Andrew Consortium
School of Computer Science
Carnegie Mellon

The Andrew View

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June, 1994

The big news this month is our release in the contrib section of the X Consortium's **R6 tape** !

The Andrew Consortium **Conference and Annual Meeting** will be held Friday, July 1.

Contents

My Own View

Wilfred J. Hansen, Director

Next week at Xhibition, I'll present a tutorial comparing various integrated user environments, including AUIS, OLE, and OpenDoc. As part of the Consortium Annual meeting, I'll repeat the non-Andrew parts of the tutorial.

After a challenging Spring preparing for various lectures, I look forward to a lot of vacation this summer. The whole family will be going to the finger lakes in July and I'll be going to the annual Go Congress in Washington, D.C.

The Consortium staff is continuing work on the various projects we have undertaken: dynamic loading for C++, printing, and new widgets code. As a sort of a startup for the widgets work, we are (once again) revising the scroll bar. This go-around will make it more general and will avoid some of the unexpected behavior when scrolling backward.

Andrew Technical Conference and Annual Meeting

The Andrew Technical Conference this year is scheduled for

Friday, July 1

The Annual Meeting of the Consortium will be held during and after lunch. The agenda follows.

8:30 - 9:00 Coffee and Danish

9:00 - 9:30 Tom Neuendorffer, Andrew Consortium Consultant
AUIS Web Browser
The World Wide Web has become the medium of choice for the dissemination of information on the Internet. The goal of this project is to integrate the AUIS and Web environments as seamlessly as possible, in order to facilitate transference of information both to and from AUIS users. In the process, AUIS should become a first class environment for both accessing and creating Web documents.

9:30 - 10:00 Pat Place, Software Engineering Institute, CMU
An Application Developer's View of AUIS
We are currently developing tools to support the development of an aircraft flight simulator. This talk will discuss some of the reasons why we chose to use AUIS as the user interface for our tool set. We examine those reasons with the benefit of hindsight. Further, we will touch on areas of AUIS that have helped and hindered us in our development efforts.

10:00 - 10:20 Wallace Colyer, Andrew System Manager, CMU
Andrew II (Cyrus)
The Carnegie Mellon Computing Service is converting the campus computing facility in a number of ways. The most dramatic of these is the introduction of server based mail delivery instead of delivery direct to the user's mailbox. The expected result is a reduction in the number of server machines.

10:20 - 10:40 Morning Break

10:40 - 11:00 Terry Gliedt, Andrew Consortium Consultant
AUIS on Linux
AUIS has now been made available in binary form for the Linux operating system. It is our hope in doing so to introduce AUIS to a broad community.

11:00 - 11:20 Rob Ryan, Andrew Consortium Developer
Dynamic Loading in C++
The port to C++ is largely complete, including complete plans for dynamic loading; but the latter is still pending implementation. We expect to make a complete release of the C++ version later this year.

11:20 - 11:40 Andrew Plotkin, Andrew Consortium Developer
Printing
In the C++ release, text and many other objects now print directly to postscript. Many niceties remain to be added, but the new printing facility should be ready for the C++ release.

11:40 - 12:00 Wilfred Hansen, Andrew Consortium Director
Widgets Plan
The Consortium is making progress with the widgets project. Planning documents will be presented and opened for discussion.

12:00 - 1:00 Lunch - FRC Courtyard

1:00 - 2:30 Annual Meeting
Please send suggested topics to wjh+@cmu.edu

2:30 - 2:45 Afternoon Break

2:45 - 5:00 Wilfred Hansen, Andrew Consortium Director
Tutorial on Compound Document Systems
This will discuss the Human-Computer Interface challenges and opportunities of user interface systems like AUIS, Fresco, OLE from MicroSoft, and OpenDoc from the Component Integration Laboratory. These systems offer the challenge of defining user interface schemes that extend across a wide spread of applications; they offer the opportunity to conveniently capture user interactions in order to study user behavior.

As part of the annual meeting, we discuss future directions for development of AUIS. These discussions drive the work of the Consortium staff for the year ahead. If you have any suggestions as to directions we should take, please send email to Fred Hansen at the address above.

For registration information, please complete and return the following registration form or contact Susan Straub at (412) 268-7326 <susan+@andrew.cmu.edu>.

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Registration Form

Name: ____

Address: ____

____

Organization:____

Email: ________________ Phone: ________________

I will / will not attend the luncheon. (please circle)

Conference $ ___________ $100

Housing $ ___________ $50/night

TOTAL ENCLOSED $ ___________

Please make checks payable to Carnegie Mellon University.

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Please complete the form and return it to:

Susan Straub
Andrew Consortium
School of Computer Science, Carnegie Mellon
5000 Forbes Avenue
Pittsburgh, PA 15213-3891

Attendees at the Conference may wish to join Consortium staff and guests at the event in the next article.

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* Starship Carnegie: Mission to Midnight *
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A grand opening preview party for "Star Trek: Federation Science" exhibit at the Carnegie Science Center.

* Friday, July 1, 1994
* 8:30 PM to Midnight
* The Carnegie Science Center
  (next to Three Rivers Stadium)
* Entertainment, Galactic Food & Fun
* Tickets -- $25 in advance/$30 at the door
* Creative Dress Encouraged

Discover the world of space travel with more than 30 interactive displays incorporating today's real science technology with the fantastic vision of the future portrayed in Paramount Picture's hit television series, Star Trek: The Next Generation (R), and the Star Trek motion pictures.

Turbo lift to the 24th Century Disco. Savor the complimentary galactic cuisine and cosmic beverages. See a Star Trek make-over and dance to the music of Billy Price. And meet Robert O'Reilly, Gowron, leader of the Klingon High Council from Star Trek: The Next Generation.

You must be 21 or older to attend. Charge by phone: (412) 237-3411.

Version 6.3 Now Available

AUIS users everywhere can now receive Release 6.3 of AUIS. It will also come out with the contrib section (in contrib/lib/auis-6.3 of contrib2.tar.gz) of X Windows System V11R6 in June/July and will be the last AUIS release in C. Subsequent releases will be in C++ and numbered 7.1 and higher.

You can obtain the latest release from our ftp server

ftp.andrew.cmu.edu

in pub/AUIS. The directory pub/AUIS/auis-6.3 holds the distribution in ASCII format while the tar files are available in pub/AUIS/dist-6.3. We have modified our distribution procedure and are now making distributions available in gzip'd format as well as compress'd format.

Inter-Language Unification

WHAT'S ILU?

ILU (pronounced eye'-loo) is a system that promotes software interoperability via interfaces. Interfaces between what? Whatever units of program structure are desired; we call them by the generic term "modules". They could be parts of one process, all written in the same language; they could be parts written in different languages, sharing runtime support in one memory image; they could be parts running in different memory images on different machines (on different sides of the planet). A module could even be a distributed system implemented by many programs on many machines. Calls across ILU interfaces involve only as much mechanism as necessary for the calling and called modules to interact. In particular, when the two modules are in the same memory image and use the same data representations, the calls are direct local procedure calls -- no stubs or other RPC mechanisms are involved.

ILU modules are known by their interfaces. A module interface is specified once in ILU's object-oriented Interface Specification Language (called, simply, ISL). For each of the particular programming languages supported by ILU (currently Common Lisp, ANSI C, C++, and Modula-3; Python, Tcl, and GNU Emacs-Lisp are in the works), a version of the interface in that particular programming language can be generated. The ILU kernel library provides services which may be used by the language-specific interface to overcome intermodule language or address space differences.

Many existing RPC systems, such as Xerox XNS Courier, ONC RPC, and OSF DCE RPC, have strong notions of interfaces. ILU allows binding to such services provided by such systems if their interfaces can be described in ISL. ISL has been designed to facilitate such description (currently, only for ONC RPC; Courier and DCE RPC are in progress). The binding to such RPC services is done in such a way as to be indistinguishable from binding to other ILU modules. In fact, properly constructed ILU modules can appear as native RPC services, and can be manipulated by non-ILU tools designed to work with those RPC services.

Similarly, the Object Management Group's (OMG) Common Object Request Broker Architecture (CORBA) defines modules with explicit interfaces. ILU allows modules that can be described with a safe subset of OMG CORBA IDL to be used as ILU modules, as well, though the ILU object model is not quite the same as the OMG CORBA object model. In fact, people wishing to experiment with CORBA may find ILU a useful experimental platform, as it does allow module specification with OMG IDL, and does generate ANSI C support as specified in Draft 1.2 of the OMG CORBA specification. As the OMG specification for a C++ mapping is agreed upon, we intend to provide that mapping for our C++ support, as well.

Version 1.6.4 of the Xerox PARC Inter-Language Unification (ILU) system is now available for general use via FTP from the PARC ftp server. Perhaps the simplest way is to go through our World Wide Web homepage,

ftp://parcftp.parc.xerox.com/pub/ilu/ilu.html

It has links to everything else, and may help answer any questions you might have.

ILU is copyrighted by Xerox Corporation, but the copyrights asserts "Unlimited use, reproduction, and distribution of this software is permitted." Contributors to ILU's development included Antony Courtney, Doug Cutting, Bill Janssen, Denis Severson, Mike Spreitzer, Mark Stefik, and Farrell Wymore.

1994 Survey - LAST CHANCE !!

Susan Straub

Once again we are polling the world to see how people are exploiting AUIS and to determine their needs. If you've not already filled out this survey, please take a few moments to complete the enclosed survey and return it to susan+@andrew.cmu.edu. We will share the results of the survey at the Annual Meeting.

(It is not our intention to publish individual answers other than to quote comments; however, we are not taking cryptographic precautions and cannot guarantee the confidentiality of what you send us. If we've asked questions you'd rather not answer, please feel free to omit them from your reply.)

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1994 Survey of Andrew User Interface System Users

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Name:

Net address:

Company/division/site location:

Number of machines at site running AUIS:

1?   2-10?   10-100?   100-1000?   over 1000?

Number of AUIS users at site:

1?   2-10?   10-100?   100-1000?   over 1000?

Number of AUIS users at other sites for the same company?

What system type(s) do you run AUIS on:

Are you or anyone at your site using AUIS for:

Mail, bulletin boards, news groups access?
Document production
User interface prototyping or development
Other uses (please list)

What additional service(s) would you like to see provided by the Andrew Consortium?

Other comments:

The Andrew User Interface System

The Andrew User Interface System (AUIS) is a word processor for compound documents, a collection of related applications, and an environment for building new applications and embeddable objects. AUIS runs under X11 and provides a dynamically-loadable object-oriented environment wherein objects can be embedded in one-another. Thus documents can contain not only multiple fonts and other typography, but also embedded raster images, spreadsheets, drawings, equations, simple animations, and so on. These embedded objects may themselves contain other objects, including text. The release includes many objects, including those mentioned above, along with a help browser, a directory browser, a font editor, a system monitoring tool, an editor-based shell interface, and source-text editors for C, C++, Lisp, HTML, Pascal, and other languages.

The underlying Andrew Toolkit architecture (ATK) supports cooperation between objects not only for screen display, but also for file storage, cut/paste across windows, an application construction environment, an extension language, and printing. There is full support for programmers to create new objects and new applications.

The Andrew Message System(AMS) is a component of AUIS and provides a multi-media interface to mail and bulletin-boards. AMS contains 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 character-based terminals and low-function personal computers in addition to high-function workstations.

Andrew has been successfully used on most platforms from these vendors: IBM, Sun, DEC, HP, SGI IRIX 4.0, Apollo, Macintosh II MacMach, 386/486 Mach, Linux, Telmat, Apollo, Mac2, Next, SCO I386.

The following are components are available in version 6.2 and later versions. Some respond to frequently requested applications in X: word processor-ez, drawing editor-figure, mail and news reader-messages, font editor-bdffont, documentation browser-help, directory browser-bush, HTML editor-htmltext.

AUIS editors that are both applications and insets

eq - equation inset
fad - animation editor
figure - drawing editor
layout - inset for arbitrary layout of enclosed insets
lset - display two adjacent insets
ness - extension and string processing language
org - display and edit hierarchies
page - allow flipping between pages
raster - editor for monochrome bit-mapped images
table - table / spreadsheet inset
text - text, document, and program editor (the heart of ez and other applications)

AUIS applications

bush - directory browser
chump - schedule maintainer
console - shell interface / terminal replacement

ez - word processor and program editor
bdffont - font editor (for fonts in bdf format)
help - documentation browser (includes all AUIS help files)
launch - provides a menu of AUIS applications
messages - mail and news reader, manager, and composer
pipescript - viewer useful as stdout
prefed - preferences editor
sendmessage - application for sending a message or news posting
typescript - shell interface (terminal substitute)

Commonly used non-interactive AUIS applications

datacat - concatenate AUIS files
ezprint - print an AUIS document
nessrun - runs a Ness script (the extension and string processing language)
preview - preview an AUIS document on screen

File format converters

from AUIS to: RTF, ASCII, PostScript, troff
to AUIS from: ppm, Scribe, RTF, troff, X window dump
convertraster - various raster formats

Embeddable insets not usually used as applications

clock - analog clock
eq - equations
fad - rudimentary animations
header - specify document headers and footers
image - store and display images in JPEG, gif, tiff, and other formats
link - hypertext-like link
month - display a calendar for one month
note - annotation
text - the text object itself
timeoday - digital clock
writestamp - displays the time the file was written

Editing tools

compchar - type characters for European languages
compile - support compilation and error review
complete - filename completion for typescript
dired - directory browser
dsearch - dynamic search
ezdiff - compare two ASCII files
filter - process a region of a document through a shell command
isearch - incremental search
lookz - style table editor
spell - spelling correction (uses ispell)

Source text editing tools for

assembler, C++, C, HTML, Lisp, man pages, Modula, Modula-3, Pascal

Tools for constructing insets and applications

arb - ADEW application builder interface
bison, mkparser/parser - GNU parser generator (modified)
class - preprocessor for AUIS's ClassC version of C
createcon - ADEW tool to generate C code for interface
createinset - create a prototypical inset under a new name
genmake - Makefile generator for classC
gentlex - lexical analyzer generator
makedo, doindex, whichdo - create, store, and locate dynamically loadable objects
runadew - ADEW application builder

Additional insets available for building applications

button, display text string, entry of labeled text string, four position switch, multiple buttons, multiple sliders, multiple string entry, on/off switch, slider, slider controlling array of strings, text list, thumb knob

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Consortium Services and Offerings

For information about services and offerings of the Andrew Toolkit Consortium please contact us at:

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Pittsburgh, PA 15213; USA
phone: +1-412-268-6710
email: info-andrew-request@andrew.cmu.edu

We offer memberships at three levels: Full, Contributing, and Associate. We also can provide source tape, CDrom with both source and executables, bibliography, copies of papers, conference proceedings.

AUIS sources and binaries are available online via anonymous ftp from **ftp.andrew.cmu.edu** (IP address is 128.2.35.66) in directory ./pub/AUIS. See the README there. Another ftp site is **public.x.org** in directory ./contrib/andrew; this is cloned on many servers, world-wide. On the nationwide AFS file system, AUIS is available in **/afs/cs.cmu.edu/project/atk-ftp/.**

To try AUIS, use our Remote Andrew Demo service: **finger help@atk.itc.cmu.edu** (IP address is 128.2.203.218)

News groups: Send subscription requests to **info-andrew-request@andrew.cmu.edu** and submissions to **info-andrew+@andrew.cmu.edu.** This is a distribution list offering the news with full AUIS formatting; For a clone in plain ASCII, see news group **comp.soft-sys.andrew.**

Send requests to info-andrew-requests@andrew.cmu.edu
Bug reports to info-andrew-bugs@andrew.cmu.edu