Athena Insider

The Project Athena Faculty Newsletter

An aperiodic publication of the Faculty Liaison Office

Users: 9345
Workstations: 1051
Servers: 100
Printers: 88

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Faculty Liaison Office News . . .

This issue of *Athena Insider* starts off with a few announcements from the Educational Initiatives Group:

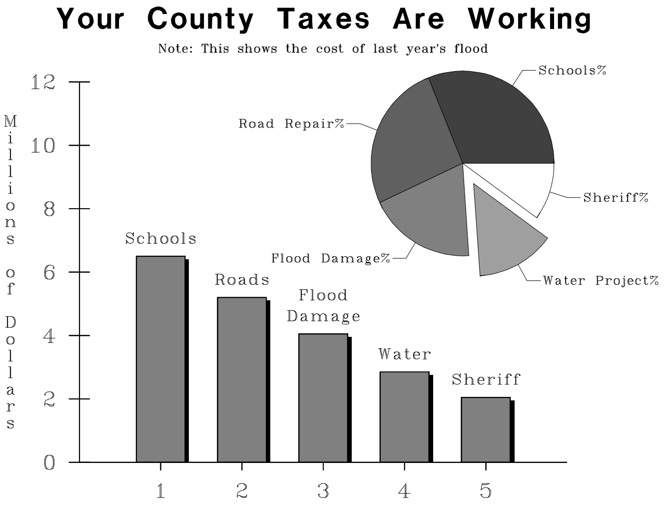
We have a new **Faculty Liaison** in the group, Dorothy Bowe, coming to Athena from Interactive Systems Co. here in Cambridge. Dorothy graduated with an A.B. in Computer Science from Brown University in 1986. Her background includes graphics programming with X and UNIX systems development. Her username is `dot@ATHENA.MIT.EDU`, and phone is 253-0170. Any mail sent to the mailing list `f_l@ATHENA.MIT.EDU` will now go to Dorothy as well as to Anne LaVin and Naomi Schmidt.

The Educational Initiatives group has also hired a new staff member to be in charge of **Third Party Software** issues. She is Michele Berrie, username `mberrie@ATHENA.MIT.EDU`, phone 253-0510. Her previous employment was with Cullinet, where she was an analyst for Digital and Sun systems, working closely with end users to determine software and hardware requirements. Michele will be in charge of evaluating our current third party software suite and keeping an eye out for potential additions. Enclosed in this newsletter is a "Software Acquisition Suggestion Form." Please return it to her if you have any suggestions for third party software acquisitions.

As mentioned in our last issue, Athena has reorganized its management structure (see the article "Athena Reorganizes" on page 6). As part of this, Naomi Schmidt is now Manager of Educational Initiatives. Along with her new responsibilities, Naomi has a new office, E40-353, and a new phone number, 253-6884.

We're sending this issue of the *Insider* to a wider audience than the first; the first issue was sent only to those on the Institute Faculty mailing list. We realized after it was sent out that this left out a significant number of users who are involved in courseware development or in teaching courses that use Athena. If a member of your teaching staff or software development project did not get a copy of this issue, please notify us, and we'll add them to our mailing list!

In This Issue:



ProChart graphics from X-Y data; see the ProChart article for details.

We Want Your Feedback

Peter Roden

Several times a year Athena has the opportunity to make changes ("releases") to the software in use on the workstations all around campus. We'd like to hear from you what improvements you feel are needed to the system. These changes include bug fixes, updates of existing software, etc. Software acquisition suggestions should go to Michele Berrie.

Our next release is scheduled for June, with one to follow at the end of the summer in August. (An article in the next *Insider* will detail the changes that will take place in the June release.) The programming cycle is such that suggestions made now will be considered for inclusion in the August release.

Use your favorite e-mail program to send your ideas to:

`software-suggestions@ATHENA.MIT.EDU`

After a few days (during which some triage, sorting, and the like will happen), your suggestion will be posted to the `discuss` meeting called `software-suggestions` where the Athena user community can discuss your idea. Discuss is an "electronic-conferencing" forum that allows users to read and reply to a sequence of messages. If you have never used discuss but would like to learn about it, please contact the Faculty Liaison Office for information.

If you are already familiar with discuss, just add the meeting to your list with the command:

```
am MENELAUS.MIT.EDU:/usr/spool/discuss/suggest
```

The publication of any idea in the discuss meeting does not imply that Athena will be committed to make that change; the suggestions are to give us ideas for directions to take when making software changes.

Please continue to send bug reports on system software to `bugs@ATHENA.MIT.EDU` and hardware problems to `hotline@ATHENA.MIT.EDU`.

Peter Roden, `roden@athena.mit.edu`*, is the Manager of Systems and Operations at Athena.*

New Dialup to Athena

Kevin Cunningham

Project Athena, working with the Information Systems Network Services and Telcommunications Departments, has upgraded its dialup access.

The new system, shown schematically in the accompanying diagram, allows access to Athena through the 5ESS phone system "modem pool" and a group of gateways called "Cisco Protocol Translators" or CPT's for short. Currently the system allows users coming through the CPT's (each one named after a type of pasta, hence the name "LASAGNE" in the examples below – they had to be named *something*) to access only the Athena dialup machines and the machine used for electronic requisitioning. (See the *i/S* December '89 issue for details on electronic requisitioning.)

If you have a terminal-emulating device, a modem, a phone line, and an Athena account, you can now gain access to Athena facilities via dialup in these three easy steps:

1. **Set Up Your Terminal and Modem**

   Make sure that your terminal and modem are configured to use 8 data bits, 1 stop bit, no parity, full duplex, and a speed setting of 300, 1200, or 2400 bps (up to 19,200 bps for an on-campus digital phone).

2. **Connect to a CPT Gateway**

   When your device is properly configured, you can connect to the MIT call-routing facilities by dialing in to the appropriate number:

   MIT Digital Phone: 700-7000
   Analog Phone: 258-7000

   Hit the Return key to see the CPT prompt:

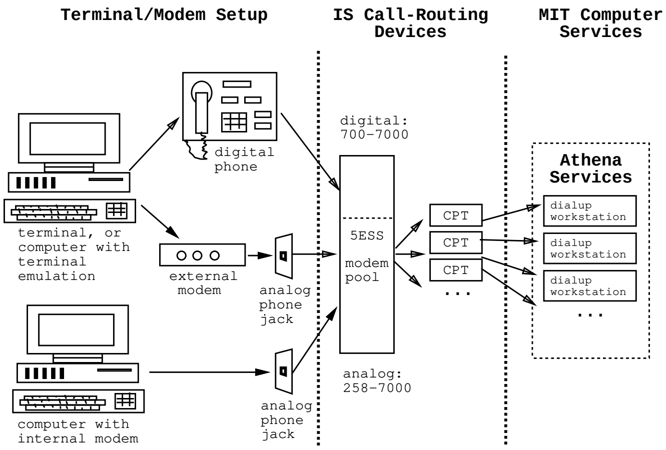
   ```
   LASAGNE-PAD>
   ```

3. **Log into an Athena Dialup Server**

   Now, to login to Athena, enter `athena` at the prompt:

   ```
   LASAGNE-PAD> athena
   ```

This connects you to the lightest-loaded dialup server available. If you need to login to a specific kind of machine (for example, if you need to run a program that only runs on a VAX workstation), you can identify the specific kind of machine you want at the CPT



prompt: enter `athena-vax` to connect to a VAX dialup server, or `athena-rt` to connect to an IBM RT dialup server. This will connect you to the least-loaded machine of the type you want.

You then go ahead and login by entering your Athena username and password. When you are finished with your Athena session, you first logout in the usual way by typing `logout` at the Athena prompt. When you get back to the CPT prompt, you can type `exit`, `quit`, or `q` to logout completely.

For more detailed information, pick up a copy of the Athena document *How To Dial Into an Athena Account*, available at the Graphic Arts Copy Centers in Building 11 and the Student Center.

Kevin Cunningham is a Senior Technical Writer for Athena's Documentation group. He has written numerous documents and is currently leading Athena's On-Line Help (OLH) development project.

System Tools: Prochart

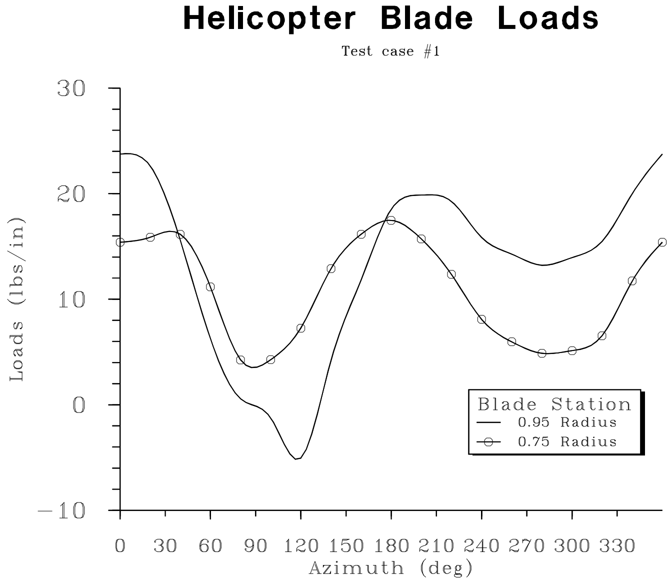
Steve Ellis

ProChart is an easy-to-use tool for creating presentation quality charts and graphs directly from x-y data. Based on Visual Engineering's GKS and C-Chart libraries, ProChart provides a simple ASCII menu interface for creating and editing a variety of chart types including bar, pie, step and line charts. It is currently available only on Athena's VAX machines, and we are investigating making it available on the IBM RT's. ProChart suppports a number of hardcopy output formats, including Postscript. Other major features include the ability to quickly change from one type of chart to another (with the same data), and the capability to create and save graph templates and data files separate from the templates. Although it does provide some data "smoothing" and regression capabilities, ProChart is not a data analysis package (See the "Matlab" article in the January 1990 Athena Insider for a discussion of one such tool available on Athena). The following short introduction to ProChart is intended to encourage users to try out the package and experiment with it a bit.

Included in this article, and on the first page of this issue, are two sample plots produced in ProChart.

Contributors: Paul Boutin, Bill Cattey, Kevin Cunningham, Ben Davis, Steve Ellis, Ron Orcutt, Peter Roden ....
Editing & Typesetting .... Anne R. LaVin

This document was written and typeset completely on Project Athena equipment, and formatted with the LaTeX document preparation system. No scissors or glue were used!



To run ProChart, type:

```
attach prochart
/mit/prochart/prochart
```

The user interface is provided by a series of ASCII menus. You can move through ProChart's menus either by using the arrow keys, or by typing the two letter identifier to the left of the menu item. Once a menu item is highlighted, hitting the spacebar will take you to the next deeper menu, while the right arrow key will move you either to the next menu or to an input field if appropriate.

For example, in the "Data & Chart Types Menu" shown below, the first three items all have input fields to the right, so the right arrow key will move the cursor into the field for input. After the input, a carriage return or left arrow will return the cursor to the menu.

```
              Data & Chart Types Menu
dn * Data Set Number [1] <== Set in Use :Yes
le * Legend Entry    [0.95 Radius]
ct * Chart Type      :Primary
pd   Plot Detail
as   Add New Set
ds   Delete Set
cd   Change Data
rd   Replace Data
```

ProChart also accepts some keystrokes to accomplish certain tasks. Most of these are shown at the bottom of the ProChart window. In addition, "Control-d" (press the "CTRL" and "d" keys at the same time) allows you to change your current working directory, "Control-x" allows you to exit ProChart and "!" allows you to enter a shell (UNIX) command from ProChart.

One of the useful features of ProChart is the ability to create graph templates that contain all the setup information for your graphs. Such features as line styles, labels, legends and titles can all be saved in a file (file suffix `.grf`). This file does not contain the actual data, only the name of the file that contains the data, so that multiple charts can easily be made from the same template. Each data set is is kept in a separate ASCII file, which can be created or edited from inside ProChart, or created by another program or editor.

Data files for ProChart should be in the form of one or two columns of numbers. If you use the two column method, the first column is taken as the x-coordinates, and the second as the y-coordinates. The columns may be separated by spaces, tabs or commas. If you use the one column method, that column is taken as the y-coordinates, and the x-coordinates are assumed to be 1,2,3 . . .

Presently, no hardcopy documentation is available for ProChart. There is, however, extensive on-line help available from inside ProChart while running. Select "help" from the main menu or type "?" when any menu item is highlighted. Also, a brief introduction to ProChart is included in the online "man" pages. Type

```
man prochart
```

to read this.

Steve Ellis, `ellis@ATHENA.MIT.EDU`*, has been working as an applications programmer at Athena since 1985. His work has ranged from consulting on the Aero/Astro Department Todor project, use of in-class projection and third party applications software. He is presently working on improving Athena support for a number of third party software packages.*

Work in Progress: NAG libraries; the 2020 Spreadsheet

Steve Ellis

A continuing effort is under way at Project Athena to upgrade our third party software suite. This effort includes obtaining and evaluating the latest versions of already installed software and new software products.

Two product updates are now available for use, Mark 13 of the NAG library and 2020 release 2. The current versions of the NAG FORTRAN libraries and the 2020 Spreadsheet are available automatically on the system (you do not need to "attach" anything to get to them, as you must for the new versions described below.) We will be phasing out the old versions with Athena release 7.0 in June, and users are encouraged to start using the new systems in their place.

NAG Mark 13

The latest version of the Numerical Algorithm's Group (NAG) library of fortran subroutines is now available in the "nag" locker, and only for the VAX workstations. This version incorporates many bug fixes and code improvements over the current Athena release (NAG Mark 11). In addition, an on-line help facility is available. To use this new version, you must attach the "nag" locker prior to linking your code. At the Athena prompt, type:

```
attach nag
```

Then, in place of "-lnag" in your compile/link command, put in the full path of the new NAG library. For example:

```
f77 -o program yourcode.f /mit/nag/vaxlib/libnag.a
```

To use the on-line NAG help facility, you must also attach the "nag" locker, then type the following command:

```
/mit/nag/vaxbin/naghelp
```

The following prompt will appear:

```
 NAG Online Information Supplement:
Interactive HELP System.   FOR HELP TYPE
''HELP''; TO QUIT TYPE ''BYE''. KEYWORD(S)?
```

You may enter a topic such as "curve fit", a NAG chapter number such as "E04", or a specific routine name, e.g. "D01ANF".

For more information on the NAG library at Athena, please send electronic mail to the Faculty Liaisons, `f_l@ATHENA.MIT.EDU`.

2020 Release 2

The current Athena release of 2020, a spreadsheet from Access Technology, is very old and out of date. Work is now under way at Athena to evaluate candidates for replacing this old version of 2020. As an interim step, 2020 release 2 is being made available for use. The major feature this new release provides is the ability to create charts and graphs and to get postscript hardcopy output. To use 2020 release 2, type:

```
add 2020.r2
s2020
```

There is also a tutorial available. To run the tutorial, after adding 2020.r2, type the following:

```
xterm -e t2020 &
```

The tutorial will prompt you for all further input.

A few notes on 2020 release 2:

1. The 2020 on-line help facility is the only documentation available.

2. 2020 release 2 cannot read earlier version worksheet files directly. To move an old version worksheet to the new release, use the `/STORAGE EXPORT` command in the old version of 2020 to create an export file and read this in 2020 release 2 with `/STORAGE IMPORT`.

3. The key bindings for 2020 functions are listed in /mit/2020.r2/doc/keys.2020

EZ – a Document Preparation System

Bill Cattey

What is ez?

The ez application is a multi-media editor currently available on an experimental basis on Project Athena. It supports multiple fonts, special symbols, and a variety of useful text formatting operations, with a very nearly WYSIWYG (What You See Is What You Get) interface. The difference between ez and true WYSIWYG is: instead of showing exactly where words will appear on the printed page, ez shows legible text in whatever size window the user chooses. A separate preview window provides a view on the screen of the final printed output.

The ez editor supports direct manipulation of media types other than text through its use of insets. Media manipulation objects such as `table` for spreadsheets, `eq` for equations, `raster` for bit images, `chart` (in beta test) for charts, and `zip` (still buggy) for line drawings can be inserted into the stream of running text in ez.

What can ez do for you?

- Edit plain text files like your .cshrc.mine file or data files
- Edit programs – C, Pascal, Modula 2, Modula 3, and Lisp modes are supported.
- Edit formatted text.
- Edit multi-media text – equations, line drawings, spreadsheets, charts, and hierarchical drawings, to name a few.
- Add multi-media capabilities to applications – for example, the `messages` multi-media mailer, and the `eos` composition and file exchange system.

Getting Started

To use Andrew on any Athena workstation, execute the following two commands:

```
attach andrew
source /mit/andrew/.attachrc
```

This creates a configuration file in your home directory called `preferences`, and also puts the path of the andrew applications, `/mit/andrew/$hosttype/bin` at the end of your search path so you need only type `ez`, for instance, to get to it.

You can `source /mit/andrew/.attachrc` every time you log in, or you can incorporate the features of the .attachrc into your dot files by following the directions in the file `/mit/andrew/DOTMODS`.

The Andrew help system contains overviews and well-written on-line documentation for the andrew applications. Run it by typing:

```
ahelp
```

To use the multi-media editor just type:

```
ez
```

The ez window will appear as a flickering rectangle; just move the mouse cursor so the window is where you want it, and click the leftmost mouse botton, and the window will appear.

Gnuemacs compatible

While ez is set up to allow movement of the cursor via the mouse and window scrollbar, regular emacs mouse-movement keyboard commands work as well. In addition, a great many of the regular emacs commands may be used along with ez's menus. Emacs users will maintain many of their familiar functions (movement in the file, string searching, etc.) inside of ez.

Getting More Information

The best source of documentation on Andrew applications is the `ahelp` program mentioned above.

Athena will soon offer an Essential EZ document (currently under production) and currently teaches a mini-course on ez, both of which cover basic editing and formatting in ez.

The following electronic mailing lists exist:

- `andrew-news` distributes essential Andrew news, and system status.
- `andrew-users` is for users to send comments, questions and suggestions.
- `andrew-bugs` is where users send reports of bugs and documentation errors.

Interested users should use the mailmaint program (type `mailmaint` to the athena prompt, and follow the menus from there) to add themselves to `andrew-news` and `andrew-users`. There is a `discuss` meeting, Andrew-Toolkit (`atk` for short) which is an in-depth discussion of issues related to ez and other Andrew Toolkit applications.

There is an on-line consulting (`olc`) topic, ez, where you can ask questions. Consultants will attempt to answer questions, and every effort is made to be helpful, but because ez is not yet fully-supported Athena software, there is no guarantee that you will get an immediate response.

Bill Cattey has been at Project Athena since 1985, working primarily with the MIT Writing Program on tools of general applicablity such as `turnin` *and* `ez`. *Bill is an Applications Programmer in the Educational Initiatives Group.*

Project SOCRATES Software at Athena

Paul Boutin

Athena has recently acquired nearly twenty engineering educational applications programs from Project SOCRATES at Cornell University. Over a hundred engineering schools already use these programs, which come with source code, user manuals, and support from Cornell. Ten of the programs are already running on Athena, with more to be ported this spring.

The software covers topics in digital filter and analog circuit design, electricity and magnetism, optics, part and assembly description, beam analysis, multiple degree of freedom systems, fluid and heat flow, fracture analysis, finite element study, structural matrices, framed structures, and image processing. Also included are programs to create menus and plot and graph data for building new applications. Screen graphics are done via the HOOPS graphics library introduced to Athena last year, and run both in color and black-and-white.

Some additional work is still needed to make the programs run better in the Athena environment, but interested users can see the currently available programs and their source code by attaching the `socrates` locker and reading the file `/mit/socrates/README`. Send any questions or comments via email to `socrates@ATHENA.MIT.EDU`.

Paul Boutin has been around MIT since 1981 and is currently importing and publicizing existing software that may help meet Athena needs, particularly in courseware applications development.

Coming in April: Graphics!

Paul Boutin

A new filsystem locker called `graphics` will contain many commonly-used programs and utilities for graphics generation and image processing. There will be online help and a `graphics` mailing list has already been set up for questions and comments. Anyone may add themselves to the list (via the program `mailmaint`) or contribute ideas or programs to the locker.

Among the many applications, most of which have been available (but obscure) on Athena for some time, are graphics programming and libraries, graphical editors, ray tracing utilities, image processing programs, plotting utilities, and even some storehouses of popular images. Attach the graphics locker and see the file `/mit/graphics/README` for up-to-date information, or send mail to `graphics@ATHENA.MIT.EDU`

Athena Reorganizes

Ron Orcutt

Athena's development has, within the last two years, reached the point at which the environment can be considered stable: the system changes that occurred over the summer of 1988, for example, though large, were hardly noticeable to the users. Inevitably, a greater percentage of Athena's resources are now required for service delivery, for the user community has grown rapidly. By last fall, Athena was providing continuous service to nearly ten thousand users, including almost all undergraduates and half the graduate students.

One effect of this change of focus from an experimental to service environment is that Athena has reprioritized its goals, and reorganized its internal management structure.

Priorities

Through internal discussions and confirmation by Athena's Executive Committee (made up of MIT Deans, faculty, Athena management and vendor representatives), six priorities were established for the remainder of the Project. Briefly articulated, in descending order of importance, these are:

1. Continue to provide and enhance service delivery.
2. Improve the common user interface and application development tools.
3. Provide roubst linkages between the UNIX workstation environment and the installed base of Apple Macintosh and IBM (or compatible) PC-DOS systems.
4. Make the transition to workstations running vendor-supplied operating systems
5. Enrich the suite of available commercial software
6. Export both the system level and courseware developments.

Internal Organization

As with startup companies, the tension between the development and service delivery parts of the Athena organization became an obstacle to progress and had to be resolved. During the fall of 1989, an internal planning process led to the articulation of specific priorities and project goals for the remaining two years of Athena, and the reorganization of the Athena staff. The new organizational structure is shown on the figure on the opposite page.

The technical development function has been split into an Advanced Development Group and a software engineering group within a combined Systems and Operations Group. The Advanced Development Group focuses on technologies and projects whose impact on project deliverables is a year or more in the future, whereas Systems and Operations focuses on productizing developments and delivering them to users in the near term. This split aims to resolve or certainly lessen the tension between change and stability.

Because of the differences between the needs of faculty as "drivers" of the educational process and the needs of students as the primary uses, two separate but equally-placed groups have been created: Educational Initiatives and Users Services. Ecuational Initiatives is, in effect, the account representative of the MIT faculty; its focus is on improving the educational effectiveness of Athena, hence it is concerned with such things as courseware development and integrating faculty-requested commercial software. Its name conveys the message of renewed thrust in a neglected area.

User Services is Athena's front-line to students and other users, providing consulting, documentation, training and exception handling of nearly ten thousand user accounts. It is the next largest group after Systems and Operations, and includes significant numbers of paid and voluntary student staff members.

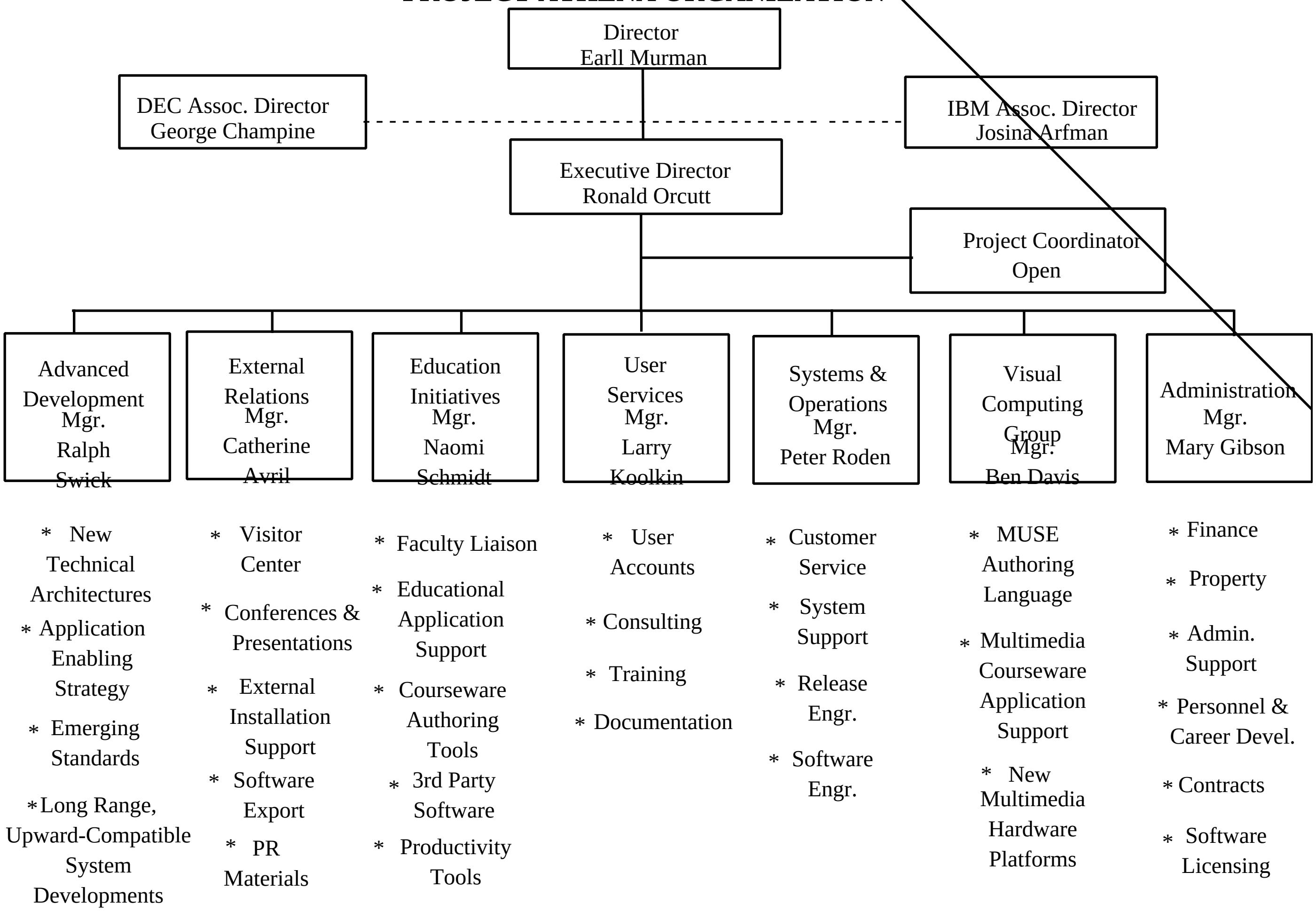
The well-known Visual Computing Group focuses on multimedia computing developments and works closelywith faculty in several disciplines to explore new approaches to multimedia courseware delivery. One of its major products in the works is MUSE, a multimedia authoring language. While having both an educational, application-driven focus as well as an advanced technological component, the Visual Computing Group is split off as a separate group for historical reasons.

Finally, Athena has a major responsibility for educating other universities, industry and government about its findings. Over four thousand visitors from every continent visit Athena annually. To address this large and growing task, a separate External Relations Group has been created.

This organization matches Athena's current challenges, and at the same time, provides a structure that facilitates current deliberations deciding the future of academic computing at MIT.

Ron Orcutt has been the Project Athena Executive Director since 1988.

PROJECT ATHENA ORGANIZATION



Athena will Fix Your Courseware

Well, not *exactly*, but we did get your attention.

Athena is offering a new service to courseware developers, starting this spring: with each new system release, we will compile and test your software to make sure that it is compatible with the new release, and will assist in fixing any problems which do occur as a result of new system changes.

What we require from the developers are the path to the sources, the appropriate "makefiles" or instructions for building the software, permission to make copies of the sources, and manuals or instructions for actually running the software.

Providing a service like this to our developer community will, we hope, help developers deliver their software consistently from semester to semester, and take some of the burden off of them to continually adapt to changes in the system in each release. And, in addition, it should provide some extra motivation for development projects to put their sources in an easily maintainable format, and keep software up to date.

Interested faculty or developers should, as usual, contact the Faculty Liaison Office.

Important Numbers:

Faculty Liaison Office: E40-343A
Anne LaVin, `lavin@ATHENA.MIT.EDU`, X3-0115
Dorothy Bowe, `dot@ATHENA.MIT.EDU`, X3-0170

Faculty Liaison Mailing list:
`f_l@ATHENA.MIT.EDU`

Naomi Schmidt, Manager of Educational Initiatives
`nschmidt@ATHENA.MIT.EDU`, E40-353, X3-6884

Michele Berrie, Third Party Software Coordinator
`mberrie@ATHENA.MIT.EDU`, E40-342C, X3-0510

FROM:

Project Athena Faculty Liaison Office
E40-343A

INTERDEPARTMENTAL