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User Issues in the Electronic Information Environment

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1 Introduction

The electronic environment has created a baffling array of information opportunities and challenges for the average user. This paper focuses on the perspective of the user. Of course the word 'user' does not represent the naïve, but obviously one who lacks a certain creativity in figuring out solutions to problems. We come across a number of such users using electronic information systems for a number of years, but unable to keep pace with the online explosion of information. One can cite a number of interesting examples, while identifying the power of electronic information systems. After one has used a number of different computer software systems, especially the front ends or the search interfaces of different international directory/ statistical/ corporate/ bibliographic/ full text databases, and its online and Internet formats, it is hard to remember the features of each of them, leave alone the difficulty in the smooth operation all by oneself. In most cases it is bewildering and embarrassing. The host of Internet search engines and search directories also join the above group. It is hard to remember the confusion the user feels when attempting to make sense of a new software system. How does one navigate from one screen to next? What to do when a blank page comes? What are the commands? How do you print, or fix a frozen screen? These are endless questions and it takes substantial amount time for one to be quite comfortable with a system, thanks to the recent developments in Internet technologies, Human Computer Interaction. Looking at the other side, 'user friendliness' is the buzz word of the day, though it is a long way to go.

We can group the major issues relating to usage of electronic information into three, viz., 1. The advances and achievements which have changed the way of acquiring storing, retrieving and disseminating information 2. The common problems being faced by the average user and 3. The promise of the future.

2 Achievements

This is about the 'good' of e-information. It is needless to re-emphasize the role of computers in the efficient and effective handling of information. We have made so much progress in so little time, and it is difficult to put into perspective, just how the electronic environment has changed the way we access and use information. According to the U.S. Council of Competitiveness, Internet, the global information infrastructure, will enable people to access information and communicate with each other easily, reliably, securely and cost-effectively in any medium - voice, data, image or video - anytime, anywhere. This capability will enhance the productivity of work and lead to dramatic improvements in almost all spheres of life. Developments in computing and processing abilities are amazing, and soon we will start getting machines with tera (10^{12}) bytes, pushing gigabyte ones to breaking-point. The advances in transmission area is yet terrific - Project Oxygen (Internet 2 base) will criss-cross the oceans with terabit fiber. Data users now talk a thousand fold up of tera, the peta (10^{15} bytes), and also the exa (10^{18} bytes). Simply put, technology now allows an average user access significant and pertinent information without difficulty. The response time may vary depending on our Internet connectivity, but essentially we

shall stay in contact. A recent study of Internet use estimates that 37% of house holds in the United States with Internet access regularly seek out medical information. This is a very rich area with over 1000 sites. But finding meaningful, reliable and accurate information does take some effort. If one goes to a search engine on a web browser and enters the term 'diabetes', for example, depending on the search engine, you retrieve up to 65,000 postings. Thanks to the voluntary efforts, there are a number of aids available to help with this task. The National Library of Medicine (NLM), for example, has a guide to information on hundreds of diseases (Fig. 1).

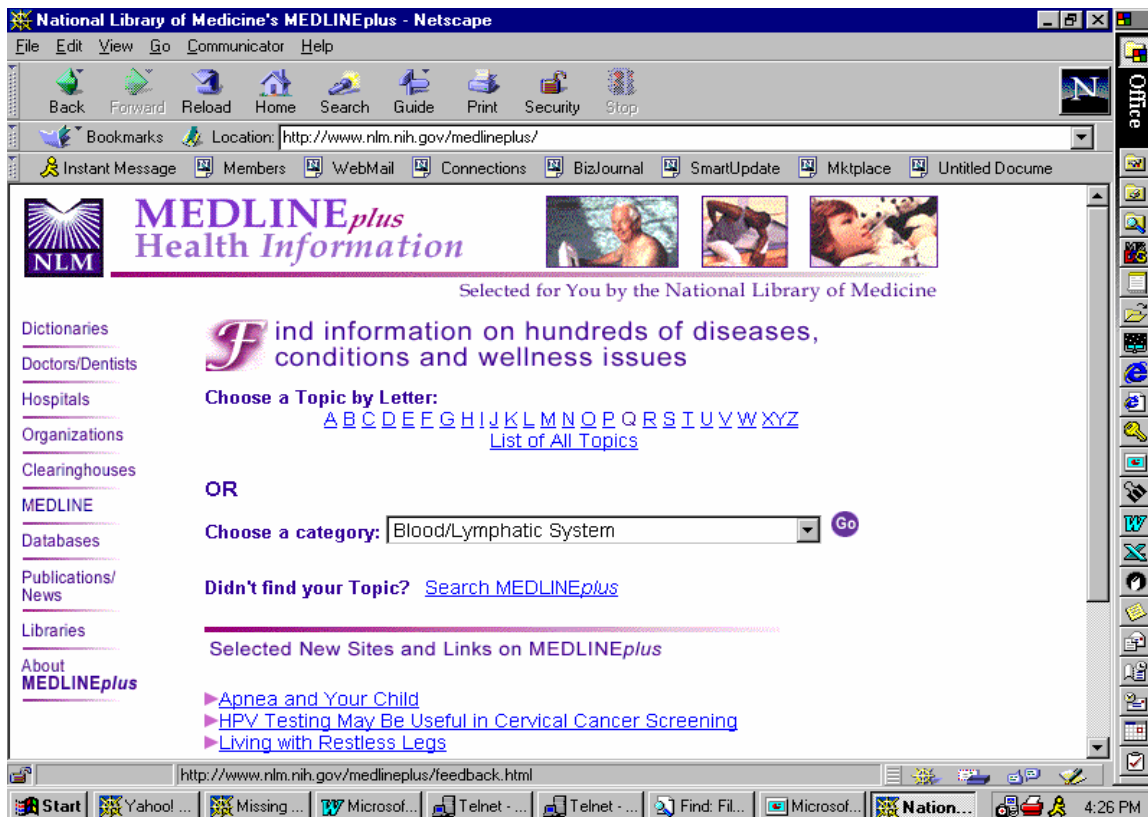


Fig. 1: NLM's health information guide

MEDLINE, the most appreciated biomedical database, has references and abstracts from 4300 biomedical journals, and it is freely accessible. MEDLINEplus provides answers to your health questions.

HealthWeb (Fig.2) is yet another interesting information resource. It was designed by a group of university librarians who have organised Internet health information. If a search is made on 'cardiology', the list of relevant sources as hyperlinks are provided along with annotations (Fig. 3).



Fig. 2: HealthWeb Home page

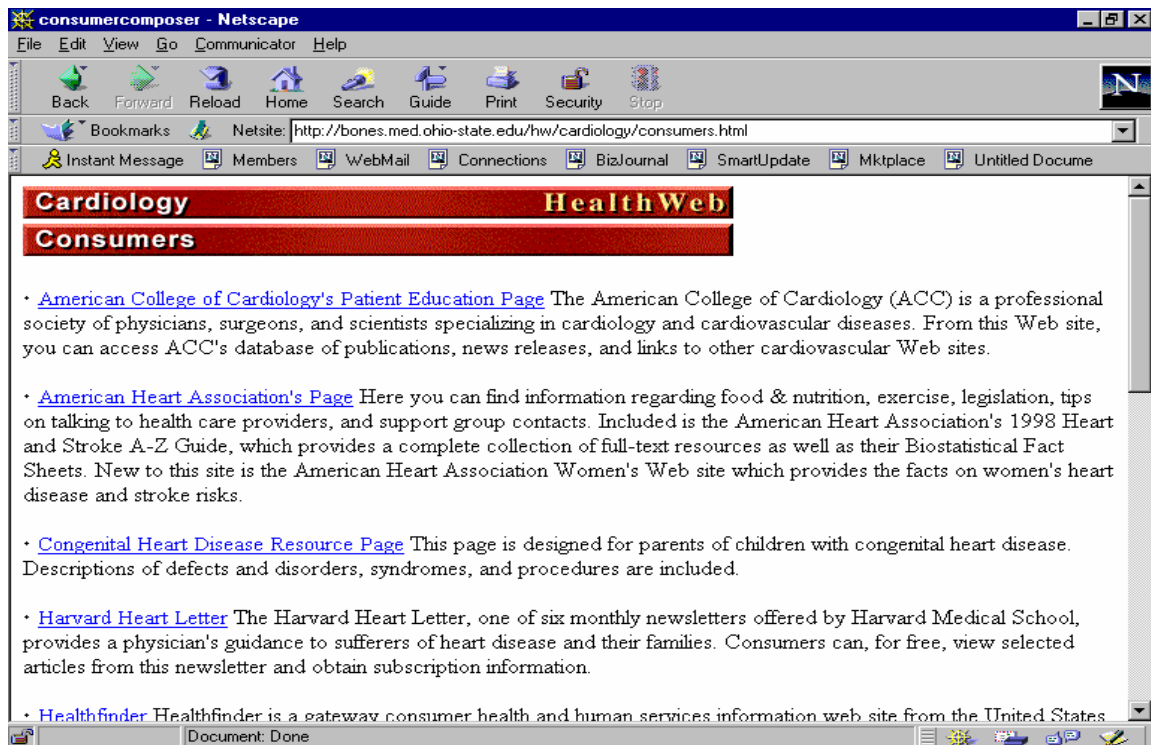


Fig. 3: Search result on 'cardiology'

HealthWeb is a classic example of 'quality filters' on Internet resources. This is just one example, and there exists countless numbers of such invaluable resources and filters. The example of medical information has been consciously chosen as the right information in the right time determines the difference between life and death.

Another remarkable development is the ease of searching bibliographic, citation, and full-text databases spanning almost the entire world of knowledge. Below given are some of the popular search interfaces.

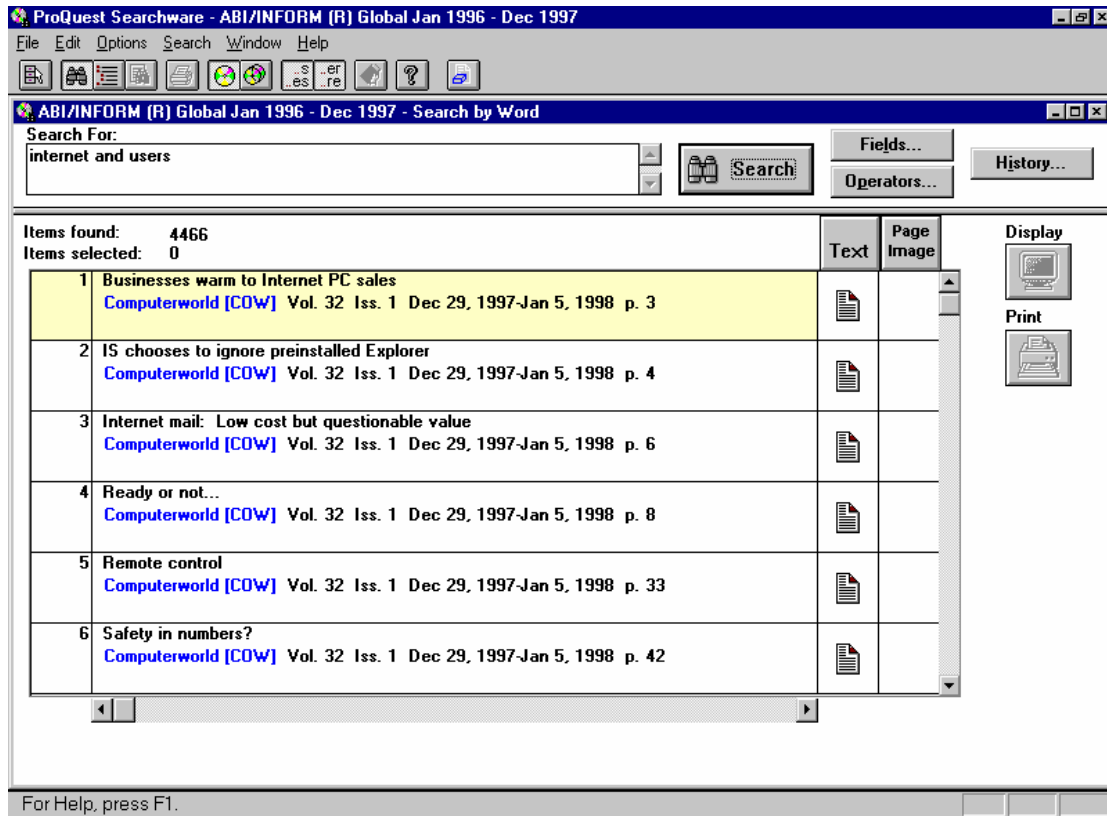


Fig. 4: Proquest (ABI/INFORM)

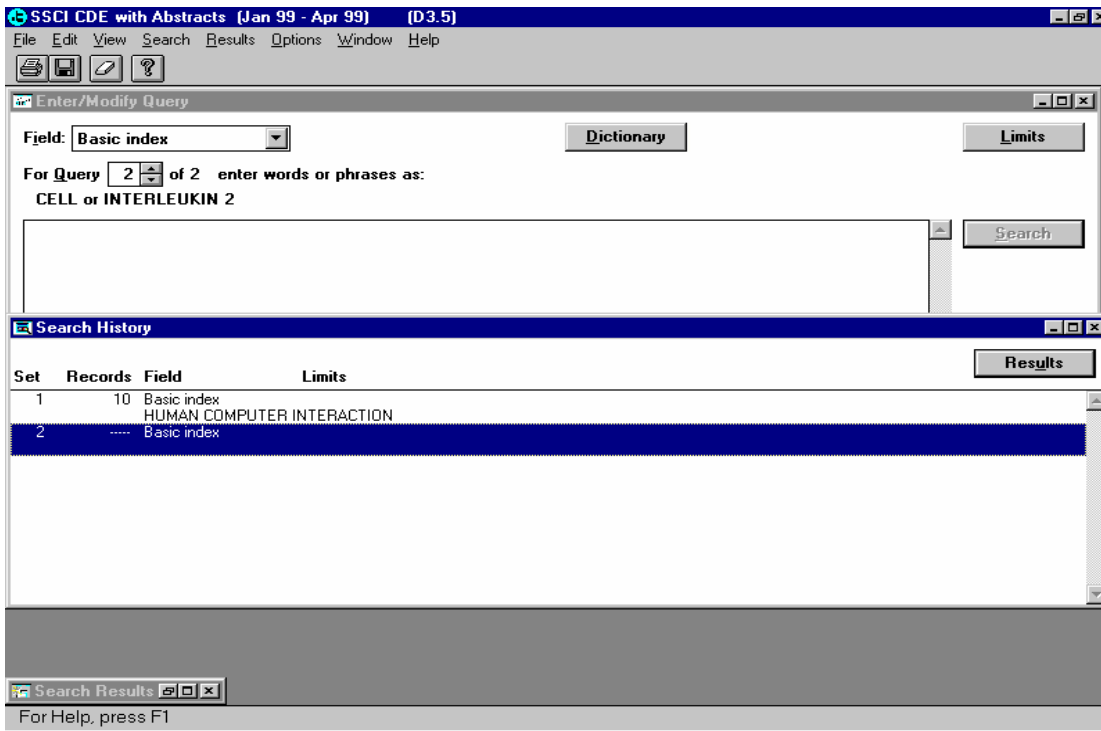


Fig. 5: CDEWIN - Social Science Citation Index

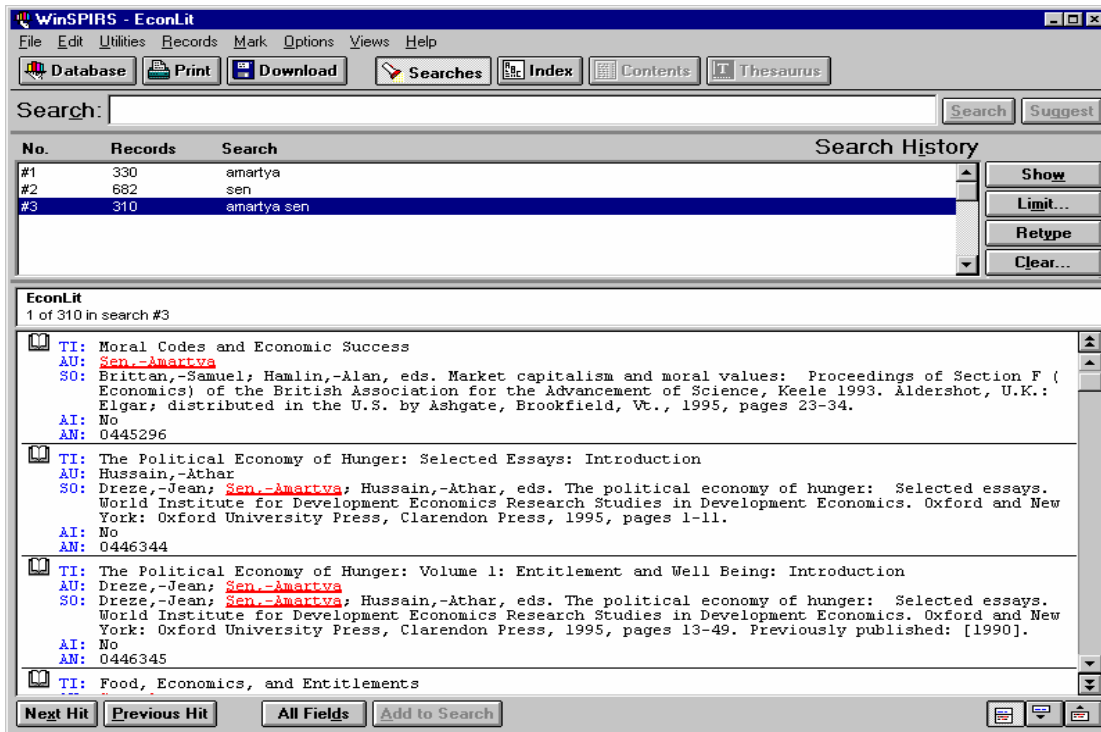


Fig. 6: WinSPIRS - Silverplatter

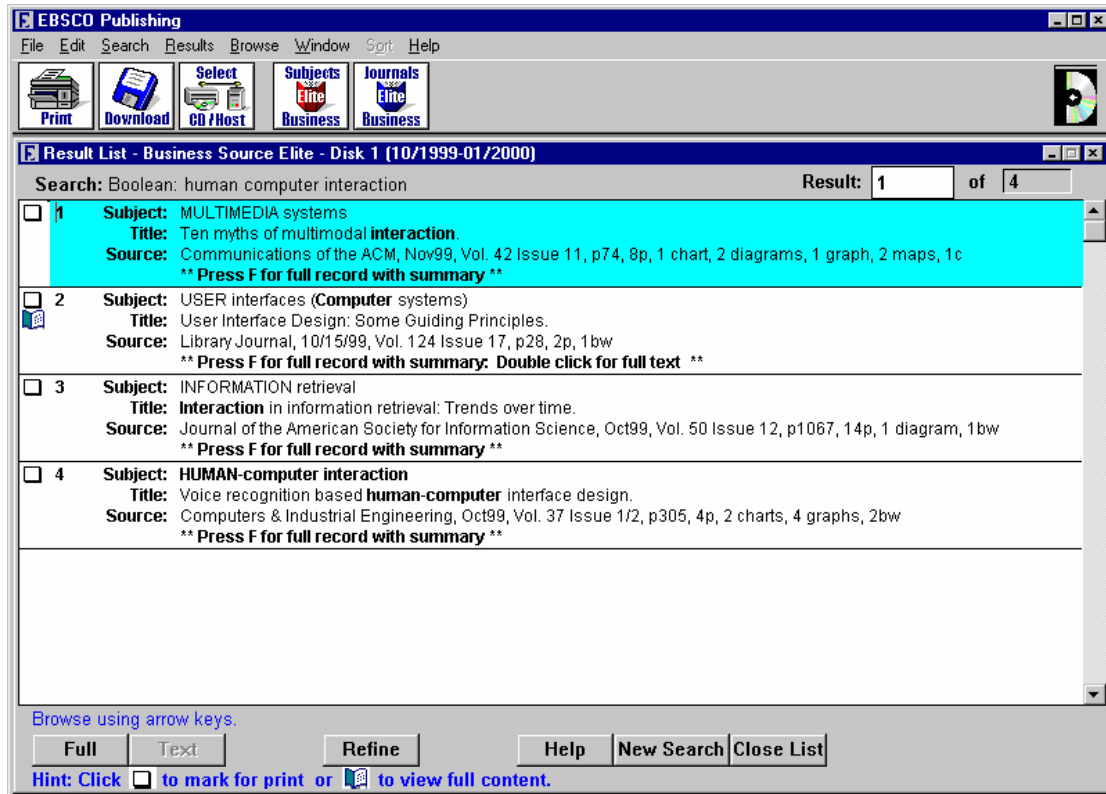


Fig. 7: EBSCO Publishing

It may be noticed that almost every user approach along with all possible combinations including Boolean and proximity searches are offered by these interfaces. Provisions for different period as well as a variety of publications such as journal articles, reviews, books etc. shall be additional features of a good software. Multiple options using Text Box, Combo Box, List Box, Check Box, Label, Radio Button, Exit/Submit/Clear Buttons etc. (Fig. 8) shall also be provided as per requirements. Even though the approach of these software may vary according to context, their retrieval efficiency and relevance ratio will be more or less the same. One should be very careful about the response time of these software when frequently used. Familiarity with a software (search interface) shall definitely result in efficiency improvement, noise reduction and increased precision. Several such studies have been made by information scientists the world over and Lancaster's study on MEDLINE Database and its front end software is just one classic reference.

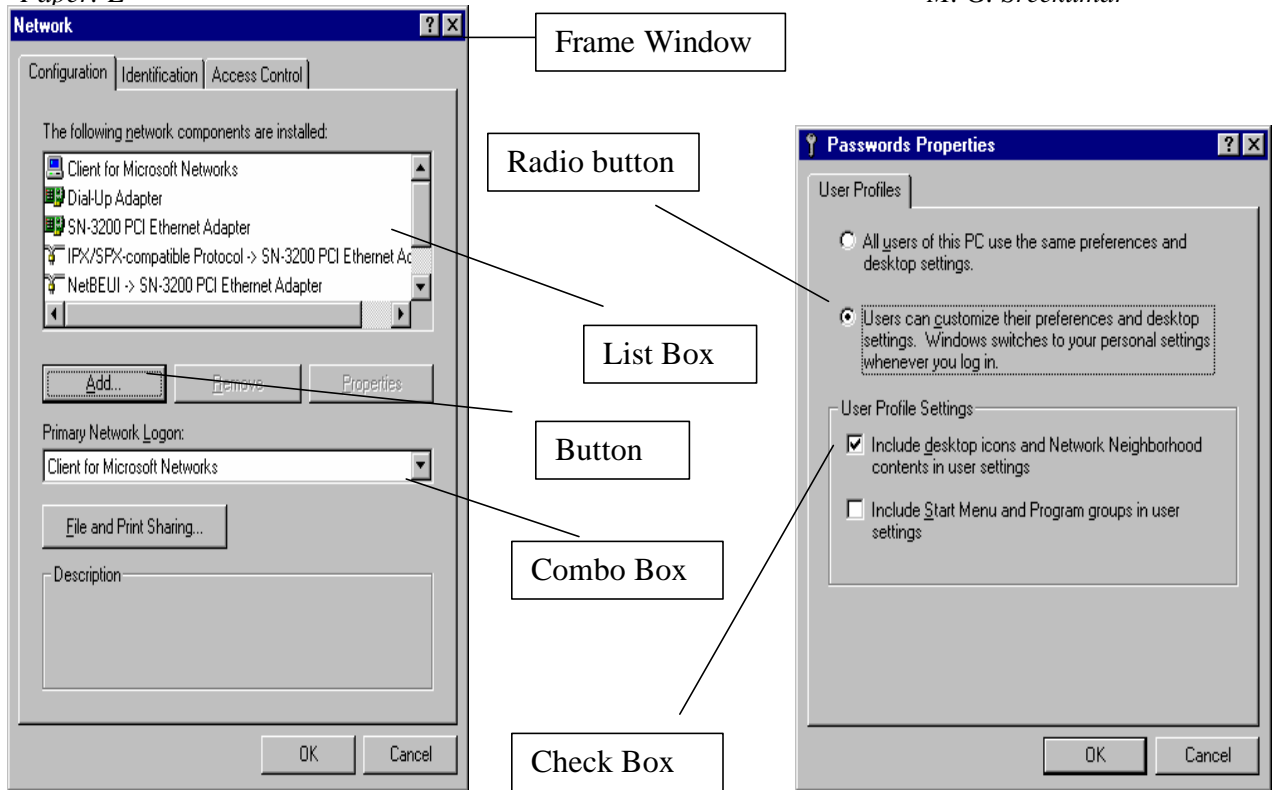


Fig. 8: Few of the Multiple Options provided in search software/interfaces

3 Problems

Here is a growing list of 'bads' on e-information. One can cite humpty number of problems, though eventually there emerge solutions also to address each of them. Some of them may continue to remain as there exist no solutions. Nevertheless one has to admit that the merits of these resources always outweigh their shortcomings. At times a serious approach to the problem can render better relief. The major complaint one hears is that the software systems are not always intuitive. Below given are some of the noted problems:

3.1 Learning curve

One can only learn so much at one time. When a trainer or class instructor demonstrates a software programme by clicking through a series of screens, it always looks so easy and straightforward. When trying to repeat the process alone, one invariably comes to a step where one gets lost. If one does not use a system regularly, it is hard to remember specific steps.

3.2 Diagnosing problems

So many functions need to work together to make a computer work properly that diagnosing a problem is difficult for the non-computer user. When faced with a problem, one needs to know if it is the computer, the software programme, the

telephone line, or the operating system, the culprit. Not easy. For example, Netscape sometimes freezes when some of the features like 'bookmark' etc. are invoked, making the user feel that he has done something wrong. Sometimes even the systems people are helpless the way things manifest while trying to get the best of a software programme or a search interface.

3.3 Understanding error messages

Error messages often seem to be unrelated to the problem one is having. I remember my friend telling me a problem he faced - while trying to logon to his office account from home, he got a message "Networking could not negotiate a compatible set of protocols you specified in the server typesetting. Check your computer configuration in the control panel and try again". He tried to set the parameter, but since he did not know how the configuration was supposed to be set, this turned out to be little help. When he rebooted, the problem simply vanished.

3.4 Adjusting to new features

Different software packages use different approaches for the same or similar task. One can take Netscape and Internet Explorer for example. Almost the same purpose but with difference in interfaces. This is more in search interfaces coming with massive databases. Some take the average user for granted to know high skills in search, retrieval and file organisation.

3.5 Understanding manuals

Poor quality manuals do no good to the average user. Instead it becomes a liability for him, leading to aversion. One should also acknowledge the presence of well documented manuals, so handy and comfortable to consult.

3.6 Navigating systems

Some of the Internet services such as 'telnet' etc. needs number of steps for achieving login, and to further movements. I remember to have gone through as many as 17 steps - 11 mouse clicks and 6 pieces of information in order to logon to my computer account in the University from home, during my Fulbright days.

3.7 Printing/downloading/uploading

These are essential utilities while trying a software. At times these pose enormous amount of problems and pressure to the user. In most cases the systems behave very typically to the extent that even the expert system people are helpless.

3.8 Short cuts

There are many tricks one learns after a while using a particular computer. Remember we were using 'alt/tab' key to easily switch from one opened system to another. One should also know how Win95 manipulates windows on the screen by clicking and dragging the little section of the window, or knowing what portion of a web document to print by using the print preview feature. There are probably hundreds of examples. Importantly these are the steps that can save so much time.

3.9 Upgrading/changing systems

The amazing number of updates and newer versions of software packages poses problems to the common user. The data already stored in earlier versions need to be updated, whereas some of the earlier versions cannot be upgraded due to lack of facilities. Data re-entry or document re-keying is a problem. Thanks to the upgrading and version update options provided by most of the recently issued packages.

The problems highlighted are just a few and only the nuts and bolts of running a system, and certainly one shall find lots more by virtue of one's own experience, especially in database information retrieval and Internet searches.

4 The promising future

The future of the e-information environment seems to be absolutely promising. On the retrieval software and interfaces arena, the tremendous developments taking place the world over is highly encouraging. On the Internet front, the recent advances are amazing, though the fruits of the same may be reaching the developing countries like India after a little while. If we want to get the benefits straight away, the national information infrastructure (NII) needs further strengthening and immediate and careful attention. Thanks to the recent developments in national information policy and information technology bill. The timely awakening is noteworthy and strategically significant.

The suite of Internet standards and respective emerging technologies has been, in the recent years, massively used for 'content publishing' on the Web. Low-cost approaches deliver in many instances a high-value result, which if performed in the physical rather than the virtual world would require substantially more resources. One can also find a number of instances where the Web acts as a 'service provider' rather than just content publishing.

Human Computer Interaction (HCI) is already an established area of research, and the topic attracts information scientists and computer scientists the world over to embark on high-tech research leading to easy, reliable, relevant and faster retrieval of information both from massive bibliographic databases and Internet as well.

5 Conclusion

From the user perspective we have looked at the wealth of information available electronically, the technical problems one encounters, and also the potential and the promising future. 'IT' has made significant strides in the very way of acquiring, storing, retrieving and disseminating information. The real changes with the computer will come when we are able to do things significantly different. The FedEx parcel tracking system on the Web is just one example, which might not be possible to materialise through conventional activities. Having known the potential of electronic information it is our duty to make this accessible to the unreached, and there comes the role of the information professional.

Acknowledgement

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