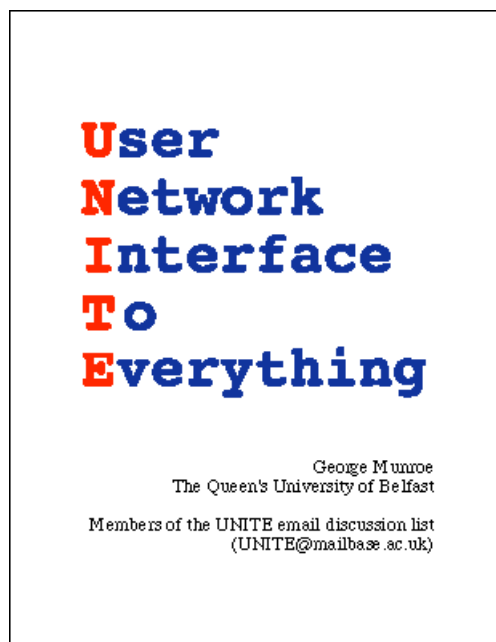


UNITE at Warsaw

Presentation on UNITE given at the second Network Services Conference held in Warsaw from 12-14 October 1993.

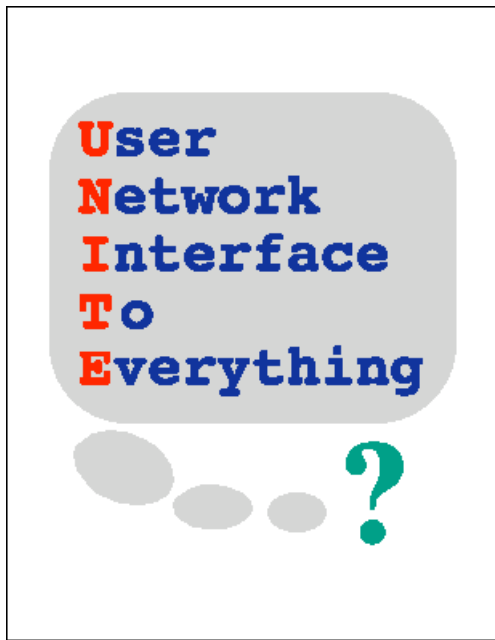
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Title 1



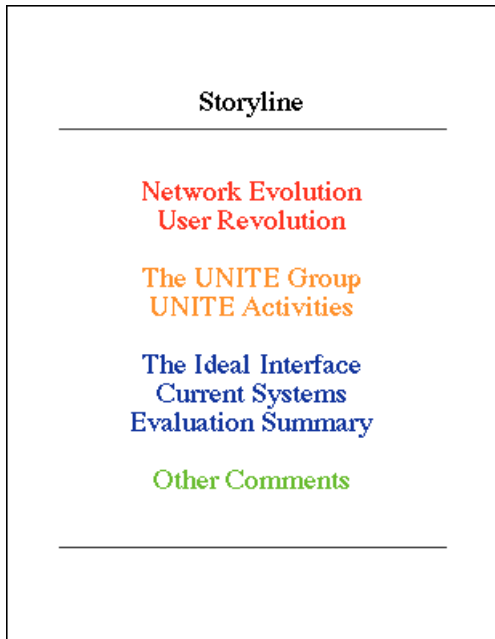
The title of this talk is User Network Interface To Everything, or UNITE. I am George Munroe and I work in the Computer Centre at Queen's University Belfast. Credit for this presentation should also be given to members of the UNITE email discussion list.

Title 2



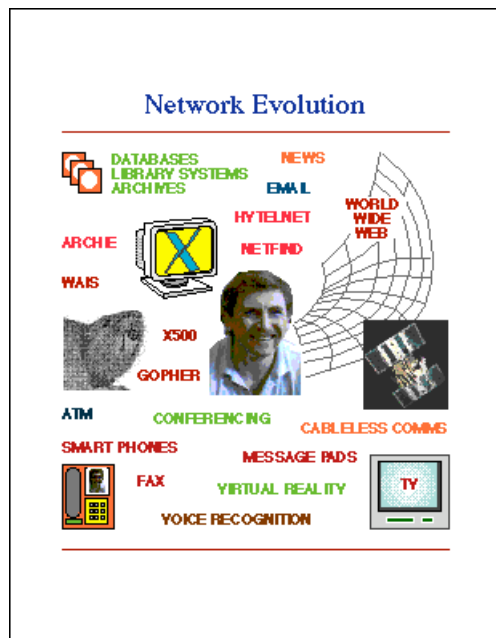
Before I start I would like to make it very clear that it is a concept, idea, which I will be talking about rather than any specific solution which has been developed.

Storyline



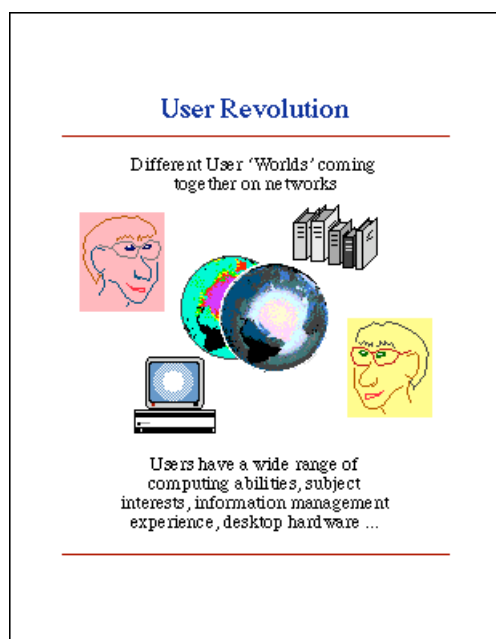
Here is the storyline I will be following. Four main sections. First I will mention briefly what I have called the 'network evolution' and 'user revolution' which together provide the background for our thoughts on user network interfaces. Then I will describe the UNITE group which I currently co-ordinate and which was formed almost one year ago to investigate the notion of a total solution network interface. Thirdly I will present some aspects of ideal and existing network interface solutions which the UNITE group has been considering. Finally I will share with you interesting comments on this theme which have been posted to the UNITE discussion list.

Network Evolution



Right. Network evolution. There's a lot going on. Today the bemused user is surrounded by many exciting developments. Alongside the established news, databases and archives, we have tools which make their use much more productive. Email is a way of life. There is a proliferation of client-server systems. We can run X-Windows programs from half-way round the world. Gophers are everywhere. The World Wide Web is pulling together all known services. Not too far away ATM cell switching technology will boost bandwidth by several orders of magnitude. Desktop video conferencing may be commonplace. Telephone, Fax and email are beginning to merge. Above us constellations of satellites will provide wireless communications for a new generation of hand held devices. TV will be interactive. Virtual reality and voice recognition will begin to do for network interfaces what visualisation has done for data analysis. All of this could soon be part of the global internet.

User Revolution



And new users are coming on-line in ever greater numbers. We have a diversity of abilities and interests as never before. Different user worlds are coming together on the network. Resources are being shared across the whole user spectrum. Library and Computing disciplines are sparring for control. There is a need for a united approach to the organisation and use of distributed information systems. So much for the background.

The UNITE Group

The UNITE Group

RARE

Working Group on Information Services
and User Support (ISUS)

'... we require total solution interfaces which support
transparent access to all available information from a
familiar working environment ...'



UNITE Task Force

Provide focus for discussion
Increase awareness of what is available
Guidelines for further development



IIR
(IETF)

BUBL
(Librarians)

NIR
(ISUS/IETF)

In Europe we have a forum for co-operation in networking. This is RARE. The largest RARE working group is Information Services and User Support. Last year this group identified a growing need: "... we require total solution interfaces which support transparent access to all available network information from a familiar working environment." This led to the formation of the UNITE task force. Objectives include: providing a focus for discussion on total solution interfaces; increasing awareness of powerful interfaces that are already available; and, if possible, providing guidelines for the further development of interface software. The group has tentative links with the Integration of Internet Information Resources group of the Internet Engineering Task Force, the BUBL Information Service, and the Network Information Retrieval combined group of the IETF and ISUS.

UNITE Activities

UNITE Activities

UNITE Discussion List (unite@mailbase.ac.uk)

Sharing ideas

Identifying informative documents

Tracking software developments

Collecting relevant news

Evaluating network interfaces



Monthly discussion
digest and news file

Documents and
systems lists



Evaluation reports

UNITE File Archive

UNITE activities to date include sharing ideas on the discussion list, identifying informative documents, tracking software developments, collecting relevant news (from the rest of the world about for example what Apple or IBM or Novell or Microsoft are doing that is of relevance to a complete network interface), and evaluating existing software solutions. To consolidate these activities, reference documents are maintained in the UNITE file archive. So we have monthly discussion and news files, lists of interesting documents and software systems, and evaluation reports submitted by volunteers.

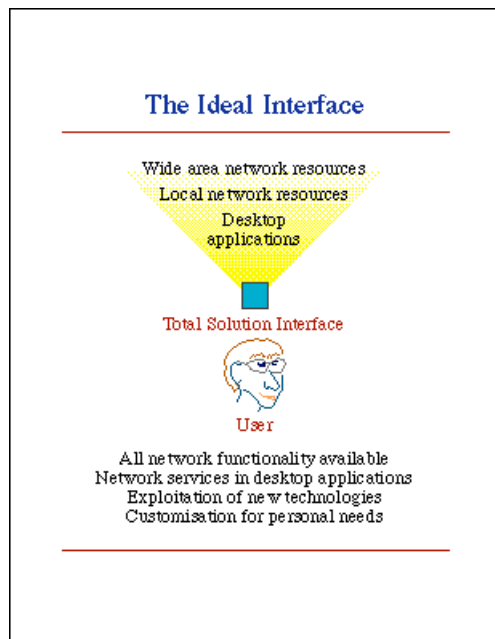
Survey

Word counts from responses of 44 UNITE
members about their network use

Activities		Programs		Platforms	
email	53	Hytelnet	8	PC	50
gopher	41	Mosaic	8	Macintosh	40
ftp	34	TurboGopher	8	Sun	26
telnet	27	Archie	7	VAX	14
access	23	Eudora	7	Novell	10
WAIS	20	Kermit	7	workstation	9
news	17	Xgopher	5	100mbps	1
WWW	17	Exceed	4	500mbps	1
Library	16	Fetch	4		
server	16	WAIStation	4	Windows	26
information	15	WinQVThet	4	X-windows	25
connect	14	Xarchie	4	Unix	24
lists	13	Pegasus	3	vt100	12
research	13	Pine	3	NCSA	11
database	11	Xwis	3	DOS	11
look	11	Veronica	2	winsock	7

During May and June of this year we tried to gather information on just how we are using the network with a view to concentrating on what we require in a network interface. 44 list members submitted varying reports on their own particular setup. These were summarised into one document of concise paragraphs, each presenting about the same depth of detail. I then produced a wordlist from this document, filtered out all the irrelevant words, combined the counts of words which meant the same, and categorised the word counts into three sections. These are the words which occurred most frequently or were of special interest. We can see that email and gopher are very popular and that there is still a lot of telnet and ftp use. Hytelnet, Xmosaic and TurboGopher are the most mentioned programs. And most users seem to be PC or Macintosh based.

The Ideal Interface



The real focus of the UNITE group is the network interface itself. Ideally we want a single interface to all network services. This must provide equivalent functionality to what we have with telnet, ftp, email, newsreaders, WAIS, Gopher, World Wide Web, Archie, WHOIS, and more. And the network should be available from all applications so that, for example: it is as easy to mail a portion of text or graphics as it is to print it; or networked information about a selected keyword can be retrieved as simply as using a thesaurus lookup in a word processor. New technologies such as multimedia, intelligent searching, voice activation, should be exploited when suitable. And of course the interface should be configurable to the users own preferred views of the information universe.

Chris Frith

'The art lies in concealing the art —
even though it is a highly complex
network it will be invisible to the
people who need to use it.'

(Chris Frith)

The network transparency, which the user should expect, is well described by Chris Frith, when he said in relation to the SuperJanet project in the UK: "The art lies in concealing the art -- even though it is a highly complex network it will be invisible to the people who need to use it."

Current Systems

Current Systems

Bear Access
Xmosaic
Cello
X-Windows set
Systems accessible via vt100
Windows set
Macintosh set
DOS set

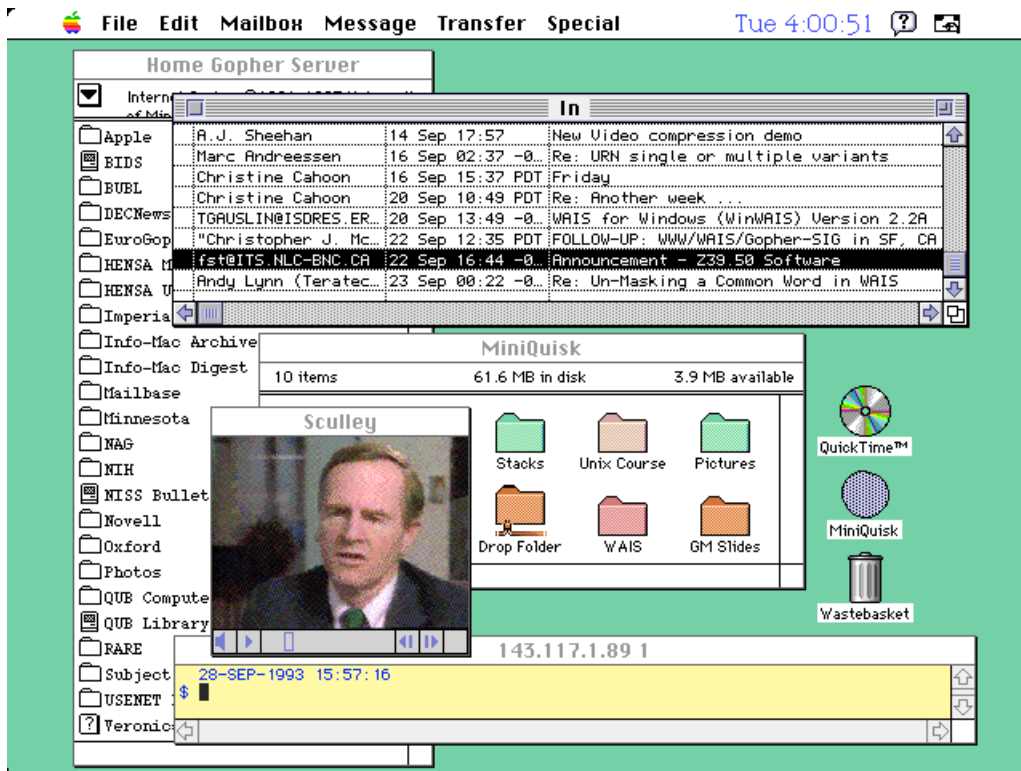
(WWW, WAIS, Gopher, Telnet, FTP,
Email, Newsreader, Archie ...)

MOO Gopher
Information Visualiser
BIOMIX
Magic Cap

But of course the ideal does not exist yet, it is something to work towards. How close to it are we ? The UNITE group has identified many systems of interest. Some such as Bear Access, Xmosaic and Cello consist of a single package. Others are a combination of client programs on common platforms. Other systems we have little experience of or have only read about. MOO Gopher is an object oriented information system which uses an adventure game type interface. Information Visualiser from Xerox Parc is a three dimensional information management tool. BIOMIX is a discontinued German project which presented information resources on screen maps. Magic Cap is General Magic Incorporated's operating environment for hand held devices offering a three dimensional walk through virtual world of information and communications services.

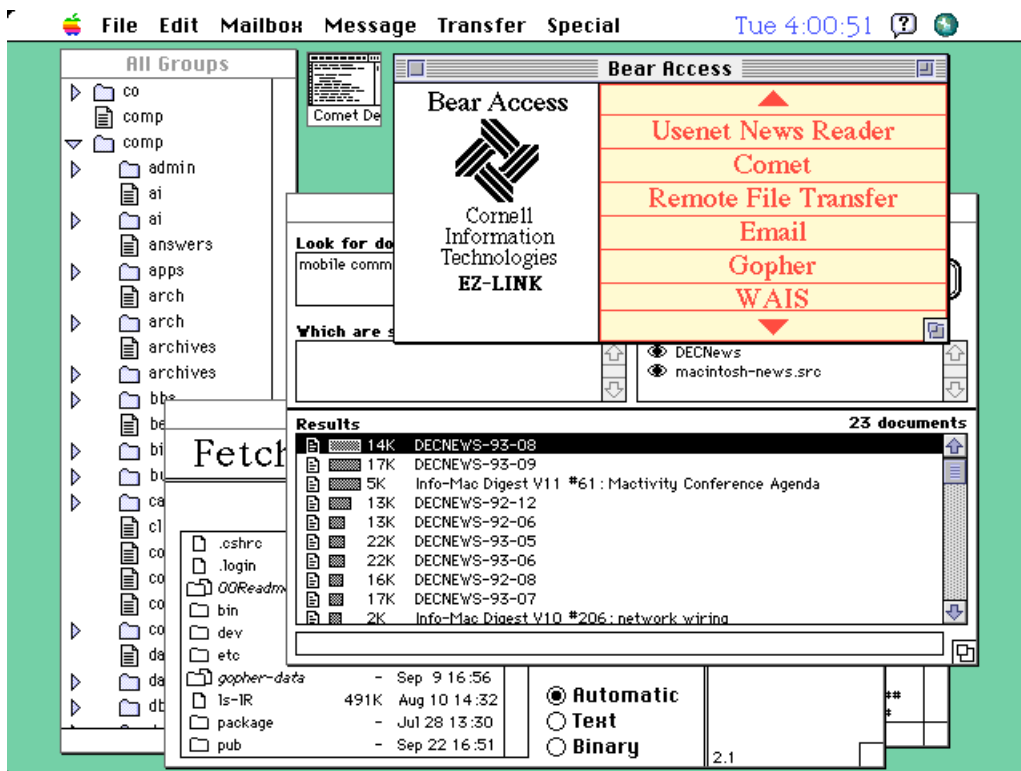
For now however we will look at what an average user can do very easily today.

Screen Dump 1



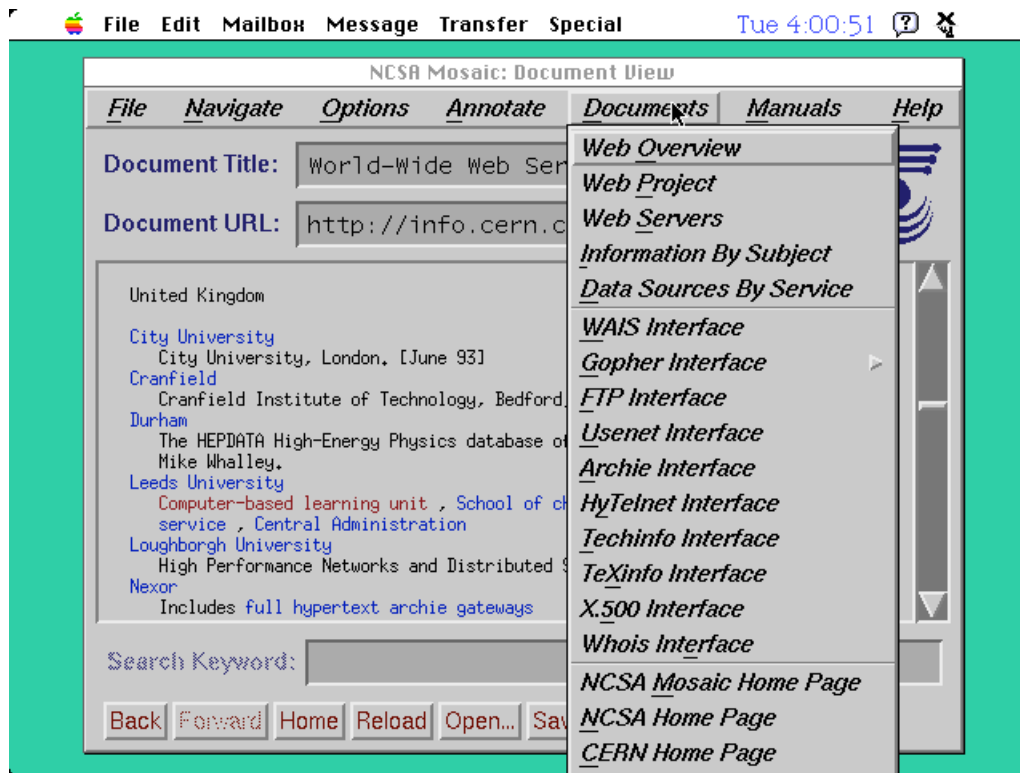
Here we have the desktop of my own Mac IIx. I have just finished checking some mail using Eudora. Behind TurboGopher displays the top level of my University's gopher server. At the bottom of the screen the NCSA Telnet program maintains a connection to a VAX 9000. A QuickTime movie has been opened from a remote CD which is in fact part of a Novell server somewhere else on the campus. System 7 file sharing is being used to share a local folder of information with colleagues on the network. Not shown but running in the background is Microsoft Word. Text can be copied and pasted between any of the running applications.

Screen Dump 2



This shows the Bear Access package developed and used at Cornell. This is a collection of programs fronted by a configurable menu box. In this case we have an iconised VAX session using the Cornell Comet communications program; the Nuntius newsreader connected to a remote news server; the user friendly Fetch ftp program connected to an internet archive; and MacWAIS displaying the result of a search of remote databases. Again cut and paste is possible between all running applications and information from several remote sources is only a click away.

Screen Dump 3



This is Xmosaic. Now everything is contained in one program. Coloured words in documents are links to other documents somewhere else on the network, documents which are automatically displayed when the link words are clicked. Native Macintosh and Windows versions of this program will soon be readily available. A typical reaction to this program from the UNITE discussion list is: "What more are we going to need ? ... we almost have a single product that runs on X terminals, PCs and Macs, that can access WWW, Gopher, WAIS, ftp, telnet, usenet news, Hytelnet and deliver ascii text, formatted text, postscript text, BW, greyscale and colour images, sounds and 8-bit audio, animation and more or less motion video." A very impressive interface.

Evaluation Template

Main headings in template for use by evaluators

- 1 Evaluator(s)
- 2 General information about software being evaluated
- 3 Target platform
- 4 Installation of software
- 5 Network functions provided by this software configuration
- 6 Multimedia support
- 7 Interface to network information
- 8 Extent of integration within familiar computer environment
- 9 Effectiveness of software
- 10 Other comments

These are the main headings in the template which UNITE volunteers have been using to evaluate different solutions. The name of the evaluator, description of the software, hardware requirements, installation, functionality, multimedia, user interface, integration, effectiveness, and other comments such as best features or limitations. The objective has not been primarily to produce detailed descriptions but to probe how well user requirements are satisfied.

Evaluation Summary

Evaluation Summary

Best Features

Single interface to nearly all services
Ease of use
Fast access to useful information
Customisable views (bookmarks etc.)
Keyword searches (boolean, relevance feedback)
Transparent use of local and networked information
Multimedia support
Embedded email
Full utilisation of VT100 capability
User control of network transfers

What's Missing

Integration with everyday applications
Consolidation of information objects
Widespread standards for multimedia

My summary at this stage cannot be exhaustive, evaluations are still going on. Nonetheless general list discussions and returned evaluation reports suggest that the best features include: single interface, as with WWW browsers such as Mosaic and Cello; ease of use, as with Gopher; fast access to useful information in preference to a fancy graphical user interface; customisable views as provided by Gopher bookmarks or Xmosaic's hotlists; keyword searches, especially with boolean combinations and relevance feedback; transparent use of local and networked information as supported by WWW browsers which use local files also; multimedia support; embedded email where for example a newsreader supports seamless posting to a group or author; full utilisation of vt100 capabilities as demonstrated by the Lynx WWW browser with highlighting and full screen arrow movement; and user control of network transfers, especially to abort slow downloads.

And what's missing ? Integration -- usually all we've got is cut and paste, we need proper program linking at least. Consolidation of information objects: the interface should remove the user a level away from the actual tools which are being used to retrieve information -- the user should not have to be concerned as to whether it comes from a WAIS database, Gopher server, WWW document or whatever. And widespread standards for multimedia: there is a perception that severe hacking is needed to produce impressive presentations.

Other Comments

Other Comments



I would now like to use comments from other members of the UNITE discussion list to touch on some of the finer issues associated with our theme of a complete network interface. First I want to talk about surfing.

Jim Croft

To describe our involvement with information systems in general we use a surfing analogy. There a huge, exquisitely formed tsunami of information and the technology to handle it, is curling beautifully. Some are riding this wave with consummate skill and daring on a ride that will never end. Some of us are falling down the face of the wave totally out of control and will probably be dumped heavily into the sand. Others are slipping to the back of the wave and will have to paddle harder if they want to catch it, or wait for the next one. Some are on the beach building castles in the sand. Some are not even at the beach, others don't even know where the beach is. And there are even people who do not even know there is such a thing as an ocean with water in it.'

(Jim Croft)

Jim Croft says: "To describe our involvement with information systems in general we use a surfing analogy. There a huge, exquisitely formed tsunami of information and the technology to handle it, is curling beautifully. Some are riding this wave with consummate skill and daring on a ride that will never end. Some of us are falling down the face of the wave totally out of control and will probably be dumped heavily into the sand. Others are slipping to the back of the wave and will have to paddle harder if they want to catch it, or wait for the next one. Some are on the beach building castles in the sand. Some are not even at the beach, others don't even know where the beach is. And there are even people who do not even know there is such a thing as an ocean with water in it."

Charles Blair

'My own view is that, with the World Wide Web, for the first time we have the empowerment of the end-user that we've heard so much about. We have the closest thing to jacking into the matrix, the best way of surfing the Internet and the closest vision of what cyberspace might be like to date ... It promises to place the full power of the Internet in the hands of the people.'

(Charles Blair)

On the topic of using a World Wide Web interface, Charles Blair says: "My own view is that, with the World Wide Web, for the first time we have the 'empowerment' of the end-user that we've heard so much about. We have the closest thing to 'jacking into the matrix', the best way of 'surfing the Internet', and the closest vision of what 'cyberspace' might be like to date ... It promises to place 'the full power' of the Internet in the hands of 'the people'."

Dennis Nicholson & Scott McIntyre

'... the user needs to be able to fashion his own
view of network resources.'

(Dennis Nicholson)

'Navigation through infospace must be highly
customisable. There will always be people who
want arrow keys and F1-F12 at the top of a
keyboard. Personally I would like to be able to sit
with a VR helmet of some sort on, and represent
the information sources as books on a library
shelf. I can sort it however I want, paint the
spines of important books in a bright colour for
easy reference, even stack the books in different
positions. Point, grasp, and you're there.'

(Scott McIntyre)

On the issue of customisation of the interface, Dennis Nicholson makes the general statement that: "...
the user needs to be able to fashion his own view of network resources."

While Scott McIntyre is a little bit more specific (and perhaps ambitious): "Navigation through infospace
must be highly customisable. There will always be people who want arrow keys and function keys at the
top of a keyboard. Personally I would like to be able to sit with a Virtual Reality helmet of some sort on,
and represent the information sources as books on a library shelf. I can sort it however I want, paint the
spines of important books in a bright colour for easy reference, even stack the books in different
positions. Point, grasp, and you're there."

Chris Bishop & Rick Gates

'Perhaps the thing that does the navigating
should be the computer, not the user.'

(Chris Bishop)

'I rarely predict, but I'll make a stand here. By
the turn of the century our interfaces will have
less concern with the ins and outs of search and
navigation techniques, than with how best to
communicate with the intelligent agent that
does the searching for us.'

(Rick Gates)

On the subject of how to navigate the network to find information of interest, to sift through the masses
of data in quest of what is useful, Chris Bishop has this to say: "Perhaps the thing that does the
'navigating' should be the computer, not the user."

Rick Gates follows this up by saying: "I rarely predict, but I'll make a stand here. By the turn of the
century our interfaces will have less concern with the ins and outs of search and navigation techniques,
than with how best to communicate with the intelligent agent that does the searching for us."

Rick's pet name for this intelligent agent is the Weasel. When I contacted Rick to confirm that it was OK
to quote from some of his messages, I got the following message back: "Mr Munroe, My master (Rick
Gates), has asked me to inform you that you may feel free to use any of his previous communications to
your fine email list. Respectfully, The Weasel"

Mary Dudman

'... the Library goal is to provide access to as much information as possible, in the most versatile way possible, to the widest range of clientele we can possibly serve. Therefore, we have to keep the reins pulled in a bit so as not to leave the vast majority behind in the dust of the stampede while we go merrily on our way into the future, shouting back that if you can't keep up, just go away. To decide how quickly to implement change is a real technological dilemma for academia and a technological nightmare for academics.'

(Mary Dudman)

Mary Dudman realises that there are some caveats to introducing new and better technology: "... the Library goal is to provide access to as much information as possible, in the most versatile way possible, to the widest range of clientele we can possibly serve. Therefore, we have to keep the reins pulled in a bit so as not to leave the vast majority behind in the dust of the stampede while we go merrily on our way into the future, shouting back that if you can't keep up, just go away. To decide how quickly to implement change is a real technological dilemma for academia and a technological nightmare for academics !"

Micheal MacConmara & Stephen Benson

'What seems to be ignored in all the mad rush to newer, better, faster technology is the quality of the data. Computer Scientists are pushing the boundaries of what is in fact only the packaging. A fancy sweet-box (candy-box) but full of saw-dust.'

(Micheal MacConmara)

'What worries me is that these tools may tend to be re-inventing the wheels that librarians have used for yonks. While I accept that the Internet is different in both format and structure to traditional libraries it requires the same kind of structures applied to it to make its data usable.'

(Stephen Benson)

Micheal MacConmara reminds us that a futuristic interface may still be disappointing: "What seems to be ignored in all the mad rush to newer, better, faster technology is the quality of the data. Computer Scientists are pushing the boundaries of what is in fact only the packaging. A fancy sweet-box (candy-box) but full of saw-dust."

And Stephen Benson warns us not to disregard those who have experience of information provision: "What worries me is that these tools may tend to be re-inventing the wheels that librarians have been using for a long time. While I accept that the Internet is different in both format and structure to traditional libraries it requires the same kind of structures applied to it to make its data usable."

Sean McLinden & Tony Barry

'While I agree that from the point of view of expenditure of resources we should focus on those things which would have the greatest anticipated utility, I would never agree to bias the design in favor of the planned rather than the accidental discovery of information.'

(Sean McLinden)

'Over thirty years ago when I was young I spent a great deal of time in libraries in search of nothing in particular and finding a great deal of interest. I valued what I found. I use the internet the same way.'

(Tony Barry)

Sean McLinden urges that provision is made in the interface for serendipitous possibilities: "While I agree that from the point of view of expenditure of resources we should focus on those things which would have the greatest anticipated utility, I would never agree to bias the design in favour of the planned rather than the accidental discovery of information."

And this view is seconded by Tony Barry: "Over thirty years ago when I was young I spent a great deal of time in libraries in search of nothing in particular and finding a great deal of interest. I valued what I found. I use the internet the same way."

Summary

Storyline

Network Evolution
User Revolution

The UNITE Group
UNITE Activities

The Ideal Interface
Current Systems
Evaluation Summary

Other Comments

Before finishing I would like to recap on what I've said here today. I've mentioned the network evolution and user revolution amidst which we have a focus in the RARE working groups. And in particular the UNITE task force is trying to act as a rallying point for ideas about how users can best interact with the net. We moved on to look at the ideal interface, what we have in current systems, what features should be developed further and what is still missing. I then shared with you comments from other members of the group to highlight briefly some of the other issues which must be considered.

Jill Foster

'This is a blue sky project.'

(Jill Foster)

The talk would not be complete without some words from Jill Foster, who chairs the RARE working group on Information Services and User Support and is responsible for much good work. UNITE is the brainchild of Jill.

And at the Network Services conference last year she said about UNITE: "This is a blue sky project", and for me that just about sums it up.

To join the UNITE e-mail discussion list,
send a message containing

join unite <yourfirstname> <yourlastname>

(e.g. join unite George Munroe)

to

mailbase@mailbase.ac.uk

(George Munroe, November 1993)