Andrew Consortium
School of Computer Science
Carnegie Mellon

The Andrew View

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Lots of exciting events to report this month including

our new name
our new CDrom Release of ATK (!)
the Andrew Consortium Technical Conference
    and annual meeting
progress on editors for
    fonts, preferences, figures

Andrew Consortium

Since our software is so much more than just a toolkit, our old name "Andrew Toolkit Consortium" has been confusing. The new name of "Andrew Consortium" has a more appropriate broader spread. The software maintained by the Andrew Consortium is the Andrew User Interface System and is comprised of:

Andrew User Environment - various applications for computer access: the ez editor, typescript, console, help, raster, ...

Andrew Toolkit - the architecture and supporting software that simplify construction of applications.

Andrew Message System - top-of-the-line electronic mail, bulletin board, and net news management system.

Alternate futures for AUIS
Wilfred J. Hansen, Director

The key agenda item for the annual meeting was discussion of future directions for the Andrew software. In planning future efforts, we balance commerce and research. Commerce suggests enhancing what we have, polishing awkward facets to achieve quality. Documentation would be expanded, but no new insets would be added and existing insets and applications would continue to operate much as they do. Research prompts us to explore new approaches: new interaction modes, new insets, an enhanced application development environment.

In preparation for the annual meeting, we distributed a list of potential projects. Little discussion ensued except for a strong call for a better drawing editor:

More documentation. Andrew software has over two thousand pages of documentation on-line. The greatest need is for overview documents telling users where to find what they need. We foresee manuals directed to users, program authors, and system administrators.

Wrapper architecture. Scrollbars and cels serve as wrappers which hold a single inset and enhance it in some way. What is required is a general architecture so any number of wrappers can be around any given inset. ADEW should then permit editing the set of wrappers around any inset. The biggest change will be required in introducing arbitrary wrappers around the outermost object: at present the outermost object is a data object in the file, but some form of view information will be needed as well.

Drawing editor. Zip is satisfactory for some tasks, but sometimes fails to provide what is wanted. The goal should be an easy-to-use editor that facilitates insertion of insets so images can be created with the same order of ease as in Hypercard, but with all the power of ATK insets instead of just buttons and fields. We can enhance zip or build a new editor.

More widgets. The set of widgets available with ADEW is not always sufficient. Indeed, the preferences editor project has a whole new set of widgets and others have also built widget suites. One general suite could be made available.

Static linking. Dynamic linking is marvelous for development because it saves considerable time; however, it detracts from system portability and can slow execution. We can explore a system build option that constructs the system as a single executable binary with some specific set of insets.

Motif compatibility. Permit Motif widgets as ATK insets. Permit ATK insets as widgets in Motif compound objects.

SGML. SGML seems to be the coming standard data stream, but saying that is saying little since the choice of DTD determines translation difficulties. Indeed, the ICA project (Integrated Chameleon Architecture) at Ohio State Univ (ica@cis.ohio-state.edu) has recommended selecting a DTD before beginning to write an SGML translator.

If you have comments on these possibilities or other projects you feel should be considered, please send mail to info-andrew@andrew.cmu.edu.

Andrew - The CDrom Release

Many readers of the electronic form of this newsletter have access to the internet and get Andrew software by ftp. Now, however, for everyone Andrew software is available in a convenient CDrom form. Unlike some recent distributions of workstation software, this CDrom includes not only the source but also executable files for four popular platforms.

For your consideration, here is the flyer describing the CDrom:

- -

An*drew* New convenience! A CDrom package for An*drew*, the comprehensive user interface software for workstations.

The An*drew* CDrom includes the full source and executable binaries for four platforms. No need for lengthy system compilation: pop the An*drew* CDrom into your cdrom drive and begin exploiting Andrew software.

This first release of the CDrom version is Release 5.1 of Andrew and includes:

> **Andrew User Environment** -- an integrated set of applications for X11: the ez 'generic object' editor, a help system, a system monitoring tool (console), an editor-based shell interface (typescript), and support for printing multi-media documents. In all applications text can have full typographic formatting and embedded objects. Cut/paste operate consistently between all applications
>
> **Andrew Toolkit** -- a portable user-interface toolkit. It provides a dynamically-loadable object-oriented environment for constructing new applications and objects. Existing objects include run-of-the-mill widgets--buttons, sliders, etc.--and higher level objects--raster images, spreadsheets, drawing editors, equations, simple animations... Embedded objects can themselves contain other objects, including text.

Andrew Message System -- provides a multi-media interface to mail and bulletin-boards and supports the new MIME standard for compound messages. 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 high-function workstations.

The An*drew* CDrom contains executable binary for: **IBM RiscSystem 6000, Sun Sparcstation, Hewlett Packard Series 700, DECstation Ultrix**. You can compile the sources to run on most other platforms.

Ordering Information

Copies of the CDrom may be purchased for $50.00* from

Andrew CDrom
Andrew Consortium
Carnegie Mellon University
Smith Hall 106
5000 Forbes Avenue
Pittsburgh, PA 15213-3890

Phone: (412) 268-6710 Fax: (412) 682-6938
Email: info-andrew-requests@andrew.cmu.edu

Requests for purchase must be accompanied by a check made out to Carnegie Mellon University, in U.S. dollars, before shipment will be made.

* Add $7.00 for shipment within the US by Airborne
Add $17.00 for shipment outside the US at standard bookrate
Add $27.00 for shipment outside the US by Airborne

Andrew Technical Conference

The Andrew Technical Conference and Consortium Annual Meeting, along with an Andrew Tutorial, were held on June 25 and 26 at Carnegie Mellon University, Pittsburgh, PA. In addition to some new faces, a number of our long-time Andrew users attended.

Thursday morning was a tutorial on Extending the Andrew User Interface System, concentrating on .atkinit, the proctable, and extending both with packages in C and functions in Ness. The tutorial continued in the afternoon with construction of a complete but rudimentary inset with createinset. The final session was hands-on experience using the tools explored earlier.

The Tutorial was followed Thursday evening by the Andrew Consortium Annual Meeting. After dinner we discussed three topics: enhanced documentation, a new drawing editor, and conversion to C++. As a result, some new documentation is in place, a new drawing editor is nearing completion, and a report will be prepared on the costs and benefits on conversion to C++.

The Andrew Technical Conference was held on June 26 and featured presentations by AUIS users and devlopers. Proceedings and a videotape of the presentations are available from the Consortium.

"Future directions for ATK", Wilfred J. Hansen, Carnegie Mellon

> The future of the Andrew User Interface System (AUIS, nee ATK) is viewed in this paper at three horizons: recently completed additions, work in progress, and long term potential. All three aspects are affected by the nature of AUIS as a comprehensive user environment and an open system.

"Using ATK for OnLine Help and Documentation," Mike Denny, Bell South

> The plan is for over 9000 operators to respond to queries by accessing information through AUIS.

"Andrew & MIME: How Messages 8.5 Accomodates the New Mail Format Standard," Nathaniel Borenstein, Bellcore

> I. MIME: History and Overview
> II. Andrew and MIME
> III. Status Report
> IV. Implications for Andrew, Email, and Other Multimedia Applications

"Drag & Drop Extensions for the Andrew Toolkit," Todd A. Inglett, IBM Rochester

This paper outlines how the simple protocol used by *X.desktop*[1] may be used to extend the Andrew Toolkit (ATK) to allow drag and drop between X.desktop and an ATK application. The protocol does not require X.desktop.

"A guided tour of contrib/mit," Bill Cattey, MIT

Andrew source directory .../contrib/mit/ includes utilities, GNU Emacs compatibility for ez, Scribe to ATK translation, translation between ATK and RTF, and the Networked Educational Online System (NEOS). This paper discusses such questions as What files and functionality are there? How hard is it to make it work in different environments? What is on the list for future functionality or bug fixes?

"Vee is Object-Oriented -- Not!," Dean Rubine, Carnegie Mellon

VEE is a system for producing applications with highly interactive direct manipulation interfaces. In VEE, an object's sole interface is a set of attributes rather than a set of methods, implying that VEE is not object-oriented, at least in the strict sense of the term.

"Design of an ATK Joint Editing Dataobject," Michael Kedem, University of Ottawa

The ATK-supplied ez editor can simultaneously edit a text object from multiple windows, but has no protocol to prevent conflicting updates. This paper suggests an architecture consisting of a modified *text* object, which allows joint editing with user-initiated locking and commiting of text portions.

"An interactive browser for electronic journals based on MIME," Brian Capouch, Saint Joseph's College

This paper describes an interactive browser for electronic journals. Our design constraints included having the transport mechanism be compatible with RFC822, insuring that beneath any layers of "complex view" there is a plaintext file viewable by the most rudimentary hardware, and making the design scalable so that both the low-end and high-end users can subscribe to these journals--the high-end user will just have richer functionality.

"An Example of Design Recovery: ATK," Richard Orgass, Industrial Technology Center, Pittsburgh, Joe Newcomer and Dave Anderson, Information Technology Center

This paper describes our experiences in automating creation of Modula-3 interfaces to the existing C code for ATK. We produced a modified version of the class preprocessor to generate the Modula-3 interfaces and replaced the existing ATK runtime environment with the DEC SRC Modula-3 runtime environment using shared libraries in place of dynamic loading.

[1] X.desktop is a product from IXI Limited, Cambridge, England.

"The Remote Andrew Demo System -- Supporting Thousands of One-Time Users," David B. Anderson, Carnegie Mellon

To make it easier for many of our colleagues to experiment with Andrew, we built the Andrew Remote Demo. This remote demo represents a new form of electronic publishing, which allows users anywhere on the public internet to use the Andrew system. These remote users are able to traverse a guided tour, edit files, browse through our extensive bboard system, use help and console, and send us comments.

"Making a CDrom version of Andrew," Susan Straub, Gary Keim, Fred Hansen, Andrew Consortium

To make Andrew more widely available, we have published it on a CDrom. Major difficulties encountered included removing dependencies on the location of the objects in the directory tree and creating software to facilitate user access to files on the CDrom.

"SuperLibrary. A full-text electronic document access and retrieval system based on ATK/AMS," E. Gonzalo Juarros, CEC/JRC/EI

SuperLibrary (SL) is an electronic library system developed at the Joint Research Centre as part of its support to CORDIS, Community Research and Development Information Service. SL provides tools to manage a bibliographic database and to access and retrieve full text documents registered in a document database.

For information about ordering the Conference Proceedings, contact:

Email: susan+@andrew.cmu.edu
Phone: 412 268 6710
Fax: (412) 682-6938

Recent Accomplishments

Since the CDrom release, we have many a number of enhancements to the AUIS we are using here at the Consortium. These will be made available later this year to Consortium members and at some later time to non-members.

***** **`bdffont`** inset - Edits font files in the standard X bdf format. Uses the raster object as the editing engine.

***** new ***rastool*** menu item in raster that brings up an editing interface. Lots of neat features: dragging when pasting, lines, shapes, patterns, ... You can overlay an inset and then convert it to bits in the image.

***** keystroke equivalents are shown on menus (finally!)

***** there was a bug in textview where any insets embedded in text were never freed; there is now a new class called **`traced`** that can be used to keep an inset alive after it's parent text object is destroyed or cleared (atk/basics/common/traced.{c,ch})

***** new macro package that uses **`Ness.`** A new interface makes it possible to bind macros on-the-fly. A command converts a macro created via ctl-X-(... ctl-X-) into a Ness function.

***** message line expansion. The message line expands to display the entire message for output or the prompt and response for input.

Projects in Progress

preferences editor - The preference editor promised in the last newsletter is now being tested. When ez edits the ˜/preferences file, the window is split in three panes: a list of preference categories, a list of the preferences in the selected category, and the instances of the selected preference in the file.

groff - Printing is a frequent problem in installing Andrew software because it requires packages from at least two other sources for a complete printing solution. For printing, Andrew insets generate a troff data stream with embedded postscript for some insets. There are three usual paths to the printer: ditroff-psdit, troff-psroff, and groff, as outlined in the FAQ file (/cdrom/src/andrew/FAQ or ftp emsworth.cmu.edu:FAQ Emsworth is IP address 128.2.45.40.).

We have been using ditroff-psdit here at Carnegie Mellon. To explore the groff option, we are building it for the Hewlett-Packard platform and are close to a working environment. When we have it going, we will report on the info-andrew newsgroup (see addresses at end of newsletter).

figure editor - In parallel with tables and footnotes, the "drawing editor" is more accurately called a figure editor because it edits the type of line and object drawing commonly found in labeled figures in articles and books. The new editor has a simple, rapid user interface, though it does lack Zip's capability for images at multiple levels of detail.

image - A new inset capable of storing, displaying, and altering continuous-tone digital images is nearing completion of its initial-release functionality. In this release it will offer:

An ATK datastream format based on the JPEG standard, but encoded to be mail-safe.

Import conversion of popular foreign image formats: GIF, JPEG, PBM, Sun raster, X pixmap, ATK raster, X window dump, X bitmap, Macpaint.

Truest possible color rendering on all available X display hardware whilst not hogging important shared resources; support for high-performance color workstation displays.

Colormap manipulation interface (for example: change all the black pixels to white).

Whole-image editing: Gray, Dither, Scale, Reduce, Brighten, Normalize.

Single-pixel editing: set an individual pixel to the currently selected colormap entry.

Staff

Two new technical staff members have joined the Consoritum.

Andrew Plotkin joined the Consortium staff after graduating from Carnegie Mellon in May with a degree in Math/Computer Science. In addition to authoring a large fraction of the FAQ file, he has developed the new rastool interface to raster editing. In his spare time he is studying Mesoamerican history in preparation for authoring a simulation. He also writes various puzzles like:

> I am forever on the Way, but I will never reach its end. I see the Way in three aspects. With my first eye, I see it as endless motion; with my other eye, I see it as eternal stasis. Yet I have a third eye, which sees both without contradiction; perceiving entropy, the energy of the Way decaying inevitably down to silence. What am I?

Andy won't tell you the answer. Two people have solved the problem in three years and he wants to see whether the trend continues.

Douglas DeJulio attended Carnegie Mellon University as an undergraduate. He spent two years working for Project Mercury (a library automation project) at CMU before joining the Consortium. Doug's work experience is augmented by setting up an ethernet network of three machines in his house. He runs AMS/ATK at home on his NeXTstation.

The Masthead

The Andrew User Interface System

The Andrew User Interface System is a portable user-interface toolkit that runs under X11. It provides a dynamically-loadable object-oriented environment wherein objects can be embedded in one-another. Thus, one could use our 'generic-object' editor (ez) to edit text that, in addition to containing multiple fonts, contains embedded raster images, spreadsheets, drawing editors, equations, simple animations, etc. These embedded objects could themselves contain other objects, including text. With the toolkit, programmers can create new objects that can be embedded as easily as those that come with the system. Many objects, including those mentioned above, along with a help system, a system monitoring tool (console), an editor based shell interface (typescript), and support for printing multi-media documents, are included in the release, making it useful to programmers and non-programmers alike.

The Andrew Message System(AMS) 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 ttys and low-function personal computers in addition to the high-function workstations.

Consortium Services and Offerings

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

Information Requests
ATK Consortium
Carnegie Mellon University
Smith Hall 106
5000 Forbes Avenue
Pittsburgh, PA 15213-3890
USA
phone: +1-412-268-6700
info-andrew-request@andrew.cmu.edu

We offer:

Full, distributing, and associate memberships
Source tape
CDrom with both source and executables
Bibliography
Copies of papers
Videotapes
Conference proceedings

Sources and binaries are available online via anonymous ftp from

emsworth.andrew.cmu.edu (128.2.45.40)

where the full CDrom release is in the ./cdrom directory. See the README there. Another ftp site is

export.lcs.mit.edu (18.30.0.238)

in directory ./contrib/andrew; this is cloned on many servers, world-wide. On the nationwide AFS file system, AUIS is available in

/afs/andrew.cmu.edu/itc/sm/releases/X.V11R5/ftp/cdrom/

Remote Andrew Demo service:

finger help@atk.itc.cmu.edu

News groups:

info-andrew+@andrew.cmu.edu

This is a distribution list offering the news with full AUIS formatting; send subscription requests to info-andrew-request@andrew.cmu.edu. For newsgroup in plain ASCII, see

comp.soft-sys.andrew

Platforms

Andrew has been successfully used 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, Sun4 Mach
DEC: Vax Ultrix 3.1, Vax Ultrix 4.2, Vax BSD, DEC MIPS, Pmax Mach
other: HP, SCO I386, SGI IRIX 4.0, Apollo, Macintosh II MacMach, 486 Mach

Send bug reports to:

info-andrew-bugs@andrew.cmu.edu