THE 1990s: CONTENT COUNTS

Why, our friend asked, has Comdex become boring? This friend, minds you, works for Apple, loves her work, adores her customers, and tends to bounce with enthusiasm. So why were she and we so bored?

Well, the platforms and the tools on display at Comdex were pretty boring, with exceptions as noted on page 11. It’s what customers do with them that’s exciting -- the content they put in. So while most folks are trying to predict the future of the pc software industry, we think it may hardly have one. As Jim Manzi suggested in announcing (at last) Notes, maybe software is really a service business. One small component of value will be delivered as software, but most of it will consist of content: either information or services to help customers create systems and information tailored to their own needs. In the Nineties, software will no longer reflect its original vendors as much as it reflects the customers and resellers who use it.

In the next decade, tools will be taken for granted. The issue will not be cutting costs or even enhancing productivity, but transforming a business. What does it imply? It implies that the software industry itself will spread out and lose focus, infiltrating other businesses as vendors of all kinds of goods and services include software with their wares. For example, among the users described below is the American Institute of Certified Public Accountants, which uses software as a conduit to supply information to its members. Shearson and Price Waterhouse use software to implement internal paper flows.

In short, content counts. By and large, what differentiates one user from another will be not their software, but what each did with it, either in modeling business processes or filling it with information.

This implies a need (still) for easy-to-use software. But it also implies a need for technology transfer, consulting and support. It is no coincidence that IBM, Oracle and Lotus are all newly active in the support business, or that systems integration -- adding customer-specific content -- is a hot new area.

HAPPY NEW DECADE!

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EDventure Holdings Inc., 375 Park Avenue, New York, NY 10152, (212) 758-3434
But it also implies a need for smart customers. In order to automate their own businesses, they have to understand them. Otherwise, they will end up running their businesses using canned software that makes them efficient but not distinctive. At the other end of the spectrum, increasing automation of routine tasks (and automatic handling of what used to be exceptions) will place a greater premium on the people and people skills that can truly distinguish a business -- leadership and motivation, honesty and imagination.

Do-it-yourself software

Analysts may work alone and concentrate on personal tools, but the new generation of software users is people working in teams, and their software reflects that. Many systems customers are now building with content- and group-oriented tools are a generation ahead of the personal productivity applications people have been building up to now. (However, each is far from working as full-fledged groupware, serving for the moment mostly an information-sharing rather than an active coordinating role.)

Different from the mainframe applications they supplement or front-end rather than replace, these applications automate the paper-shuffling done by and among individual professionals, rather than the data-intensive, person-insensitive tasks formerly done by clerks and "operators." In other words, they make sure that people paid by the year rather than the hour spend their time on tasks worthy of those rates.

All the systems described below could be built from scratch by a data-processing department. That's not the point. The point is that although they are not generic -- each is tightly tied to its user base -- they can be installed and configured by a much smaller, less technically adept user, and customized by their users. Similarly, any dp department could build a financial model -- but spreadsheets broadened that same capability to users. The parallel is not exact because the systems we're describing here are for groups of users, and they must be configured to reflect group behavior rather than the thought processes of a single user.

LOTUS NOTES AT PRICE WATERHOUSE: COMMUNITY MEMORY

Lotus recently formally announced Notes, a product first publicly discussed at the 1988 PC Forum (see Release 1.0, 88-3). It is a client-server tool, designed to help people build text- and image-rich information-sharing applications. It works off OS/2 servers, with DOS-Windows or OS/2-PM front-ends (a DOS version exists but is not recommended for serious use). The features haven't changed much since that sneak preview in 1988; much of the work of the past two years has gone towards the security and robustness that appeal to the corporate types who constitute its primary market. In short, 80 percent of the work goes to addressing problems that happen 1 percent of the time but cause 99 percent of the headaches.

Love at first sight

Notes is ideal for unstructured data that nonetheless can be categorized in a multitude of ways, that can be displayed at different levels of detail, but that can't be averaged, summarized or consolidated. This approach seemed natural to Sheldon Laube, the now-famous man who bought 10,000 copies
of Notes for Price Waterhouse. "I've never been a regular spreadsheet user," he says; "I use GrandView." Symantec's GrandView, an outliner with hypertext links and views, is similar to Notes in many ways, but it lacks support for a server or the integrity that comes with it, as well as the programmability of Notes.

Laube is the kind of customer any firm would kill for: committed, articulate, willing to buy 10,000 copies of a pc product and, better yet, to talk about it. Never a numbers man, he co-founded Consumer Financial Institute in 1976; it was acquired by Price Waterhouse four years ago. At CFI he led the development of its major business -- a C-based expert system to mass-produce customized financial plans for individual investors. CFI produces about 200,000 of them a year in 4 seconds each, wholesaling many of them to major financial institutions, which retail them for $500 to $1000 each.

At PW, Laube took the job of national director of information and technology (de facto, chief information officer) last March. He is part of the firm's top management committee, which plans to make technology its competitive edge. His purview is to impose order on the use of software by the firm's 10,000 professionals, who have been using a variety of DOS-based applications at each of PW's 100-odd US offices.

Overcoming the quality/quantity trade-off

Two years ago, the firm had decided to upgrade the quality of its personnel by dramatically raising salaries for new hires and giving all professionals four weeks of vacation. But quality also comes from interaction among good people. Rather than strangle them in the increasingly large organization, PW management resolved to offset the quality deterioration that frequently results from growth. The purpose of Notes is very simple -- to shift the quality vs. quantity trade-off curve, not just move along it.

Precisely in order to decentralize and support the flow of information and activity horizontally, it was necessary to install a common technology platform. Otherwise you don't get a centralized or a decentralized organization; you get lots of separate organizations that have difficulty communicating at all. In effect, the answer was to centralize the technical decisions so that the content could be effectively decentralized -- but shared.

Laube and his staff looked at a variety of E-mail packages to run over the LANs now installed in half the US offices (and counting). The mail systems they considered at first didn't scale up and had insufficient security. What they he needed was neither point-to-point mail nor central broadcasting, but a medium where everyone could be both broadcaster and recipient, a cross between a bulletin board and a notification system -- without creating total confusion and a surplus of unusable information as it scaled up.

Then Laube found Notes: "I showed it to real people. I've never seen a reaction like that!" He didn't even test it for bugs or robustness, figuring he could trust Lotus. Instead, he says, the question was: How fast can we do it? "Most people start with a pilot, and spend time justifying and rejustifying. We knew we wanted it, and so we short-circuited that process. We also wanted to make a statement that we consider leading-edge technology important; it wasn't like buying 10,000 copies of 1-2-3."

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Good news for Lotus; bad news for Federal

They went first to the most needy sites: One was the widely distributed employee benefits service group, who do pension plans and compensation plans. Two other areas already using Notes are financial services consulting (in New York) and the Washington National Tax Service in Washington. "Our Washington office was flooding people with memos by Federal Express," says Laube, but how many of those missives ever got read or even distributed is questionable. The financial services group, which consults to financial companies, has the most interesting application, a marketing database that integrates internally generated information on client companies with news items gleaned from a Reuters newsfeed.1 The local offices add information as they please, and the new data is distributed electronically to all other locations. Other users can attach their own comments, which appear with the original data but can also be found separately under their own categories.

So far, he has put servers in four locations, with about 100 users, and more want it, especially since a recent firm-wide technology conference in Orlando where 100 local technical coordinators took training from Lotus. "Only four servers, and already we’re standing on our heads keeping up with demand!" says Laube with glee.

He expects it to take about two years to get the whole 10,000 copies into use. "Programming" the system is fairly simple, since the initial applications are straightforward information-sharing: The work consists of designing a variety of forms and reports for entry and display of data, rules for notification of people, etc. "We're using it mostly in broadcast mode," explains Laube, "because we expect people to look in. Otherwise you'd get beeped every five minutes."

Logistics

It turns out, says Laube, that programming for content was the easy part. The hard part was deciding when and how to update the servers, where to put them, naming conventions, and so forth. Now it works this way: All servers send new data to a single server early each evening; later that evening, each collects all the new data from that same server. Eventually, updates will happen continually, especially for hot data, and different servers will manage different databases. During the day, users can communicate by mail, sending new data or notices to selected mailing lists or groups.

Microsoft and IBM will be happy to note that Laube has just converted a DOS server to OS/2, so the servers are now entirely OS/2-based, although most of the front-ends are Windows-based. Everything should be on OS/2 within two years -- by which time Laube will no doubt be installing Release 2.0. (Another benefit of the system is that it can be installed over the networks and telecommunication links itself.) By then, Laube also hopes to send his people out into the field with systems such as Compaq LTEs or an improved version that has a 9600-baud modem (once the chip makers get around to making a portable one possible).

1 The Reuters newsfeed, an application being developed jointly by Reuters and Lotus, uses some separate OS/2 tasks running alongside the Notes server. Reuters will probably sell it, acting as a VAR for Notes.
Some product details

To describe Notes fully you need to list a lot of features, rather than a single metaphor: Rather than an application with a single focus, it's a broad-ranging tool with a variety of capabilities. Notes' data structures are a cross between a table-oriented database and an outline. Each Notes database is a separate collection of documents, which are generally created when a user fills in a form -- which can be as free-form as a comment field with a title, or as structured as a Rolodex card for a new customer.

Forms can also be used for queries, as can Views -- which are akin to database reports. Views generally display a listing of documents, with or without details, with headings and column entries showing data in specified fields -- sort of a cross between an outline and a table. From a View, you can select whatever level of detail you wish to see, in a variety of formats. Data can be sorted by any standard user-specified category, such as customer, person responsible (for a set of tasks or customer), date, problem type, etc. For example, a View could be a list of trouble reports, sorted by product, date and sales rep responsible. Data from different kinds of forms can be combined in a database or view -- different kinds of information referring to a particular customer; for example: a structured form address, products owned, sales rep, buying intentions, comments on the last five sales calls. Information from similar forms can be collected or summarized -- i.e., how many customer complaints about the new release? or who made the most calls this month? -- although that is hardly Notes' strength.

In addition, you can create or follow hypertext links between items in different databases, run scripts, develop filters for automatic data categorization (as in the Reuters application) and the like. And as noted there is extensive security and validation, with seven levels of application-specific security, and access specifiable by views or forms. What makes Notes more useful than a standard relational database is not just its ability to manage text and images (which is increasingly common anyway), but its implicit awareness of individual users, so that it can be used as a medium for exchange for messages, assignment of responsibilities, and interpersonal interaction as well as information-sharing.

The base price for Notes is $62,500, which includes software for 200 machines in any combination of servers and user workstations; additional machines cost $295 each, although we suspect PW and other large clients pay less than that. Marketing the product will be Lotus's key challenge -- one where visible customers and resellers with practical applications such as PW, Manufacturers Hanover and Reuters will be extremely important. "Direct sale-only is our entry strategy," says Eric Sall, director of business applications for Notes, but the company is also hoping to arouse enthusiasm among VARs such as Reuters, and will gladly cede some of the enormous task of selling and supporting the product in exchange for a little margin.

Learning from its experience with Agenda, Lotus has included a number of application templates with the first release for simple applications such as electronic mail, group discussions (where users' comments are maintained and sorted by topic), client-tracking (name, address, phone, contact dates, and subject), project status reporting and "newswire" (article filtering and categorization, less automatic than the Reuters tool). It also has better facilities for data import and report production than Agenda had initially.

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THE VIEWSTAR SYSTEM AT SHEARSON: STEP BY STEP

The Price Waterhouse story is the kind every vendor dreams of: A large, visible customer makes a broad, public commitment to a new product. More typical is ViewStar's experience: Most customers are doing something they consider strategic and proprietary, and would prefer not to discuss it. Meanwhile, those who are willing to talk are doing pilot projects, trying the stuff out rather than buying thousands of copies at a time.

ViewStar is a four-year-old company selling a server-based image-management system (see Release 1.0, 88-3). It has 30 customers, more than 20 of them in the Fortune 1000, including Arco, Procter & Gamble and Texaco. Many of them have engineering or design operations which have to keep track of drawings, plans, charts and diagrams not only to get their work done, but to prove that they are doing so to customers or interested parties from the government. Furthermore, these companies must frequently share this information across a variety of locations, where small teams are building components of larger systems. Unfortunately, they don't like to talk.

But it's not just designers and engineers who shuffle paper. A mere subway ride from our office, Shearson Lehman Hutton faces an equally intransigent paper explosion in its back office. Even though its information is seemingly all-digital -- currencies, customers, amounts, dates, clearing houses, interest rates; not an engineering drawing or architectural schematic in sight -- Shearson's back office is piled high with papers, despite networked pcs (with terminal capabilities) on all the desks. Each of Shearson's business units generates a folderful of documentation a day: hundreds of journal entries, order tickets, wire transfers, cash sheets and other items. While transactions are carried out on an IBM mainframe (which replaced an aging Burroughs machine two years ago), transaction files are downloaded into .dbf format for settlement of trades, analysis and reconciliation on a network of pcs. (The analysis applications are written not in Dbase but in Clipper.)

Two years ago, the firm decided these back-office operations needed a better system of record-keeping than paper files all over the place...and days of delay anytime something more than a month old was needed. Shearson's Rick Hopfer, first vp of systems development, took a look at the imaging systems then on the market, most notably FileNet, and decided in favor of ViewStar's image-management system for one primary reason: It runs on pcs, so that his users could continue to do their work on systems they already had, and so that all Shearson needed to buy was software and some optical disk systems.

The back-office system is just now being installed, with a goal of about 150 users by this summer, up from 30 or 40 now. Hopfer had been excited about the groupware possibilities: With ViewStar, you can annotate documents, route them according to predetermined or dynamic paths, monitor completion of components of a group task, and so forth. In fact, most users are happily using only part of ViewStar's functionality, although the long-term plan still exists. Many of them want to do their jobs the old way, Hopfer says, and most aren't quite comfortable yet with the groupware aspects of the system. Second, the full ViewStar system runs only on pcs with 4MB or more of memory and can take several minutes to load, an inconvenience when you're switching into other applications all the time to do the tasks you need the documents for. As Shearson gets better integration of its other applications within OS/2 (through its own efforts and those of vendors), this prob-
lem will diminish. For now, most users are working with ViewStar's Retrieve package, a subset which runs under Windows and simply lets them retrieve documents, without the annotation and group-interaction functions.

**Slow sell**

Shearson's approach might seem disappointingly low-tech given all the power that ViewStar could bring to bear. Hopfer and his team at first were aghast when they saw users printing out and distributing hard copies of the scanned documents, instead of mailing them. But they're learning to be patient. Slowly, people are starting to want the more advanced features. "It's better if they sell each other," says Hopfer, "than us coming down from above."

For now, the back-office system replaces paper, but does not manage the paper flow itself. Nonetheless, it saves users substantial time and anguish: Now they don't have to wait days for things to come from the warehouse, or hunt through dog-eared files. Almost all the paper records they might use are scanned in. In addition, selected virtual printouts from the mainframe are stored in ASCII on optical disk, but displayed as print-out (thereby never going through the paper step, but still looking familiar to users). Items can be searched for by title, and the ASCII printouts can also be searched as full-text.

Eventually, the ViewStar system will be used to capture trading tickets and images of physical securities. Ultimately, Hopfer points out, full use of the system depends on the legal status of image as opposed to paper copies; for now, scanned documents are sent to warehouses -- but at least they now never need to be disturbed (barring a lawsuit or other such event), whereas before the warehouse was simply the ultimate in slow-access storage.

**Details**

ViewStar manages and shuffles papers, with facilities for indexing, marking up and annotating documents. It can display ASCII as print-outs, but its value is its ability to handle images. Users with the full system can annotate documents; attach Post-It™-like notes; link items in one document to others; circle, cross out or annotate individual items; or attach entire files. All these addenda are kept in separate layers; the original is unaltered. For example, you might want to attach supporting material for a change or append a note explaining the circumstances of a canceled trade. Users can mail these to each other, or send them to a broader mailing list.

Developers can set up routing lists for documents or specify steps they must go through such as approval cycles; they use ViewStar's LISP-based script language, which is fairly easy to learn once you get your mind around object-oriented programming, says Shearson developer Marc Neer.

Currently, ViewStar resells Gupta Technologies' SQLBase server, which maintains a database about the documents and pointers to where they are actually stored on an optical or magnetic file server. The server software (without hardware) typically starts at about $50,000; prices per concurrent seat for the front-end drop from $5000 for the first copy to $3000 for the 100th copy. A full 100-user system, including image hardware but not pcs, would run about $1 million. Retrieve costs $2000 per concurrent user.

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FOLIO'S VIEWS AT AICPA: KNOWING WHERE TO LOOK...

Folio's Views (see Release 1.0, 89-3) is yet another product that comes into its own when you're dealing with a large volume of material. Where Notes has a flavor of a database and communication package -- and meets a strong requirement for updating and data integrity -- Views is more for publishing information that comes from a single source. It's not so much an application but a broadcasting and publishing medium, through which users can navigate easily.

Views is a large-scale outliner, text-search and hypertext package, designed for industrial-strength applications and publishing large volumes of information. You can use it as a straight Boolean search tool, or you can build term hierarchies and hypertext links, and create structured views containing specific chunks of text selected automatically by string matches or assembled by hand. One familiar use (and an easy first step with imported data) is to link each item in a table of contents to the text it describes.

One early adopter of Folio's Views is the AICPA, or American Institute of Certified Public Accountants, which supports a membership of 300,000 accountants vainly trying to keep up with the latest pronouncements from the Federal Accounting Standards Board, the IRS, the SEC and numerous courts and agencies. While Price Waterhouse can afford to use Notes to keep its people informed and coordinated, the AICPA's primary constituency is smaller firms. It will be using Folio Views to keep its members informed; coordination is up to them.

Beyond Burroughs

The AICPA is no stranger to technology. Its Technical Services Division publishes software applications such as Accountant's Trial Balance, Audit Program Generator and Engagement Manager. Since 1972 it has managed the National Automated Accounting Research System, or NAARS, which publishes the annotated financial statements of 4200 public companies as well as the texts of all official pronouncements through Lexis and Nexis. And since 1977, the AICPA has produced a yearly hard-copy index to all those documents, called Index to Accounting and Auditing and Technical Pronouncements. This publication, the size of a laptop but twice as heavy -- 800 pages long and about two inches thick -- was generated by an aging Burroughs machine. "We ran the software twice a year," says John Graves, director of technical services for the AICPA, "and it crashed twice a year. Unfortunately, the programmer who wrote it left seven years ago." But now he won't be missed, since the Division has loaded everything into Views, which can generate nicely formatted files for printing as well as online access.

Graves settled on Folio Views for his first two disk-publishing efforts, he says, "because they were exactly what we needed." Long familiar with plain old text search, he knew that wasn't sufficient. The new Electronic Index to Technical Pronouncements is an annotated, cross-referenced thesaurus/index, not just a string-search tool. Terms are cross-referenced and collections of documents are compiled into views, so that you don't get everything that mentions, say, banks, but only those pronouncements that focus on banks and whatever other term you may specify.
In content, the Folio system is a copy of the paper version -- basically, a topic-specific thesaurus, replete with cross-references, as well as listings of relevant documents, such as "FASB statement on consolidations..." or "Treatment of deferred income." Deferred income also has a list of terms to "see also": Unearned income, unearned revenue, liabilities, and so forth. Now comes the nice part: Instead of searching for a reference, you simply click on the triangle in front of it, and Folio takes you there.

For the AICPA itself, Views offers a slightly more efficient way of generating the same information: The articles and pronouncements are still categorized and indexed by people, just as they were before, but the indexers type directly into Folio Views, bypassing the separate data entry process entirely. They also have an easier time building cross-references, by selecting appropriate topics from a list.

Moreover, the disk production is a continuous process, enabling the group to produce four updates a year. (Views can automatically strip out old information and add the new stuff; in paper-based looseleaf systems, users rarely take the trouble to add the new pages, leaves get lost and so forth.) In book systems such as the AICPA's traditional form, the information is months old when it appears and a year and a half old when it is retired.

But it's still just a guide to the actual documents, which right now are kept in the libraries of most firms and are available on-line in NAARS through Lexis and Nexis. In fact, the new technology is so non-disruptive that the EITP will probably foster strong demand for a forthcoming CD-ROM full-text disk of all these texts that the AICPA plans to release in cooperation with Mead later this year. Initially, users will have to search for items in the EITP and then retype the keys into the CD-ROM software, but Graves hopes to build a link between the two quickly. Once you can find things automatically, shouldn't you be able to view them automatically? Moreover, users will be able to assemble them, excerpt them, and put them into documents (as long as they observe fair-use copyright provisions). At that point, we suspect, users will wish they had a product like Notes, so that they could distribute them easily to co-workers. Views will work effectively as a publishing medium, but it lacks (by design) the programmability of Notes.

Online answers

Graves and his team are also producing a second disk, Technical Hotline Q's and A's, a compendium of 1300 of the questions most commonly answered by the AICPA's hotline. The AICPA's hotline, staffed by 12 CPAs, currently takes about 5000 calls a month from members. The new electronic service won't replace the phone service, but it may ease the load.

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2 Folio gave the AICPA some help with the original data conversion, when the Burroughs file was converted into an ASCII text and loaded into Views. Folio built a parser to translate each entry into a Views text item, and to convert the cross-references into links by recognizing the terminology used in the book. It is considering selling the technology to build such parsers as part of a future release.
Each disk-set will cost $96 a year, including the base product and three updates, and a runtime version of Views. The first version of EITP will appear on January 15, with data up to 1 October 1989. (The hard-copy version was $36, and will continue to be published for the moment.)

**Views:** 2.5 million users who probably never heard of Folio

Runtime Views "infobases" are also being used by Novell and Software Products International to provide online documentation for their software. Prentice-Hall, Mead, FASB, Michie Legal Publications, Global Village and many other data publishers are using Views to publish information that used to be on paper. Union Carbide is using it internally to store Federal environmental and health & safety regulations on a 650-MB system.

All in all, Folio estimates that there are 2.5 to 3 million runtime copies of Views out there, distributed by some thousands of its direct customers. While the company (and we) originally saw Views as an author's tool that could be used as a medium, it turns out that the market is far flatter than Folio thought, with most of its users readers rather than authors.

The only issue now is how to price and distribute the runtime version to make it a standard medium. That is, what precisely is the intellectual property Folio is selling? Views costs $495; Previews, a user's as opposed to developer's tool with limited functions, costs $99; and runtime copies that simply allow a user to view a single infobase cost the reseller between $2 and $20 a copy.

**GROUPWARE: START BY AUTOMATING THE FAMILIAR**

These scenarios are typical mostly in their specificity. Groupware is not abstract or general. It's a way of automating concrete daily tasks that are routine in their outlines but each instance different in its own way, so that it takes a constantly varying combination of persons and machines to get the work done.

In the future, groupware will change how people do their work, but for now it mostly just simplifies it or speeds it up, as described above. The greatest potential for a change in process is with Notes and ViewStar, which are programmable, potentially active systems as yet used mostly for passive retrieval and categorization of data. Users will want more soon enough.

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NOW, ENRICHED WITH...INTELLIGENT INTERFACES

Yes, there is innovation in traditional categories too, although it can be hard to distinguish in the morass of unique, revolutionary, breakthrough, artificially intelligent, user-friendly, object-oriented, adaptive software we read about every day. In that vein, our friend Arthur loves to tell the story about the computer system that could generate classifieds automatically. Feed it some data, and it would create a literate, intelligible ad, highlighting features ranked highest in consumer surveys. Just for fun, someone fed it the specs of the White House, and it produced the following: "Colonial with parklike views..." The moral of this story is that some products transcend their categories.

Two such are SQLWindows from Gupta Technologies, seemingly just one more database development tool, and Vellum from Ashlar, seemingly just another CAD program. In fact, each takes a well-explored category and transforms it into something special with clever, appropriate use of enhancements -- call them intelligent interfaces, to use a budding buzzword. They don't change the fundamental functionality of a product, but they significantly change the experience of using it.

Although you could regard these intelligent interfaces as no more than tricks, they can make a house White instead of just white. They do more than just exchange a mouse for a keyboard in a word-processor (or even in a drawing program, where it does make a difference) or pull-down for pop-up menus. In the case of SQLWindows, a language-sensitive outline editor enables a user to navigate through a program and switch from the code to the objects it implements so seamlessly that he can deal with both forest and trees simultaneously. In the case of Vellum, a background process (the "geometric inference engine") monitors the user's actions and provides feedback, so that he has to do the least work possible. Rather than select, say, the circle-bisect tool, he merely confirms that this is what he wanted to do (if that is the case) when he gets close to doing so.

Gupta's SQLWindows: If you can't leave the code behind....

Gupta's SQLWindows, a tool for developing Windows-based (and soon PM-based) database applications, does what they all do: It lets programmers create windows, buttons, dialogue boxes, menus and other objects to build user-friendly database applications. But it has a security blanket for programmers who aren't quite ready yet to think totally in objects and events and want the comfort of a listing. In one window you have the object you're creating, with dialogue boxes and the like to prompt you to describe its attributes and behavior; in the other window, you have an outline representation of the code the system is generating for you. You can work on either side, with your work reflected in the other. Thus, you can edit the code as you will and see an object change, or just look at it for comfort. Likewise, you can see immediately the impact on the code of what you do with the objects. Both are simply views of the underlying code -- one the source, in an outline; the other, the interpretation.

And you can find your way around. Once you've created a system, you can easily look at a headline-level display of the code and easily find any particular object you want to modify -- or copy for reuse. (Yes, you can find similar features in some debuggers and in systems such as Smalltalk or in

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Ashlar Vellum: Software with erogenous zones

Ashlar's Vellum extends the snap-to-grid approach with vision rather than the clutch-when-you-touch function of plain old snap-to-grid. Underlying Vellum is a grammar -- that is, a set of rules that specifies what is possible at any given point: It offers a continually shifting set of possibilities based on previous actions and values. Of course, every system has a grammar: Some systems indicate them with changing menus; others just send error messages or sit mute when you do something wrong. (And compilers just wait until it's too late to let you know you screwed up.)

By contrast, Vellum makes its grammar appropriately visible and uniquely sensitive to the user's moves without becoming obtrusive -- aiding the user in choosing options rather than having to specify them. This grammar is instantiated as the Drafting Assistant, the personification of what Ashlar calls its "geometric inference engine."

The Drafting Assistant contains a knowledge base of common geometric constructions, which it combines with information on the current tool (line, polygon, etc.), the cursor's position and the objects the cursor has touched most recently. The last few objects (up to eight) that the user has touched or passed are selected and "alive," forming part of the Drafting Assistant's knowledge base. In the background the Drafting Assistant watches to see if the user's cursor is about to perform a special action -- bisecting a line, for example, or intersecting it perpendicularly; moving a line to become tangent or perpendicular to a circle; and so forth. It monitors endpoints and midpoints, lines and centers, tangents and perpendicular intersections of polygons and arcs. As it does so, the Drafting Assistant displays messages -- "tangent," for example; if you click at that point, your line or curve or polygon locks into place.

But unlike snap-to-grid, which works only locally, Vellum's Drafting Assistant can draw temporary construction lines around distant objects (so temporary that you can't easily get it to print out, unfortunately!) -- so that you can, say, align a hood ornament with the tops of some headlights.

The user interface looks simpler, because it offers you the right options at precisely the moment you may need them. But it's also more efficient, because it limits your choices to only the ones you're likely to want at any given moment. The user has only to come close to doing something to have the software ask (implicitly) if that is what he wants to do. If so, he clicks at that point; otherwise he moves on. That saves the user the trouble of typing, selecting from a list, or hitting precisely the right point on a line. (You can adjust the software to be more or less active in guessing your wants; it takes a little getting used to, like any partner.)

Grammars at work

The idea itself is brilliant -- if obvious (and noncopyrightable, we assume and hope) in retrospect. But the implementation details are another matter. "It kind of does what you want almost all the time," says Vellum co-designer and Ashlar co-founder Martin Newell. That's the sort of capability you
can't get in a lab; you have to try it out on real users time and again, and calibrate it properly. It shouldn't be too obtrusive, nor should it miss things. And it can't clog up memory with too many active areas.

Obviously, you could extend this approach to other areas. When you open a new file, for example, the system could prompt you with a list: letter? proposal? PCC column? Forbes column? Or you could open a document by selecting from this list. Each would have its own formatting conventions, and so forth. If you started a paragraph in a letter with "Sin..." it would ask if you were concluding the letter; in any other format, it would ignore it. In certain formats, if you began a new page, it would offer to start a new chapter; in others, a new heading with the next customer's name drawn from your electronic client list. If you wrote "your wife" it might pop up a memo box with the addressee's wife's name...and so forth. In many database applications and in Agenda, among others, there are completion functions that fill in a field as soon as you type enough to pick a unique data item. TI's NaturalLink/NL Menus, ostensibly a "natural-language system," let users generate queries by picking from changing menus such phrases as "Tell me how many..." and "...who work in..." The result looked like natural language, but the system actually restricted the user to the tighter syntax of the computer. Some SQL query-building tools, such as Software Products International's, work in a similar way.

There are many more possible examples -- far more in specific applications with lots of content, incidentally, than in generic tools.

Integrated parametrics: What you want is what you get

In addition, with Vellum you can draw a topologically correct model with its dimensions all out of whack, and let Vellum redraw it correctly with the precise dimensions and ratios that you specify. Of course, you may over- or underspecify, in which case it will point out the problem and let you fix it. It can also do smart scaling, so that items can scale up properly: For example, you may want a tube to be twice as wide, but the thickness of the tubing material to stay constant. Alternatively, you can change the dimensions in one place, keeping the geometry constant, and the system will redraw the figure properly. Finally, you can build libraries of parameterized objects that can be reused and rescaled to fit in many different designs. It's all hard to describe and absolutely unmistakable to see: It seems to know what you want rather than what you are able to draw.

Ideas and expressions

Indirectly, Vellum is yet another beneficiary of Xerox PARC, where Ashlar co-founder and president Martin Newell worked from 1977 to 1981. He collaborated with John Warnock on JaM, a precursor to Interpress and ultimately PostScript. From there, he went to CIMLINC, where he ran R&D and discovered the potential of workstations for engineering and design; now he's transferring that knowledge to the Mac. He co-founded Ashlar in January 1988 with Grant Munsey and Dan Fitzpatrick, both also from CIMLINC. The company has two rounds of funding from Hambrecht & Quist, totalling $4 million.

Vellum costs $995 and runs on a Mac SE/30 or II with 4MB of memory and release 6.02 (or higher, should you be so lucky) of Mac system software. Color isn't necessary but you miss a lot without it.

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Business people who haven’t been to the Soviet Union worry about financial issues -- convertibility of the ruble, tax policy, property rights. These are all important, but they’re frequently beside the point. The real issues are logistics: Is there a place for your employees to live and work? Can you get raw materials, phone lines, visa approvals? How can you communicate with the customers for your product or service? Are you dealing with the right people in an inscrutable power structure where computer firms may own farms, electronics firms build hotels, and someone’s college buddy work in an important ministry? In short, how can you motivate the huge bureaucracy -- which in principle wants you there -- to support your business goals?

From the Soviet side, too, money is not the major question. What they need from us is not just funding but technical know-how and market knowledge, managerial skills and the simple enthusiasm and bull-headed persistence that it takes to get things done. In addition, what they can offer is some leading-edge technology, most still theoretical, but well worth exploiting.

We were recently invited back to the Soviet Union by Doka-Centre, a Soviet high-tech organization that wants to provide an umbrella for small high-tech companies called Technopolis -- a Soviet Silicon Valley, or call it Silicon Selo (with the accent on the o, for "Village"). Technopolis, if it is approved and allowed to flourish by the Soviet government, would be a free economic zone where Soviet entrepreneurs and scientists could contribute their brainpower and electronic design and software talents to joint ventures with equipment-, management- and capital-rich foreign partners. As envisioned by Doka, Technopolis would operate sheltered not just from taxes but from most government restrictions.

Doka operates out of Zelenograd, an existing high-tech center controlled by the Ministry of Electronics (MinElektronProm) and currently focused on military electronics. MinElektronProm is the outfit that builds VAX-compatible computers and the chips that fill Soviet spacecraft. (These are not mass-production items.) It also produces memory chips and other electronic gear. Positive people would say Technopolis could foster the conversion of some of Zelenograd’s military capabilities to civilian ends; let’s go help! Negative ones would assume darker motives.

3 Our trip was organized by 25-year-old Doug Mellinger, a US entrepreneur in software re-engineering and bakeries, who had met Doka leader Alexandr Chuenko at an international "young leaders" meeting. Like Chuenko, he has some powerful connections. The rest of the mini-delegation consisted of Fran Smyth, who leads a high-tech research effort at Met Life; and a last-minute addition, Bob Clough, a friend of ours (through his wife, who works for JV Dialog in Moscow; see Release 1.0, 89-11) who is doing his thesis on the political and personal factors influencing the computerization of the Soviet Union. A high-powered bunch, for sure, but hardly the troop of multi-millionaires needed to launch a new national industry. The whole tour, with side visits to Doka’s friends and sponsors, took four days. As usual in the Soviet Union, it was a half-frustrating, half-exciting experience. The Soviets still talk in speeches, and adding a translator means that every exchange takes twice as long and is twice as formal.
Zelenograd is conveniently located about 20 miles from Moscow and only 10 miles from Sheremetyevo, the city's International airport. Appropriately, the Doka site in a long grey building is dominated by a nearby hotel building, which was built but never finished. Doka is now looking for a low-tech partner to finish it -- which would be an excellent commercial proposition if Technopolis is approved.

Doka had invited us to pique our interest and, with luck, to spread word through us to others. While we were there, the trip's sponsor, Doug Mellinger of the Mellinger Group, signed a letter of intent with Doka to form a US-Soviet joint venture, ASTEC (for American-Soviet Technology Entrepreneur Cooperation) to act as a holding company and financial sponsor for Doka-inspired joint ventures.

It's who you know....

Doka is a private organization -- i.e., one with no direct ties to the state. As an independent organization, Doka is free to do what it wants -- but also has little power to get what it needs. In a world without meaningful money, it's who you are that counts: What resources do you control? What bureaucracies can you manipulate? What can you do for me?

Thus, you have to have ties to the state, because the state owns all the resources, from buildings and land to supplies, equipment and training facilities. The state also tells students where to work and other organizations where to put food stores, bus lines and apartment buildings. In other words, freedom can be just another word for lack of influence.

But Doka does have influence, in the usual ad-hoc way that connections work. It was formally founded in 1987, by a bunch of young people "who couldn't find jobs within the system," says founder Alexander Chuenko. They had been working together since 1982. The outfit was sponsored (or sheltered from interference) by the State Committee on Science and Technical Policy (GKNT), a high-powered body that reports directly to the Supreme Soviet, but it took no funding. Compared to, say, Petr Zrelov, the head of JV Dialog (see Release 1.0, 89-11), Chuenko seems somewhat more naive. Although both are Party members, Chuenko seems to have won the confidence and enthusiastic support of people who share his goals, even if they don't have the energy or character to work for them more directly. Indeed, Doka seems to be unusually capable and aggressive. We were able to get our visa within a week of being invited.

Not just another pretty co-op

We got further evidence of Doka's connections through a round of visits with Soviet luminaries, starting with the mayor of Zelenograd and the chief of the Moscow Institute of Electronic Technology, also in Zelenograd -- where Chuenko was a student not so long ago. Founded in 1963, the Institute is a

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4 As people are also discovering in East Germany and Rumania, almost the only place to go for business managers is Party ranks. With few exceptions, no one else has experience running anything, nor visibility in the community.
significant part of Zelenograd's appeal as a high-tech center. It draws its 4000 students from all over the Soviet Union, and conducts leading-edge research in semiconductor design and manufacture, among other areas where Doka hopes to attract foreign investment. Its students build prototype systems in the Institute's own production facilities, and work in local government-owned factories before and after graduation.

Others we met through Doka included the International Fuel and Power Association (itself a group of energy-oriented ministries seeking foreign investors for energy projects, particularly environment-favoring ones such as pollution control and waste reuse), and high officials from the Committee on Science and Technology and the Academy of Sciences.

JVs in line

Most interesting was Yuri Proskuryakov, deputy head of the Foreign Investment Division of the Ministry of Finance, who is in charge of registering joint ventures (although they need approval from other quarters as well). He runs a team of only five professionals (and one secretary) who are scrambling to keep up with a stream of new applications for JVs. They come in at 200 per month, but can be processed at only 160 per month. About 1280 have been approved since early 1987. Because of nationwide budget-consciousness Proskuryakov can't enlarge his staff, nor can he go outside to buy more effective software to keep track of things. (A dBASE application built in-house keeps losing data, he says.) Finally, he says, some of his people, now replaced, left last year to join joint ventures themselves. (We guess it's encouraging to see that the market works, even in sometimes inconvenient ways.) He can't give any special consideration to applications from friends -- Doka, say -- but he can take them home and make sure they get read promptly. Moreover, he could be a valuable ally in piloting the unusual umbrella joint venture envisioned by Doka and Mellinger through the shoals of bureaucracy.

Can the acorn take root?

Doka now has 33 people of its own and about 2500 contractors in 18 cities throughout the USSR, who can operate through Doka without the pleasures and perils of setting up in business for themselves. Doka has developed a number of products internally, including a sensing device to help keep track of rail cars. It also sells, among other software, the Semantic Maze package -- with unusual diligence and energy, according to developer Vladimir Pokhilko (see Release 1.0, 89-11). Turnover in 1989 should approach 10 million rubles ($16 million at official rates), from products such as expert systems, software for construction and operation of nuclear plants, electrical machinery, instruments and electronic components.

But unlike the research institutes which it resembles in many ways, says Chuenko, "we're small and flexible. We get orders from our partners [i.e. government organizations] to solve problems, and we figure out how to do so." The surplus is ploughed back into research in such areas as solid-body physics, as well as more mundane industrial areas. Doka has reinvested 8.5 million rubles of payments over the past seven years, he says.

As noted, Doka's goals are far grander: Chuenko wants Doka to be the midwife to a wide range of small high-tech-based joint ventures that will oper-
ate out of a free zone in Zelenograd to be called "Technopolis." Rather than start Apple Computer, he wants to start Silicon Valley, nurturing a cluster of Apples, Intels, software houses and the like. He'd like to get it started, and then let the market do its work.

Technopolis: Free in the ways that matter

The idea is to replace the state's cumbersome bureaucracy with a kinder, gentler, better-informed approval process run by Doka. Once Doka supports a venture, it would become part of the Doka family and benefits from the resources Doka can arrange in Technopolis without having to hunt for them or get approvals itself. Of course, it all hangs on the ability of Technopolis and Doka to get government clearance themselves. The answer should be forthcoming within a couple of months -- but since no one has ever done this before, it's hard to say precisely what approvals are needed or precisely how free to act Doka/Technopolis will be once it gets them.

Technopolis would provide the following benefits: quicker registration of joint ventures; lower tariffs, taxes and other fees, although those are hardly the problem; hard-currency salaries (at least in part); easy access to personnel from elsewhere in the Soviet Union without cumbersome registration procedures and housing for them; special, beneficial terms for foreign investors such as insurance of investments (from government appropriation, not from poor business conditions). So far, Doka has received 10 proposals on which it can't yet take action...

Although only a few of Zelenograd's 170,000 citizens would actually work for Technopolis, they would benefit from its presence. Technopolis, Doka hopes, would include a freeish market for apartments, support for private enterprises selling food and services, educational facilities, and the like. In essence, the goal is to create a free-enterprise zone not just for international organizations, but more importantly -- especially in its impact on Soviet thinking -- a free-enterprise zone for internal trade and enterprises. If it works, it could start a trend......

Barriers to success: Technopolis in context

All this sounds eminently sensible. Yet its future is questionable. The major stumbling blocks are the existing power structures. The MosSoviet (Moscow City Committee) doesn't like the idea because Zelenograd belongs to Moscow, and it doesn't welcome a free zone within its territory. Min-ElektronProm, the Electronics Ministry which controls the electronic production facilities of Zelenograd, is cold to the idea for much the same reasons. Moreover, until recently it hasn't welcomed foreigners snooping near such a high-level military center.

From the foreign point of view, Zelenograd is uncomfortably closely tied to the country's defense establishment. Will our side allow people to share technology in such a place? You could conjecture, as Soviet-computer expert Seymour Goodman of the University of Arizona points out, "that the bottom line could be to have us transfer the technology. That's certainly the first thing that would occur to our national security people. Military modernization remains a goal of perestroika; it keeps the military happy."

It is alluring to see Soviet government entities as the equivalent of companies (down to their habit of diversifying into new areas). Yet it is mis-
leading, because their motives are different: power but not profit. For that reason, now that both idealism and terror are mostly gone, government entities are by and large ineffective as productive enterprises. The old order is crumbling and the new order hasn't yet had the space or resources to grow to replace it. Soviets find it harder and harder to work at jobs they increasingly consider meaningless. This attitude may be contributing to the current rapid decline: If you don't believe in what you're doing, why do it well? Why fix decrepit buildings if they're coming down anyway?

Most of the people we encountered were scared but resigned: We're going to have a couple of extremely tough years, was the general attitude. But as of two weeks ago, we didn't see much evidence of things getting better. Popular feeling against the cooperatives (small private enterprises) is increasing; joint ventures are seen as a source of goods and hard currency -- not of new management ideas and market practices. (Part of Technopolis's appeal is that it involves joint ventures, not just indigenous free enterprise.)

Can new growth find its way into the sunlight?

On the other hand, companies (unlike agencies and ministries) have to start small. The country needs hundreds of little companies, most of them too small to notice and too small to seem to matter -- not one big program run with full government support and absolutely no internal impetus for success. Little companies with profit-minded owners do have such an impetus for success. So the question is: Will they be strangled by the dead infrastructure, or will they be able to feed off it and grow up through it? And will they do so fast enough?

In principle, the new growth will by definition grow faster than the aging, crumbling state infrastructure, but can it grow fast enough to make a difference? Some 280 million people must be fed, housed and warmed in the meantime. In principle, if state bread becomes too scarce, people who can afford to will buy other foodstuffs from the private markets. Among the people we know best, rubles are plentiful and spent carelessly, but even they blanch at paying 12 to 15 rubles for a kilo of second-rate meat in a country where typical state salaries are 150 to 300 rubles a month ($240 to $480 at the official rate, $15 to $30 at actual rates). On the other hand, a programmer we know recently paid five or six thousand rubles to get an apartment 4 square meters larger than the one he had. He also has a cordless phone, a camcorder, VCR and other gadgets. Another friend has a VCR and a microwave, to say nothing of parquet floors and a stereo system. As the saying puts it, rubles are going out of style; people who have them try to spend them before they become worthless.

If the government does not allow natural forces to operate, there can be only stagnation when the government itself fails to operate.

A number of Doka managers and scientists (specialists in software and semiconductor technology) will be visiting the US in March. If you would like to know more, please call us or Doug Mellinger, listed below.

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The theme this year is "Into the seismic decade: Standards and earthquakes." We will explore the delicate interplay between standards -- temporary rigidities or fault lines in the market landscape -- and the huge upheavals that occur when the forces of change and innovation take over. Are standards a fool's paradise, or an appropriate compromise between practicality and disruptive progress? Can large companies innovate? Can small companies succeed (without big backers)? Do the standard-setters have too much power? Is the traditional pc community losing power to a new world of networked systems, MIS departments and corporate standards? Should it care, or should it embrace the new world and change it from within?

More important: Are we addressing the right set of standards? The problem of multiple operating systems will eventually be ameliorated not by the actions of a single company but by cross-OS tools, clearer market segmentation and a gradual shift to new standards. But the standards wars won't be over; we'll be able to fight about interoperability and communications protocols, database standards, distribution and pricing practices.

Addressing these issues will be the speakers and panelists listed below, along with a lively audience. We're limiting the number of speakers and panelists in order to leave extra time for "virtual panels" with you and your peers in the audience -- customers, resellers, competitors, suppliers, investors. Speakers and panelists will discuss how standards are set and superseded in a variety of contexts, including: "Why the operating system is obsolete" (Epstein), dynamic data exchange, RFCs, E-mail and messages as approaches to interoperability (Gates, Metcalfe, Reinstein and Zisman), end-user application tools (Tesler and Landry), "The care and feeding of intellectual property" (Warnock), "The evolving box" (Canion), "The software design manifesto" (Kapor), "Microsoft isn't the enemy" (Eubanks), application servers (Torresi), "Behind the pretty (inter)face" (Liddle), "Evolution and revolution in microprocessor technology" (Slater), the laptop market as the last bastion of truly personal computing, and other topics. Several company presentations will include real users with actual examples of "exotic software" accomplishing useful tasks, as discussed in this issue.

Bill Gates, Bob Epstein, Gordon Eubanks, Dave Liddle, Bob Metcalfe and Enzo Torresi, among others, will all be speaking on Wednesday, so please plan to stay through the end, at noon. The concluding lunch that day will have no speakers, so you will have a chance to catch up with anyone you may have missed earlier.

Some of the biggest earthquakes this year have been in Eastern Europe; appropriately, seven or eight Soviet citizens will be among the attendees. They will be introduced formally and will mingle informally throughout the conference. If you would like to share a room with a Soviet (you pay; he stays), please let us know.

Thinking Machines founder Danny Hillis will give our "token user talk" this year. He will discuss "Simulating evolution," showing how he uses Connection Machines to model evolving populations...and evolving standards. There are some intriguing parallels.
But that’s not all. An opening reception, Monday night’s dinner honoring Ben Rosen, and other meals and events will also give you ample opportunity for a key part of the Forum, the chance to mingle with your peers away from office pressures and among the cactuses. In keeping with the conference’s seismic theme, Colleen Barton of Stanford will lead a geology field trip for spouses and others (adults only) in the Tucson countryside.

The Forum hotel, the Westin La Paloma, sits on a desert mountainside. It’s thirty minutes from the airport, which has good service through Phoenix from the West and Dallas from the East. There’s shopping, swimming, tennis, golf... and day-through-evening childcare, so bring your family.

Speakers and panelists

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<td>Colleen Barton</td>
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<td>Dave Liddle</td>
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<td>Dennis McEvoy</td>
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<td>Ann Winblad</td>
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<td>Mike Zisman</td>
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Company presentations will include Agility Systems (Liaison), AICorp (KBMS), Aion Corporation (Application Shells), Answer Computer (Apriori), Apple (multi-media), Colleen Barton on earthquakes (Monday only), Claris, Desktop Data (NewsEDGE), Folio (Views; see page 8), GUIDance Corporation (formerly Virtual Machines; Choreographer), H-P (NewWave), Individual Software, Intel-liCorp, Interactive Images (Easel), JV Dialog, Lotus (Notes; see page 2), Lysis (Support Information System), MacroMind (Director), Mysteryware, Net-wise (RPC TOOL), Object Design, Parallan, Pinpoint (Computer Focus), Poqet Computer, Saros Corporation (FileShare), Servio Logic (GemStone), Silicon Graphics, Tricord, Verity (Topic and other topics), V.I. Corporation (Data-Views), ViewStar (see page 6), Wallaby and Xanadu (the Xanadu server).

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RESOURCES & PHONE NUMBERS

Vladimir Pokhilko, Moscow, 234-30-34
John Graves, AICPA (Folio), (212) 575-6391
Martin Newell, Valorie Cook, Ashlar, (408) 746-3900
Alexander Chuenko, Doka-Centre, Moscow, 535-62-95, fax 230-22-07
Henry Heilesen, Folio Corporation, (801) 375-3700
Umang Gupta, Gupta Technology, (415) 321-9500
Petr Zrelov, JV Dialog, Moscow, 329-51-33 or 329-47-00
Eric Sall, Ray Ozzie, Lotus Development, (617) 577-8500
Yuri Proskuryakov, Ministry of Finance, Moscow, 921-30-60
Sheldon Laube, Price Waterhouse (Notes), (212) 819-4858
Rick Hopfer, Shearson Lehman Hutton (ViewStar), (212) 640-9824
John Eyerly, John Bowne, Software Products International, (619) 450-1526
Doug Mellinger, The Mellinger Group, (212) 599-2786
Seymour Goodman, University of Arizona, (602) 621-2684
Kamran Kheirolomoom, Mike Crosno, ViewStar, (415) 841-8565

You can now dial Moscow direct, although you're still likely to get a busy circuit. Start with 011-70-95 and then the seven-digit number. (Don't wait for any dial tones after the first one.)

COMING SOON: PLANE FARE

Sorry this issue was late (Russia/Budapest trip, winter cold, etc.). The next issue, the Forum documentation, will also have a formal date: January 29. But it will be early, and will be sent by Federal Express to Forum attendees to arrive on Thursday January 25. Other subscribers will receive their issues around January 29.

That trip, incidentally, let us check out hotels for a conference on high-tech East-West trade we're planning to hold in Budapest next October. Please let us know about your East European connections....
RELEASE 1.0 CALENDAR


January 16-18  Computer graphics show - New York City. Managed by mijo; sponsored by a number of magazines. Everything from graphs and charts to animation, video and multimedia. Contact: Melanie Goldstein, (301) 587-4545.


January 18  Massachusetts Computer Software Council annual meeting - Newton, MA. With Stewart Alsop, George Conrades, Patty Seybold. Contact: Joyce Plotkin, (617) 437-0600.


January 18-19  Second annual conference on software support - San Francisco. How to turn a problem into a competitive advantage. Sponsored by Institute for International Research. With Barbara Brizdle, Software Strategies; Deborah Fain, Lysis Corp.; Tom Evans, Answer Computing (see Release 1.0, 89-7). Call Georgette Asherman, (212) 883-1770 or (800) 345-8016.


January 24-26  Software & Information Technology Conference - Phoenix, AZ. Sponsored by Morgan Stanley. With Joe Costello, Cadence;

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January 25  Andy Grove at the analysts' - New York City. Talking about Intel, but if you have a management question, maybe he'll oblige. Sponsored by the New York Society of Security Analysts. Call Carol Morgan, (212) 344-8450.


February 5-9  Communication Networks '90 - Washington, DC. Keynote by Ken Olsen. Sponsored by IDG Conference Management. Call Dorothy Ferriter, (800) 225-4698; Robin Poulin (exhibits), (800) 343-6474; or Bonnie MacKeil, (508) 879-6700.

February 5-9  *Artificial life conference - Santa Fe, NM. With Christopher Langton, others. Sponsored by Santa Fe Institute. Call Susan Wider, (505) 984-8800.

February 6-8  Goldman, Sachs technology investment symposium - New York City. With Rod Canion, Casey Powell, Bill Joy and Steve Ballmer. Call Andrew Krawitt, (212) 902-7771.


February 12-15  NewWorld - Boston. Keynote by Will Zachmann. Produced by H.A. Bruno. Call Annie Scully or Mark Haviland, (201) 569-8542 or (800) 444-EXPO.


February 26-28  SunExpo - Washington, DC. Sponsored by the Sun Observer. Contact: Brona Stockton, (512) 331-7761 or (800) 289-EXPO.


March 5-9  *Seybold Seminars '90 - Boston. . .moves east. Call Kevin Howard, (213) 457-5850.


March 27-29  1990 AAAI spring symposium series - Stanford. Case-based reasoning, text-based intelligent systems, AI & molecular biology, other neat topics, with all the right people. Sponsored by the American Association for Artificial Intelligence. Call Carol McKenna Hamilton, (415) 328-3123.

March 31-April 1  Conference on participatory design - Seattle, WA. Come participate in a conference devoted to figuring out how to bring customer self-service to design. Sponsored by Computer Professionals for Social Responsibility. Call Paul Cyzewski, (415) 967-7079, or Jeff Johnson, (415) 494-8248. Cleverly scheduled to precede...

April 1-4  *SIGCHI - Seattle. "Empowering people" with better, more intelligent interfaces to functional systems. Sponsored by ACM SIGCHI. Call Toni MacHaffie, (503) 591-1981.

April 2-4  *Patricia Seybold's Technology Forum - Cambridge, MA. Distributed network computing and object-oriented environments. Call Deb Hay, (617) 742-5200 or (800) 826-2424.

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<table>
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<tr>
<th>Date</th>
<th>Event Description</th>
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<tr>
<td>April 5-7</td>
<td>MicroVision Summit 1990 - Newport Beach, CA. For people with something to sell, to meet people looking for something to resell. Group and private meetings with US and overseas resellers such as ComputerLand (Ed Anderson), Inacomp (Rick Inatome), MicroAmerica (Peter Brumme &amp; Jack Littman-Quinn), MicroAge (Jeff McKeever), Ingram Micro D (David Dukes), Metrolgie (Alain Schwartzmann). Call Micky Dude, (603) 888-5626.</td>
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<tr>
<td>April 9-12</td>
<td>AIIM - Chicago. The annual conference of the Association for Information and Image Management. Sessions on new topics such as image compression, digital paper and transaction processing as well as vertical markets. Call James Breuer at (301) 587-8202.</td>
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<tr>
<td>April 9</td>
<td>*Software Law '90 - San Francisco. Hot topics this year, planned to lead right into MacWorld: Patents, copyrights, viruses &amp; libaility therefore. Sponsored by Elias &amp; Goodman and Wes Thomas PR. Speakers include Adam Osborne; Esther Dyson; Sue Morgan, SoftView; Jeff Cherniss, Advanced Software (owners of DocuComp and the &quot;redlining patent&quot;); Bob Kohn, Borland. Call Karen Thomas at (516) 266-1652 or Paul Goodman at (212) 421-6000.</td>
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<tr>
<td>April 10-13</td>
<td>*Macworld - San Francisco. Later this year. Call Peggy Kilburn, (617) 326-9955.</td>
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<tr>
<td>April 23-26</td>
<td>First international conference on systems integration - Morristown, NJ. Sponsored by ACM and IEEE groups. Call Peter Ng, (201) 596-3387.</td>
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<tr>
<td>April 25-27</td>
<td>Conference on office automation systems - Cambridge, MA. Sponsored by ACM and IEEE groups. Call Joan Staunton, (212) 869-7440, or Robert Allen, (201) 829-4315.</td>
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<tr>
<td>April 30-May 3</td>
<td>Structured Development Forum XI - San Diego. Sponsored by SDF. Call Judith Hays, (503) 745-5692.</td>
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<tr>
<td>May 1-3</td>
<td>Second annual conference on innovative applications of artificial intelligence - Washington, DC. Sponsored by the American Association for Artificial Intelligence. Contact: Carol McKenna Hamilton, (415) 328-3123.</td>
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May 14-17  *Expert Communication '90 - Austin, TX. Sponsored by Graph-ic Communications Association and Davis Review. With John Clippinger, Paul Doebler, Mills Davis. Call Mills Davis, (202) 667-6400, or Patty Hill, (703) 841-8160.

May 28-June 1  Avignon '90 - Avignon, France. Tenth international workshop on expert systems and applications. Sponsored by ARC, ECCAI and JSAI. The major European expert system event. Call Jean-Claude Rault, (331) 47 80 70 00, or fax, 47 80 66 29.

June 3-6  Spring Comdex - (back in) Atlanta. Sponsored by the Interface Group. Call Elizabeth Moody at (617) 449-6600.

June 3-6  *ADAPSO Conference - Washington, DC. With an international flavor this year. Call Frank Ianacone at (703) 522-5055.


June 14-17  *International Computer Club Inaugural Conference - Moscow. Scheduled to lure people east from the SPA event in Cannes. For information, call Esther Dyson at (212) 758-3434 or Levon Amdilyan in Moscow at 921-09-02.


June 19-21  PC Expo - New York City. Sponsored by H.A. Bruno. Contact: Steve Feher, (201) 569-8542 or (800) 444-EXPO.


June 24-28  Design Automation Conference - Orlando, FL. Sponsored by IEEE and ACM groups. Call P.O. Pistilli, (303) 530-4333.

July 10-16  *PC World Forum - Moscow. Sponsored by IDG. An exposition, with a software development conference. Contact: Frank Cutitta, (508) 879-0700, or Karin Griffhorn in West Germany at (49) 893 60860.


August 13-17  International parallel processing conference - St. Charles, IL (25 miles from O'Hare). Sponsored by Pennsylvania State University. Contact: David Padua, (217) 33-4223 or Benjamin Wah, (217) 244-7175, or Roger Anderson, (415) 422-8572.

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September 5-7  *Breakaway 90 - New Orleans. Sponsored by ABCD. Contact Jeff Rosenberg, Computer Emporium, (914) 565-6262.

September 10-13 NetWorld '90 - Dallas. Sponsored by H.A. Bruno. Call Annie Scully or Mark Haviland, (201) 569-8542 or (800) 444-EXPO.


September 25-27 PC Expo - Chicago. Sponsored by H.A. Bruno. Contact: Steve Feher, (201) 569-8542 or (800) 444-EXPO.

October 3-5 *Seybold Conference - San Jose. Call Kevin Howard, (213) 457-5850.


October 7-10 *CSCW '90 - Los Angeles. Computer-supported cooperative work, with a slight (but lessening) academic flavor. Sponsored by ACM. Call Frank Halasz (back at PARC after a tour at MCC) at (415) 494-4750, or Tora Bikson, (213) 393-0411.


Late October **EDventure East-West High-Tech Forum - Budapest, Hungary. By popular demand. Explore the problems and opportunities of high-tech business in Eastern Europe. Sponsored by EDventure Holdings, with a roster of speakers and attendees from both sides. Call Daphne Kis, (212) 758-3434.

October 31-November 2 UNIX Expo - New York City. Sponsored by National Expositions. Contact: Don Berey, (212) 391-9111.


December 5-8 *CASE '90 - Irvine, CA. The fourth international workshop on computer-aided software engineering. Sponsored by Index Technology, IEEE and several academic institutions. Call Ron Norman, (619) 594-3734.

1991

March 3-7  *Seybold Seminars '90 - Boston. Call Kevin Howard, (213) 457-5850.

March 10-13 **EDventure Holdings PC (Platforms for Computing) Forum - Tucson, AZ (again). Sponsored by us! Contact: Daphne Kis, (212) 758-3434.

Please let us know about any other events we should include.

-- Denise DuBois

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Associate Publisher

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