parallels and reveals that of the information, which gives meaning to their interrelationship: <ul style="list-style-type: none"> <li>- clear visual page organization</li> <li>- graphic orientation devices, conceptual maps</li> </ul>

**APPLICATION EXAMPLES**

**Programmer Documentation:  
Technical Reference Material**

*Problem:*

The content of this 40-manual set appeared to be much more complex than it was. Because there was no clear visual treatment to distinguish the various types of elements in the text, it lacked coherence and the needed information was hard to find. The decision to purchase an electronic publishing system provided an opportunity to rethink the content form and information structure.

*Solution:*

The solution was to design an integrated system of modular formats to clarify the highly technical information. Overall visual simplification was achieved by reducing

the actual number of functional elements, and clearly delineating and distinguishing them through the use of abstracting, queuing, and chunking techniques (Fig. 2).

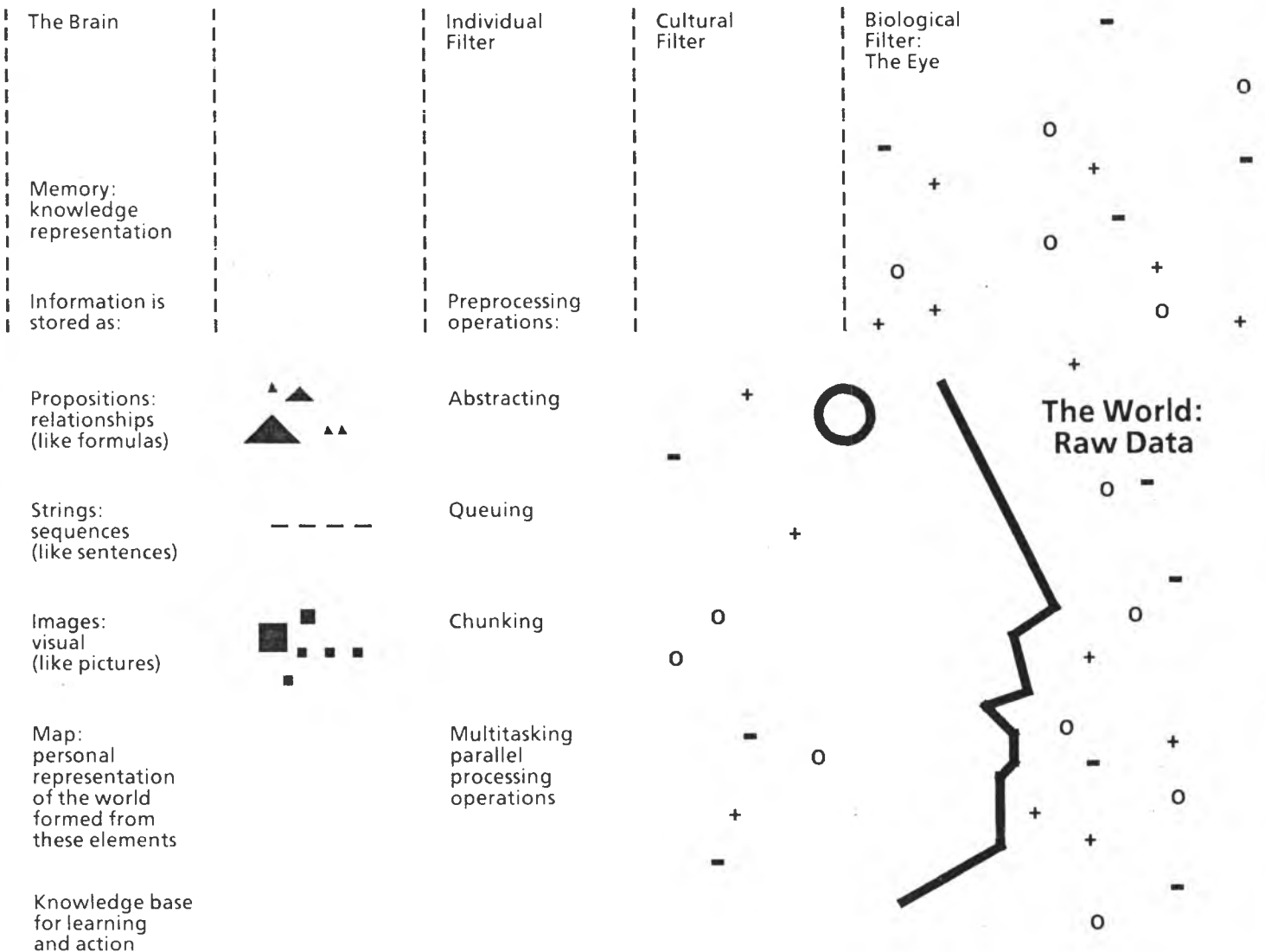
**Equipment Documentation:  
Manual for Variety of End Users**

*Problem:*

Technical Support was swamped with service calls for an "easy to use" product. More than 80 percent of the questions asked were answered in the manual - but nobody could find them.

*Solution:*

A page layout and format system were designed which facilitated quick scanning and retrieval of specific information. This was accomplished by the use of a variety of filtering techniques (Fig. 3).



**Figure 1. Diagram of Human Information Processing**

## GRAPHIC STANDARDS

Thus, far from being "graphic window dressing," the visual form and packaging of the information becomes a tool for processing and assimilating the content. These visual information structures (page grids and typographic formats) become the basis for the comprehensive guidelines and graphic standards of the system.

Graphic standards specify all aspects of the printed page: page size, placement, typography, color, header levels, tables, treatment of illustrations, graphic cues, icons, and the like. More important, when they are based on an information design process, they create a system of mod-

ular building blocks which differentiate information types, define information hierarchies, and create access routes for multiple users. Through a visual structure that parallels and reveals the content structure, the format system structures and predigests the information. The result is greater control over the accuracy of the information which reaches the reader. All of this is accomplished through visual cues which make the communication intuitive, immediate, and effective.

Thus high-quality graphic standards become essential to the creation of effective, efficient communication. The standards then ultimately translate into human productivity, decision support, and product success.

◀ **Abstracting:** An overall visual framework was created to organize the information on the page and make it as easy as possible to digest.

● **Queuing:** Rules and different sizes and weights of type were used to create a visual hierarchy that enables the reader to immediately determine the relative importance of information.

■ **Chunking:** Information is grouped into manageable chunks. The reader doesn't have to tackle the entire page, but can take in one part at a time.

### BEFORE

**\$ENQ**

This is the brief description section. It contains a one or two sentence description of what the routine does.

**FORMAT**

**\$ENQ** [efn],lkmode,lksb,[flags],[resname],[parid],[ostad]

**RETURNS**

data type:	longword integer
access type:	read only
passing mechanism:	by value in RO

At times, it may be necessary to include a sentence or two here to further describe the nature of the information returned.

**ARGUMENTS**

**efn**

data type:	longword integer
access type:	read only
passing mechanism:	by value

Number of the event flag that is to be set when access is granted to the specified resource. If not specified, the default is event flag number 0.

**lkmode**

data type:	longword integer
access type:	read only
passing mechanism:	by descriptor
parameter: form:	varying string array descriptor

Name of lock mode requested. May be one of the following:

Name of Lock mode	Description
LCKSK NLMODE	Null lock mode
LCKSK CRMMODE	Concurrent read mode
LCKSK CWMMODE	Concurrent write mode

**lksb**

data type:	longword integer
access type:	write only
passing mechanism:	by value

### AFTER

● **\$ENQ**

The Enqueue Lock Request system service allows users to queue requests to access a resource or to convert the current lock request mode to another lock request mode.

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■ **FORMAT** **SYSENOQ** [efn], lkmode, lksb, [flags], [resname], [parid], [ostad]

---

■ **Returns**

type: longword integer; access: read only; mechanism: by value in RO  
Status code returned in RO

---

■ **Arguments**

● **efn**  
type: longword integer; access: read only; mechanism: by value  
Number of the event flag that is to be set when access is granted to the specified resource. If not specified, the default is event flag number 0.

■ **lkmode**  
type: longword integer; access: read only; mechanism: by descriptor -- varying string array  
Name of lock mode requested. May be one of the following:

Name of Lock mode	Description
LCKSK NLMODE	Null lock mode
LCKSK CRMMODE	Concurrent read mode
LCKSK CWMMODE	Concurrent write mode

■ **lksb**  
type: longword integer; access: write only; mechanism: by value  
Address of the lock status block. The lock status block received the final completion status and lock I.D. and optionally contains a lock value block. The lock status block is 8 bytes long without a value block, or 24 bytes long with a value block. The format of the lock status block is shown below.

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Figure 2. Application of Visual Preprocessing Techniques to Technical Manuals

The design and development process must be based on an analysis of particular needs and requirements:

- Information data (products, system, and use)
- End user(s)
- Use environment (tasks, process and cycle of learning, daily use, advanced applications)
- Corporate image (positioning, recognition, market differentiation)
- Electronic publishing equipment capabilities and limitations

### ELECTRONIC PUBLISHING OPPORTUNITIES: MAKING IT REALLY WORK

Information design structures information to improve communication and learning rate. Readers can then process more information, in less time, with better understanding. Effective graphic standards are based on the principles of information design used in a process of content and use analysis, goal setting, and iterative format design development.

Graphic standards form the bridge between the technology, in-house personnel and the end user. The design

#### BEFORE

#### Operating the 9165

**Preparing a Document**

Just as the appearance and readability of office copies is affected by the quality of the original you use in your office copier, the quality of the copy received at another unit is partly determined by the quality of the original you sent. If you send a poor quality document, the received copy may be difficult to read. Following are several tips to help you create good quality original documents and to improve the quality of "second-hand" documents you may use as originals. If you are creating a document:

- use a felt-tip pen or type the document
- use black ink
- use white or light-colored paper

If the 9165 selectable contrast or fine-extra line resolution features cannot compensate for an existing document that is difficult to read because of light images or a dark background, make a copy of it on an office copier. Many copiers can compensate and give you a better copy to send.

You can also use a copier to piece together several very small originals or make a standard size copy of an original too small to load in the 9165 transceiver.

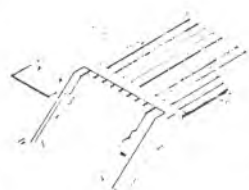
**Loading a Document**

Your 9165 transceiver has an Automatic Feed Mechanism that separates and feeds up to 30 documents. The 9165 accepts original documents with minimum dimensions of 7 inches wide by 5 inches long, and maximum dimensions of 10 inches wide by 14 inches long. The automatic copy reduction feature reduces documents wider than 8 1/4 inches both horizontally and vertically by 20% when necessary.

- 1 Neatly stack your documents, face down, with the copy you want the operator to receive first on the bottom.
- 2 Slide the stack of documents into the Document Loading Slot until the TX RESOLUTION/STD indicator on the Control Panel lights.

3 Slide the Document Guides toward each other until the guides touch both sides of the document.

Note: If the Document Guides are positioned outside of the lines on the strip above the guides, the 9165 automatically reduces the copy when necessary.



The 9165 pulls in the bottom document. It then "reads" (scans) the document line by line, converting the images to electronic signals, as the Paper Feed Mechanism moves the document through the unit.

#### AFTER

Highly visible titles create landmarks for chapter beginnings.

"Hanging" bullets enable the eye to pick out key points.

Use of bold heads, contrasting text typefaces and rules help the reader to scan the page and quickly find the specific information needed.

Color, typeface and graphic "flags" indicate procedures to be performed.

Second color helps to organize and differentiate types of information.

#### Operating the 9165

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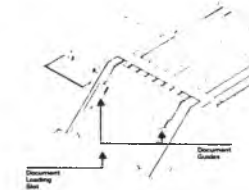
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Figure 3. Use of Filtering Techniques to Facilitate Quick Scanning for Information

specifications and standards are input directly into the electronic publishing system. Through the use of function-oriented format codes, the graphic standards become an integral part of each writer's and production person's workstation; they directly specify the final laser printer or typeset output. This specification not only shortens the production cycle, but also speeds and enhances the content development process. Once in place, the program is easily maintained by in-house personnel without professional design experience.

#### THE INFORMATION DESIGN RESULT: AUTOMATION AND COMMUNICATION

Through an information design process, the automation technology of the system is used to maximize the benefits

to both the corporate owner and the end user:

- Structured information for quick access, greater understanding, and increased utility
- Shortened learning curve
- Corporate standards (consistent visual image and graphic standards)
- Consistent presentation of information across product lines
- More efficient development and production processes
- Easier update and maintenance cycle
- Improved marketing position (communication of responsiveness, quality, corporate commitment)

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### ON BEING AN EDITOR

Dictionaries define *editing* as something like "revising and preparing a manuscript for publication." That's a little like defining *cooking* as "preparing food for eating." Both definitions have the virtue of economy, but no one who either edits or cooks for a living believes either one.

The reality, of course, is that the meaning of *preparing* in both definitions is boundless. Like cooking, editing is part art and part science, part drudgery and part exhilaration, part sound judgment and part flaming intuition. Like the serious cook, the editor approaches his or her vocation by trying to please the reader's palate without doing violence to the materials at hand. Regrettably, these goals have been known to conflict radically. Moreover, both cook and editor have a variety of expectations laid on them by people who don't understand the work very well, but who are sure to have definite tastes, whether grammatical or gastronomical. And as any experienced editor can tell you, what goes for cooks and the broth goes double for editors and the manuscript.

Nevertheless, both are noble callings pursued by noble beings. For the truly great practitioners of both professions, there is something profoundly satisfying about the process of bringing each creation to the peak of its potential, and serving it up as it was meant to be. And for each the reward is the same: The creation itself evokes the "oohs" and "aaahs," while the preparer smiles behind the door.

Bruce O. Boston, in  
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