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School of Computer Science
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The Andrew View Newsletter

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Tell a friend about the **Andrew Remote Demo Service**!

finger @atk.cs.cmu.edu

My Own View - Technology's Role in Changing our Society

Wilfred J. Hansen, Director

Robert Putnam and Francis Fukuyama have recently published suggestions that the American culture is become much less social than in prior years; Americans are finally assuming the mantle of "rugged individualism" that has so long been cited as our national character.

Americans may have been rugged individuals, but for the first two centuries, we were also a nation of joiners. We joined, attended, and supported a large number and wide variety of social organizations, political groups, sports groups, churches, volunteer fire brigades, alumni associations, and so on. Within the last decade or two, statistics concerning membership have declined remarkably. Bowling leagues--for one--have declined by 40%, even though individual bowling remains high.

Political scientists look at the trends in diminished organizational involvement and see an alarming reduction in the traditional means for forming consensus and building an agenda. This weakening of group bonding can lead, they say, to greater fragmentation and an increased potential for well-organized minority groups to seize the political stage for their own purposes.

All of this is a rather long prolog to my topic for this issue: what is the role of technology in societal change? Several obvious elements can be identified. The telephone did not interfere much with groups until the introduction of telephone answering machines. It is no longer necessary to go to a meeting place to find someone, or even speak with them directly; you can leave them a message. Television did not interfere too much until the introduction of the VCR. You are no longer at the mercy of the broadcasters or of others around you who want to watch a different channel; you can entertain yourself alone whenever you like. It is no longer neccessary to meet with someone to hammer out an agreement; the fax machine makes possible the rapid exchange of document drafts. For example, the largest "scene" for making book deals has been the annual Frankfurt Book Fair. The magic of the affair has paled since book deals--even trans-ocean--are now made by exchanging faxes instead of engaging in face-to-face discussion. Faxes, telephones, televisions, and other communication innovations get work done faster, but at a cost to social interaction. Without fact-to-face meetings, the attendant opportunities for exchanging views on a wide range of community issues, in addition to conducting the business at hand, is lost.

What powers all of those communication innovations? Computers. Besides facilitating communication, I believe that computers play a subtler role in supplanting the former flow of life: speed. Because the computer makes it *possible* to do things faster, we have come to *expect* things to happen faster. The postal service is no longer fast enough. I now expect one day turnaround. No longer are plane reservations a task for a specialist. I can now phone the airline and get reservations instantly. Information queries and catalog shopping all happen in one phone call whereas formerly there might have been two or three.

The speed made possible by computers might be expected to give us all more leisure. Instead, we find our human selves going faster and faster. The calculus of expected speed has caught us up in its web and we, too, are expected to perform faster. This is just one more factor reducing the opportunity for social interaction. And since we need to do more, we wind up more frazzled, rendering more unpleasant what social interaction we do manage to have.

Tom Plate, the journalist who reviewed Fukuyama and Putnam in the *Los Angeles Times*, suggests that the most important step that each of us can take is to join some local group. Anything at all. Get that community involvement perking again.

For myself, as a man who has spent his entire life contributing to--and utilizing--computer technology, I must accept some responsibility for our current state of affairs. At this point you might expect me to apologize, or at least offer some plans for improving things. Sorry, I'm too busy. Send me e-mail and I'll fax you a suggested list of appointments, then leave a message on my answering machine as to which one you'd like :-)

Plans for the Year Ahead

Wilfred J. Hansen, Director

In preparation for the Consortium's Annual Meeting last month, we posted a request for "Wishlists." What would our members like to see happen to Andrew in the coming year? The responses we received showed a remarkable consensus of opinion: nearly all respondents wished to see improved electronic mail and world-wide web faciltities. (Hmmm...does this mean that *ez* is satisfactory?) Combining these "wishes" with a realistic view of resources available to achieve them, we offer you this plan for the year ahead.

Web Wishes An Andrew web browser is nearing completion. The last step, conversion from C to C++, is now in progress. We have recently converted from one HTML viewer to another. These improvements will give us capabilities for browsing the web and for "warping" to any URL that happens to appear in any document. Complete web integration requires converters between HTML and ATK formats. The goal is to maintain one document and have it serve to provide formatted text in ATK, MIME, web HTML, and plain ASCII.

To polish off the browser, we will implement widgets for PushButton, ToggleButton, RadioButton, TextResponse, Label, and List and integrate these into the browser to support HTML tables and forms. There <u>is</u> progress on the widget front. We have drafted the backbone of a widget driver such that any widget can be specified to it by creating a file of attributes. The obvious next step is to create the widgets needed for the web browser. We will be undertaking this soon.

Mail Wishes Electronic mail is complex because it must interface with a plethora of external objects. Personal mail, newsgroups, and mailing lists may all transit via several mechanisms and be stored locally by several others. Carnegie Mellon University is implementing a new mail management system which will make obsolete the delivery and storage mechanisms assumed by '*messages*.' The University's Computing Services representative attended our Annual Meeting and expressed disinterest in whether or not *messages* will be converted for this new mail management system. Most of the Consortium members have also been uninterested in change. At some point, electronic mail may again be a priority for our work, but it is not at the present. In the interim, we are examining the *'c-client'* package available from the University of Washington. It supports a variety of mail transfer protocols and can serve as the basis for a mail/newsgroup user interface.

Miscellaneous Wishes At the behest of a member, we have been and are continuing to make improvements in the internals of scrolling, styles, and color. The only user-visible effects should be smoother scrolling and less chance of running out of colors.

Finally, it seems impossible to get through an annual meeting without someone mentioning the word "undo." We have decided to call it the "u" word. Maybe we can get to it next year.

Summary of Plans for 1995-1996

* Install, use, and distribute the web browser.

* Implement widgets.

* Adapt the browser to use the new widgets.

* Continue incremental improvements in scrolling, styles, and colors.

* Think more about the "u" word.

A more detailed discussion of this topic can be found in *Wishlists: An Agenda for 1996.* It can be located on our FTP server at ftp.andrew.cmu.edu: pub/AUIS/CONFERENCE/wishlists or via the Andrew web homepage at *<http://www.cs.cmu.edu/~AUIS>*.

Software Developments and Features

Rob Ryan and Susan Straub, Technical Staff

Document Launcher Andrew7.2 users can now find information about all Andrew-related documents in one single place. Andrew's new "document launcher", named *doclaunch*, is located in $ANDREWDIR/doc/. The file contains links to every Andrew document in our archive. The documents are organized into seven major categories (programming tools, mail system, insets, programmer insets, text tools, readme, FAQ). Each major category is further broken down into topic documents which contain links to other related documents. We hope that this helps you to answer your questions about the Andrew User Interface System and to find the tools you need to use it.

Batmail Added In September, the Consortium added the "batmail" mail reader to Andrew. The reader was written by Miles Bader several years ago. The package allows access to Andrew mail from within the GNU *"emacs"* editor. The *emacs* portion just displays message bodies which it fetches by conversing with another process called, thematically, *"robin"*. *Robin* has all the library calls to access mail and news from the Andrew Mail Delivery System. By carefully defining the messages allowed to flow across the boundary, a single mail reader can be used with processes designed for several different message sources and storage schemes.

You will find a copy of this mail reader on our server via anonymous ftp at ftp.andrew.cmu.edu: pub/ AUIS/misc/batmail.tar.gz or via the FTP archive section of our webpage <http://www.cs.cmu.edu/~AUIS>.

Colors are Changing Two key members of the Consortium have reported dissatisfaction with the way the Andrew Toolkit (ATK) handles colors. Applications tend to allocate too many colors and the default appearance of images needs improvement.

One of the main reasons why ATK applications consume so many colors is that once a process has used a color, that color will remain allocated until the process exits. Images look bad because on a typical display (8-bit pseudocolor) ATK uses only 5 evenly spaced intensity levels for each of the red, green and blue components. This limit is in place so that displaying images in ATK won't consume all available colors.

To rectify the situation:

1. Colors will be deallocated when not in use.

2. When a color cube is needed RGB_DEFAULT_MAP will be used if it is defined and the user has not indicated otherwise.

3. In the absence of RGB_DEFAULT_MAP or if the user so indicates then the largest color cube possible will be used subject to any user imposed limit.

4. ATK applications will redraw automatically if the mapping from a color specification to an actual color must be changed.

5. Only needed colors from the color cube will be allocated.

Other possible enhancements include:

6. Provide a quota for exact colors, allocating from a color cube if the quota is exceeded.

7. Automatically reduce the color cube in size if color resources are exhausted.

8. Reduce the 'technicolor' flashing effect when a private colormap is used.

The goal in implementing these changes is to make ATK applications look as good as possible, while not interfering with the appearance or function of other applications. These enhancements will apply only to Andrew7.2 in C++ employed by Consortium members.

Different Editors for Different Andrews Did you know that there are actually three HTML editors for Andrew? Hence, the confusion amongst our users as to which editor to use. The first was created using the Andrew Toolkit by Nick Williams while at the City University of London. It can be found on Nick's webpage at <http://web.cs.city.ac.uk/homes/njw/htmltext/htmltext.html>. Fine-tuned versions for Andrew in C and C++ were then provided by Robert Kemmetmueller of IBM in Rochester, MN. These offer the functions *"htmlview"* and *"ez2html"*. These have now been incorporated into the Andrew7.2 source. They can also be found on our server via anonymous FTP at ftp.andrew.cmu.edu: pub/AUIS/misc. Depending on what version of Andrew you are using, choose from these files:

html.v941121.tar.Z	For Andrew6.3 or earlier, written in C.
html.v950519.tar.Z	For Andrew7.0 or later, written in C++.

Alternatively, all versions can be gotten from the Consortium's webpage <http://www.cs.cmu.edu/~AUIS> under "What other items might I consider downloading?"

News from the Consortium

Susan Straub, Technical Staff and AnnMarie Zanger, Assistant Director

The 1995 Survey of Andrew Users During the summer of 1995, the Andrew Consortium surveyed as many Andrew User Interface System (AUIS) users as it could find. The purpose: to learn how, why, where and when they use the system so as to better evaluate it for future enhancements and to better define how the Consortium should serve its users. The survey was conducted via electronic mail and the postal service. Our appreciation goes out to all who responded!

Population The Consortium distributed the survey to more people than ever before (588) and offered a WorldWideWeb form on which to reply. Consequently, a record number of users (42) responded to the 1995 Annual Survey. This represented a 7% reply rate.

Location Users replied to the survey from around the world. Responses came from sites in France, Australia, Finland, Canada, Germany, Israel, Brazil and throughout the United States. A full 52% of the respondents are affiliated with academic institutions, 42% are affiliated with commercial entities, 5% come from government organizations, with the remainder not identifiable.

Today, Andrew users can be found in both the home and the workplace, thanks mainly to the popularity of Andrew's Linux port. Usage was split nearly 50:50 between home and workplace sites, and of these, a high number of respondents (12 or 22%) said that they used the system is both places.

Sites The majority of the respondents with AUIS installations cater to a small number of users: 24 groups have less than ten users per site and about 50% of all the respondents have just 1-2 users. Nine groups have more than ten but less than 100 users, three groups have up to 500 users, and five groups have over 1,000 users on site. Four of these five are academic institutions.

Of the 42 groups responding, 16 or 38% of them have 1-2 programmers on site. Eight of them have no programmers at all. Seven groups employ between three and ten programmers; another seven groups have 11-50 programmers. One group has 50-100 programmers on site and another employs the most programmers in our survey: from 500-1000 bodies, many of whom program Andrew.

Platforms Almost half (20) of the 42 respondents indicated that they run AUIS on multiple platforms. System types used to run Andrew among the respondents are dominated by Linux and Sun machines. The largest percentage of respondents use Linux boxes (27) then Sun (14), DEC (5), IBM (4) and HP (3). Two different groups each claim to use SGI and OSF systems. The remainder is made up of systems such as Data General, Net BSD, Riscos, OS2, Irix and PCs.

Familiarity Today, most new Andrew pundits are introduced to the system because of Linux. Twenty of the users who responded said that the Andrew system was recommended to them via a Linux promotional tool, or a Linux consultant. The second most common way of finding out about Andrew is through the Usenet electronic bulletin board system. The third best way to find out about Andrew is by having some type of association with Carnegie Mellon University where AUIS has been used for a decade now.

Downloading Users still download the source code via anonymous ftp most frequently, but use of the WorldWideWeb to obtain the source is growing. Over 20% of the respondents have downloaded Andrew from the Consortium homepage (http://www.cs.cmu.edu/~AUIS). When downloading, two-thirds of the responding users selected the binary distributions while the remaining one-third chose the entire source code.

Why Andrew? Once again the resounding cry is, "because it's free". A large but less resounding crowd uses Andrew because of its compound document architecture, because it is easy to use, and because it is better than other similar software. Few users cited "service and support" as the key reason why they use the system.

Type of Usage Nearly all of the respondents (38) use Andrew for word processing. Twenty-five use the mailer system. Eleven respondents employ Andrew for graphics and drawings. Seven use Andrew to manage information and desktop publish. Only five of the respondents were application builders. Therefore, the most commonly used applications are *ez* followed by *messages* (no surprise). Following right behind is the *help* application. *Console* and *bush* were much less frequently cited, whereas surprisingly *preview*, *typescript* and *launch* were not mentioned at all.

Dislikes In the "reasons for not using Andrew" pile, users offered us constructive criticism of many of the system's known weaknesses and suggestions on how to improve it. Most resounding among these were: many bugs, lack of robustness, cumbersome to use, confusing to use.

Enhancements Users asked for all kinds of enhancements for Andrew. At the top of the list were: various widgets, undo feature, cascading menus, mail integration and improvements.

This represents only a sampling of the conclusions we were able to draw from this year's survey. A more detailed ***Summary Report for the 1995 Andrew Survey*** was presented at the Consortium's Annual Meeting in September and was mailed to those who kindly responded to the survey. Please contact the Consortium <info-andrew-request@andrew.cmu.edu> if you would like a copy.

Call for Moderation By popular demand, the Andrew Consortium has begun to moderate its newsgroup postings.

In recent months, we have witnessed an increase in unsolicited posts to the info-andrew@andrew.cmu.edu mailing list, our main conduit for discussion of Andrew and Andrew Consortium-related topics. In an effort to curb blatant spamming of our netways, all non-Andrew posts will be diverted to the electronic waste bin before they reach your computer mailbox (we can hear that deafening round of applause).

This will also give us the opportunity to sort through Andrew posts which have simply been misdirected. Subscribe and unsubscribe messages from those who wish to join or depart our mailing list, for example, should be mailed to info-andrew-request@andrew.cmu.edu rather than to info-andrew. Susan Straub, our system administrator, can be reached at this email address and will be happy to addresss any comments or questions you may have.

Conference and Meeting Concludes The 1995 Andrew Technical Conference and Annual Meeting is now history. Many thanks to our speakers and participants for joining us at this annual ritual.

Proceedings began with the Consortium's Annual Meeting in which we discussed goals for the coming year. Having solicited input from our members, Consortium director Fred Hansen presented *"Wishlists: An Agenda for 1996"* which guided the discussion. Other Andrew users were heard from via our *"Summary Report of the 1995 Survey of Andrew Interface System Users"* which was taken by Susan Straub and AnnMarie Zanger during the summer.

Technical papers presented at the conference included:

> *"Towards an Andrew-Based Web Environment"* by Nick Williams, Sequent Computers, (Surrey, England).
>
> *"Creating and Editing HTML documents with ez/htmltext"* by Robert Kemmetmueller of IBM (Rochester, Minnesota).
>
> *"Doing Business on the Internet"* by Laurie D. T. Mann of ServiceWare (Pittsburgh, Pennsylvania).
>
> *"AUIS and the World Wide Web"* by Tom Neuendorffer of Galt Technologies (Pittsburgh, Pennsylvania).
>
> *"Extensible Widgets for Andrew"* by Wilfred J. Hansen of the Andrew Consortium.
>
> *"Colors are Changing"* by Robert Ryan of the Andrew Consortium.

If you are interested in reviewing these papers, try our web page at http://www.cs.cmu.edu/~AUIS. See the FTP archive link to the PAPERS/conf/1995/ directory. Papers can also be accessed via anonymous FTP at ftp.andrew.cmu.edu: pub/misc/ in that same directory.

The Andrew Technical Conference Proceedings package is also sold by the Consortium for a fee. This volume includes the entire proceedings of the 1994 and 1995 events, (HTML Editors, Widgets, Application Developer's View of Andrew, The Web Browser, Compound Document Architectures) plus highlights from the 1992 and 1993 conferences. Please use the order form at the back of the newsletter or email <annmarie@cmu.edu> for further information.

Employment Opportunities The Andrew Consortium has two programming positions open. As you know, the Consortium staff enhances and maintains the Andrew User Interface System (Andrew), one of the leading compound document environments. Andrew provides various applications based on these compound documents--word processor, mail/bboard system, help browser, drawing and font editor, directory browser--as well as a variety of embeddable objects--drawings, images, spread sheets, equations, etc.

We welcome your applications as:

* Bug Czar (full-time staff) - Your responsibilities will include fixing bugs, managing bugs database, documenting system changes, testing the system, problem solving, and system development.

* Developer (full-time staff) - You will design and implement new features in existing software, ensure the installability of the system, and communicate with Consortium members.

Please contact our director, Fred Hansen, at 412-268-6788 or via email <wjh@andrew.cmu.edu> if you are interested in any of these positions or if you would like to recommend someone to us.

FACTS ON FILE

Andrew is...

Compound Document Architecture
Word Processor
Drawing Editor
Mail /Bulletin Board Reader, Writer, Manager
Spreadsheet / Table Editor
Widget Set
Application Builder
Scriptable
In C and C++
For X11

...With a consistent, integrated user interface so you can create compound documents containing pictures, words, tables, graphs

...and more.

The ***Andrew User Interface System*** is an integrated set of tools that allow you to create, use, and mail documents and applications containing typographically formatted text and embedded objects. ***AUIS*** or ***"Andrew"*** has three principal components:

> The ***Andrew User Environment (AUE)*** is an integrated set of applications beginning with a 'generic object' editor (*ez*), a help system, a system monitoring tool (*console*), an editor-based shell interface (*typescript*), and support for printing multi-media documents.
>
> The ***Andrew Toolkit (ATK)*** is a portable user-interface toolkit. It provides a dynamically-loadable, object-oriented environment wherein objects can be embedded in one-another. Thus, one could edit text that contains not only fonts and styles, but also embedded raster images, spreadsheets, drawing editors, equations, simple animations, etc. These embedded objects could themselves contain other objects, including text. ATK is an open system so programmers can create new objects that can be embedded as easily as those system-defined objects.
>
> The ***Andrew Message System (AMS)*** provides a multi-media interface to mail and bulletin-boards. AMS supports several mail management strategies and implements many advanced features including authentication, return receipts, automatic sorting of mail, vote collection and tabulation, enclosures, audit trails of related messages, and subscription management. It also provides a variety of interfaces that support ttys and low-function personal computers in addition to the high-function workstations.

Andrew-Ready Platforms

Andrew has been used successfully on (at least) these platforms:

IBM---RT AOS 3.4, RT AIX 2.2.1, RS/6000 AIX3.1, PS/2 AIX1.2
SUN---Sun3 3.5, Sun3 4.0, Sun4 4.0, Sun3 4.1, Sun4 4.1, Sun4Mach, Solaris
DEC---Vax Ultrix 3.1, Vax Ultrix 4.2, Vax BSD, DEC MIPS, Pmax Mach
Other---HP, SCO I386, SGI IRIX 4.0, SGI IRIX 5.2, Apollo, Macintosh II, MacMach, 486 Mach, Telmat, Linux

Remote Demo Service

Try out Andrew from your own work station via the Remote Andrew Demo Service. You will need a host machine on the Internet running the X11 window system. You will be able to compose multimedia documents, navigate through the interactive Andrew Tour, and use the Andrew Message System to browse through a few of CMU's four thousand bulletin boards and newsgroups.

To get started, simply run the following command on your machine: finger @atk.cs.cmu.edu (128.2.203.218). The remote demo system will give you further instructions.

Accessing the Source Code and Binaries

Sources and binaries are available online via anonymous ftp from: ftp.andrew.cmu.edu (IP: 128.2.232.154) in pub/AUIS/. See the README file.

Other ftp sites are: ftp.x.org (IP: 192.112.44.100) and its clone sites (see pub/R6untarred/contrib/lib/auis-6.3). On the nationwide AFS file system, Andrew is available in: /afs/cs.cmu.edu/project/atk-ftp.

Binary distribution packages for subsets or all of Andrew are available for the following system types:

RS/6000
Sun 4C Sparcstation
HP 720
DEC Pmax
Linux

Source and binary tapes are also available by mail (see "Services and Offerings-Andrew on Tape" below).

Membership in the Andrew Consortium

The School of Computer Science at Carnegie Mellon University has established the Andrew Consortium to maintain and enhance the Andrew User Interface System (Andrew).

The Consortium offers outside organizations the opportunity to help shape the future of the system. Participate in the development of Andrew, utilize the latest advances by our technical staff, and undertake commercial exploitation with the active cooperation of the developers.

The overall efforts of the Consortium staff are directed toward:

+ increased quality in existing media,
+ enhancements, including a direct manipulation interface builder,
+ embedding of applications such as generic X applications,
+ increased potential for transition from Andrew to successor systems
+ inter-operability with standards such as Posix, Motif, C++, OLE, and SGML.

The Consortium makes its most up-to-date release, currently Andrew 7 in C++, available only to members. The current publicly available Andrew release is 6.3, released via anonymous file transfer over the Internet.

Membership in the Consortium is offered to organizations interested in exploiting Andrew technology within their operations or products. All members support the consortium as it:

+ Enhances, maintains, and distributes the Andrew software base.
+ Conducts an annual meeting to review progress and set priorities.
+ Distributes a quarterly newsletter
+ Monitors the info-andrew mailing list.

We offer memberships at four levels: Participating, Full, Contributing and Associate. You are cordially invited to join us.

Please contact our Director, Fred Hansen <wjh@andrew.cmu.edu> if you would like to discuss the opportunities that the Consortium has to offer.

Consortium Services and Offerings

The following materials are provided by the Andrew Consortium at Carnegie Mellon University for internal educational use only and may not be reproduced for sale or distribution. Please mark your selections below:

ANDREW IN PRINT

_____ **The Andrew User Guide** US$25

This printed and bound guide, offers a comprehensive description of how to use Andrew applications and insets. Chapters cover ez, help, typescript, messages, console, raster, figure, table, and many other facets of the system. (130 pages)

_____ **Selected Technical Papers on Andrew** US$30

This set represents a selection of some of our most handy references on the Andrew system. (250 pages)

A Guide to Andrew (User Tutorial)
Ness: An Extension Language for the Andrew Toolkit
Programming with the Andrew Toolkit
ADEW: The Andrew Development Environment Workbench
Createinset: Generate Source Files for a New Inset
The Andrew Message System

_____ **Andrew Technical Conference Proceedings** US$20

The Andrew Consortium sponsors its own technical conference each year. The proceeding papers from the 1993, 1994 and 1995 events explore topics such as: HTML Editors, Widgets, Application Developer's View of Andrew, Smart Styles, Web Browser, Compound Document Architectures. (85 pages)

_____ **Programming Documentation on Andrew** US$95

This package represents a complete set of programming documentation on the Andrew system, sold in hard copy form. (1250 pages)

ANDREW ON TAPE

_____ **Public Source Tape (6.3 in C)** US$150

Want the source code on tape? Here it is, ready to use on your Andrew-compatible platform.

_____ **Private Source Tape (7.2 in C++)**

______ US$350 for business use ______________________ Name of designated user/company

______ US$250 for personal use ______________________ Name of designated user

Purchase our most up-to-date version of the source in C++ and take advantage of the latest programming advances made by our technical staff. (This tape must be designated for the use of one individual only.)

_____ **Binary Distribution Package (6.3 in C)** US$100

This tape provides you with everything you need to get Andrew up and running on your RS/6000, Sun 4C Sparcstation, HP 720, DEC Pmax or Linux machine. Files include the source code, word processing, documentation, and mail for MIME-compatible messages.

If you are ordering ANDREW ON TAPE, please specify format:

_____ 1/4" streaming tape (150 MB)
_____ 8 mm DAT tape (2.3 GB)
_____ 8 mm HP Iotamat format

US$ _______SUBTOTAL

_______ Add US$20 per item for US express mail delivery
_______ Add US$25 per item for air mail delivery outside the US
_______ Add US$40 per item for express mail delivery outside the US

US$ _______GRAND TOTAL

Name ____
Company ____
Address ____
Phone _______________ Fax _____________ Email ________________

Please place your order by mailing the previous section of this form with your selections marked. Include a check made payable to Carnegie Mellon University and send it to the address overleaf.

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bug reports --- info-andrew-bugs@andrew.cmu.edu
discussion forum --- info-andrew@andrew.cmu.edu

Newsgroup: internet.other.info-andrew@andrew.cmu.edu (Andrew format)
netnews.comp.soft-sys.andrew@andrew.cmu.edu (ASCII text)

Demo: finger @atk.cs.cmu.edu

Access: ftp.andrew.cmu.edu: pub/AUIS/

Web: http://www.cs.cmu.edu/~AUIS