EASTERN INFRASTRUCTURE

We recently spent five weeks in Central Europe and the Soviet Union, exploring the impact of recent steps toward market economies and meeting the computer/software entrepreneurs taking advantage of them. Conditions are changing rapidly; the following is a status report as of summer 1990. Nonetheless, each country has an individual history and circumstances that will color its future; the people and their skills and characters will persist even if the structure of their organizations and the constraints that form them change. (We have covered the Soviet Union and Hungary at length in previous issues, notably 90-5, 90-1, 89-12, 89-11 and 89-5, so here we focus on the rest of Central Europe. We will write about UNIX and Macs in the Soviet Union in our September issue.)

Everywhere, entrepreneurs are emerging from the shells of state organizations ranging from companies and research institutes to military training centers, agricultural co-ops and computer clubs. Communism did not totally destroy its victims' ingenuity, but it has imposed a devastating tax of inefficiency and distortion of normal business structures. Small businesses are now permitted, but they are still hampered by constantly changing, frequently vague restrictions and by persistent hostility from the old guard.

The countries we visited range widely, from Yugoslavia, with its heritage of locally controlled if state-owned firms, to Czechoslovakia, undergoing a breakdown of centralized state control that destroyed the country's position as one of Europe's leading industrial economies before the Second World War. We found a high level of technical sophistication in Bulgaria but little commercial development, while Yugoslavia is economically advanced but probably least sophisticated technically. Yugoslavia's computer community seems to be devoted mostly to accounting systems -- useful stuff but not likely to give it a competitive advantage on world markets.

Poland suffers from a severe if restorative economic crisis and indifference to intellectual property rights. By contrast, in Hungary we found small software firms growing vigorously in the shadow of state-owned SzKI.
Szamalk and Sztaki (see Release 1.0, 90-5), all of which are also trying to figure out how to devolve into clusters of smaller, privately owned firms.

All over, ownership rights are unclear, to say nothing of the transition from state to private ownership. Who gets the spoils? The workers who built the thing from scratch? The two or three people who directed the effort? Some giant government combine that tolerated their semi-independence? The state (not the Party!) coffers? Some giant foreign bank or other investor? And what's the price? Employees are now trying to undervalue what they have created so they can afford to buy it, while the putative owners want a sizable reward for letting go. Being profitable isn't necessarily an advantage these days, because you'll get a better price from the state if your business is losing money. Meanwhile, accounting is a dicy proposition anyway, especially in the East, and you should read any numbers we cite with skepticism.

On the technical front, interest in UNIX is widespread, especially now that CoCom restrictions have lessened (see our next issue). Precisely because of CoCom, there's a lot of ingenuity in using smaller systems to manage large, complex tasks. On the other hand, because of largely centralized government structures, there's little business experience with business, as opposed to computer, downsizing. Interest in the Mac, newly freed of CoCom restrictions, is about to be satisfied: Apple has just signed up distributors in Czechoslovakia and Hungary, and is opening offices in Poland and the USSR. There are little more than a thousand Macs in the East all told, we estimate.

A world shaped by bureaucracies

Although pcs are the hot thing in Central Europe as they are in the rest of the world, this does not mean that there are no mainframes. On the contrary, in these tightly controlled markets of giant state enterprises and stunted entrepreneurship, until recently much of the computer power has been in large systems, IBM or ICL or Unisys or NCR mainframes or copies thereof. Most technology in the former East Bloc is ten or more years old, which means that officialdom is just discovering minis and workstations. This market vacuum represents an opportunity for Compaq, NetFrame, Sun and the like, offering networking and UNIX, while IBM is stepping in rapidly with the AS/400.

Meanwhile, pcs have been first seeping and now flooding in through less official channels. The difference here is that although everyone has heard of IBM and Apple, few people have one. The greatest share of the market by far belongs to "no-names" -- a word incorporated into languages from Russian and Bulgarian to Polish, Czech and Croatian. CoCom has certainly Western countries from shipping systems in, but it has not restricted Central Europeans and Soviets from buying from non-CoCom suppliers, mostly in the Far East. (Shortage of money, however, kept volumes down; see the chart on page 5.)

With greater availability of imports and eased travel restrictions, pc prices are heading rapidly down toward world levels, making the market more open but more difficult for Compaq and IBM at the low end. Both IBM and Compaq face a far more cutthroat market in Central Europe than the one they grew up with -- and probably a harder time training dealers to offer the levels of service and support that differentiate their products. Compaq is making the commitment to do so, but the IBM representatives we talked to seemed more interested in the mainframe and AS/400 business -- probably a sensible attitude for the moment, given that there's demand for everything but IBM's relative
strengths are greater at the high end. (Some competition also comes from the secondhand market, even in mainframes. "People offer to sell used mainframes for almost nothing," says an IBM rep in Yugoslavia. "It's a problem; we don't want this place to become a museum." For example, one company we visited had bought a six-month-old mainframe from an airline at half price.)

The dark side of freedom

Aside from the obvious problems of inadequate infrastructure and lack of experienced people, perhaps the toughest challenge faced by many of the smaller companies is skepticism from their own people: Everyone wants to buy from the West, travel in the West, hire people with experience in the West. You have to look hard to find Eastern products selling in the East, even though a number of vendors have been successful outside their home countries, including Novotrade, CompuDrug, SzKI and Graphisoft of Hungary; SP&S of Bulgaria; Zeto-Rodan of Poland; and (though inadvertently) the Soviet Academy of Sciences with Tetris. Autodesk has found several products from Parallel in Moscow and Software Slusovice in Czechoslovakia that it will be adding to its own line-up for sale in the West. But locally sold products are rare (page 21), although there are a few -- Ed3, a home-grown wp system from Tera in Zagreb; Text602 from Software602 in Prague; Beta, Lexicon, Master and others from ParaGraph in Moscow (see Release 1.0, 90-1 and 90-5); and QR DOS from SP&S in Sofia. Moreover, these products don't get great marketing; most ads still look like vague spec sheets or the back pages of InfoWorld or PC Week: what's available, where, and how much. (The actual level of information is quite high, especially in the Soviet Union and in Hungary, where the local variants of IDG's "World" publications are already doing well.)

And, for all the fascination with free markets, companies also miss the placid protected world of the past. Several that want to go private want to keep government funding for "research." Firms that were first into a new market don't always welcome competition from newer entrants -- particularly their own spin-offs. Meanwhile, governments may change, but the local bureaucracies are slower to. Poland's Zeto-Rodan (among others) complains that government personnel would much rather buy from, say, a French firm -- especially if they have to go to Paris for negotiations or training -- than from a local firm, even at a huge cost differential.

Nor is the opening-up of these markets always beneficial to outsiders in the short run. It means more competition and more confusion. It used to be easy; there were just one or two central organizations to sell to and get paid by; now it's a free-for-all. Now vendors have to assess the qualifications and quality of the people clamoring to sell and support their products. "There's no Softsel or Micro D yet," says East Europe manager Bruce Marquart of Ashton-Tate. There's the possibility of making mistakes where growth means success...but for the first time inefficiency or ineptitude may mean failure. Welcome to the free market!

Although we don't mention it in each case, virtually all the firms discussed here are eager for contacts with Western firms, both to act as resellers of their products and to sell products or programming services to them. To that end, most of them will be attending the East-West High-Tech Forum (or you may contact them directly using the phone and fax numbers on pages 35 to 36). For further information, you may also call us. We are not a broker, but we would be delighted to encourage some East-West trade!

Release 1.0

21 August 1990
Copyright laws and the extent to which they're honored vary widely from country to country. Overall, there's growing recognition of the need for software copyright within the technical community, but we still encountered a lot of, "Well, we use one copy of [dBASE/C/whatever] for all our programmers, but we resell only licensed copies" -- usually one to a customer, no matter how many pcs he buys. Logika in Warsaw, for example, plans to resell PertMaster with hardware copy protection, but sees nothing wrong in sharing software among its programmers. In countries such as Yugoslavia, Poland and Bulgaria, developers generally don't develop packages for local consumption, but instead build custom systems that can't effectively be used by anyone other than the intended customer. Most small companies in Poland, for example, tie themselves tightly to just one or two large customers, where they can keep watch over how their software is being used. (There are other reasons for such tight relationships, primarily that only large customers can afford to pay in the first place, and there are few medium-sized firms. This approach also requires a minimum of marketing expertise, although it limits growth and makes a firm dependent on the fortunes of just one or two customers.)

Hungary has protected software since 1983, and Bulgaria, Czechoslovakia, and Yugoslavia have just passed new laws that are currently taking effect, superseding older measures. The Soviet Union is planning to change the law, but issues such as the economy are taking priority in government activities. Poland likewise has vague plans for a copyright law (and will need one to comply with its US trade treaty), but has made no concrete moves as yet.

Moreover, laws and contracts used by some vendors in the absence of laws don't really affect behavior much. In the past, it was politically difficult for foreign firms to get relief anyway; now, it's still tough, even though formal attitudes are changing. In Bulgaria, for example, there has been a software copyright law of sorts since 1982, recently strengthened, but people we asked could cite only two cases where anyone was charged under it. One was a government institute, which promised not to do it again; the other was an industrial company using it internally only. As Boris Bekyarov of Decart in Bulgaria says, "I can complain if someone steals, but [the infringer] has only a psychological problem, not a legal or financial one."

A virtuous cycle gathers momentum

Of course, attitudes are changing. Poland, beset by an economic slump, has the worst copying problem, while Hungary has the best attitude -- and a resultant abundance of software package developers who are now strong forces for further enforcement of copyright laws. A combination of factors is moving things in the right direction:

- increased availability of hard currency on the one hand, and
- increased availability of software in local currencies on the other (due to new policies of Microsoft, Borland and Nantucket among others),
- proliferation of viruses (which encourages at least one legitimate copy per enterprise),
- a growing and thus less sophisticated end-user customer base more in need of localization, documentation and support, and
- a leading-edge developer customer base that wants the latest products, not old copies, and that wants to sell software itself.
Fear of viruses is the most compelling incentive -- but it doesn't address the one-copy-per-company problem. Some US vendors use site licensing, which takes the sting out of paying for duplicate copies. Ashton-Tate relies on its customers' honor, while JV Dialogue (Moscow) gets signed licenses (with the force of contracts) from its customers. And others just use hardware copy protection, which somehow fits in with the general ingrained attitude that physical property may become private property but intellectual property is a public good. All these are psychological tricks, if you will, but psychology and attitude are the issue here.

The best solution (and also the best marketing strategy) is a physical presence, providing support, local-language versions and other features that people will pay for. Otherwise, you can ship in a bunch of product and never make another sale. Of course, telephone support is still a problem in an area where telephone calls are de facto rationed by availability rather than price; that is, calls are cheap, but most of them don't go through.

**COMPARE AND CONTRAST: EASTERN EUROPE AND THE UNITED STATES**

<table>
<thead>
<tr>
<th>Country</th>
<th>Pop. (mil)</th>
<th>Software copyright?</th>
<th>Strength of observance</th>
<th>Currency conversion</th>
<th>DOS pcs (000) (Jan 1990E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>9.0</td>
<td>new</td>
<td>fair</td>
<td>no</td>
<td>140</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>15.6</td>
<td>new</td>
<td>fair</td>
<td>no</td>
<td>100</td>
</tr>
<tr>
<td>E Germany</td>
<td>16.6</td>
<td>soon</td>
<td>poor</td>
<td>yes (DM)</td>
<td>80</td>
</tr>
<tr>
<td>Hungary</td>
<td>10.6</td>
<td>yes</td>
<td>good</td>
<td>semi</td>
<td>110</td>
</tr>
<tr>
<td>Poland</td>
<td>40.0</td>
<td>no</td>
<td>---</td>
<td>yes</td>
<td>120</td>
</tr>
<tr>
<td>USSR</td>
<td>287.6</td>
<td>soon</td>
<td>fair</td>
<td>semi</td>
<td>400</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>24.0</td>
<td>new</td>
<td>fair</td>
<td>yes</td>
<td>100</td>
</tr>
<tr>
<td>United States</td>
<td>250.0</td>
<td>yes</td>
<td>v good</td>
<td>yes</td>
<td>40,000</td>
</tr>
</tbody>
</table>

This information is subject to change and interpretation. Situations are not necessarily comparable and different sources disagree, but these figures offer a useful perspective. All currencies are convertible to some extent, and restrictions are easing, especially in the Soviet Union. The numbers of pcs reflect better (we hope) information we gained this summer and refer to this year-end; thus they are somewhat higher than those we published in May.

Last year, Ashton-Tate, Microsoft/JV Dialogue and a number of other companies got together to organize an intellectual property forum at Pereslavl Zalesky, 75 miles north of Moscow, to discuss the problem. The group issued a declaration urging the government to issue a new software copyright law needed to implement the provisions of the trade agreement signed by Bush and Gorbachev in June. "We need this if we want to be a real member of the world market," says Irina Savalyeva, a participant in the meeting and one of four lawyers who drafted proposed legislation at the government's request. She is a partner in LECS (Legal Economic Commercial Services), a legal co-op affiliated with JV Dialogue.

Nonetheless, a recent Wall Street Journal article implying that only 1 percent of machines in the Soviet Union run legal software was misleading at best. We figure it's likely that 99 percent of users have illegal copies of software. But the proportion of software they use day to day that is illegal is far less. Not all copies represent lost revenues: Some are just casual copies, used only once or never, while others may actually be prelude to a purchase. (For a Soviet view, see also page 33.)

Release 1.0	 21 August 1990
CoCom -- A LITTLE LIST

Everyone knows that CoCom (for the Co-Ordinating Committee on Multilateral Export Controls) has relaxed its restrictions, but unfortunately it's not as simple as that. CoCom itself has 17 member countries, each of which fields a CoCom delegation of representatives from both business and defense/security communities. These representatives are not publicly identified, presumably to reduce pressure on them. They produce a short "industrial list" of commodities subject to embargo, annotated with enough exceptions and amplifications that the section on computers and software alone runs to more than 40 pages. That list is used by each CoCom member country in defining and implementing its own export restrictions and licensing procedures.

"The publicity about the recent changes has vastly oversimplified it all," says Bob Jack, Digital's Export Consultant for Digital-Europe. Restrictions vary by sending and receiving country, product line and configuration, and in timing, depending on each country's follow-up after a revised list is issued. The latest revision, with more generous parameters, was effective July 1, but most countries haven't yet amended their own regulations. Soon, 386es in general will be freely exportable without a "paper license" from the US; you must declare them for customs but no other filing is needed. But once you start adding networking, memory (more than 32MB), storage (more than 2GB), high data rates (above 275 "Processing Data Rate," or PDR) or most CAD/CAM software other than AutoCAD, you need to apply for an individual license. (It is impossible to offer a concise definition of PDR; CoCom takes several pages of calculations to define it. A typical 386 is less than 275 PDR; a typical RISC chip is more, but usually under 550. You're on your own!)

Putting together the license application takes time -- and cooperation from the customer and reseller, if any. The application must give details about the intended user, what he will use it for, any interconnections, and so forth. So much for shipping RISC machines on consignment.

High-end systems -- most networks, large-scale file servers, RISC systems, technical software and the like -- still need to be licensed for export and re-export individually, even though approval is more likely than in the past. The likelihood of getting permission for a given system/configuration and the time it takes to get it (from five weeks to nine months) vary by both vendor and customer countries, and by which "band" the system falls into. That is, anything up to 550 PDR is under "national discretion," up to 1000 PDR is "favorable consideration," and anything above, or attached to a wide-area network, is "general exception," which requires unanimous approval of a full CoCom committee. Any item on the list must be specifically licensed; a country can't issue a blanket exemption for, say, a certain configuration for Hungary -- although it could decide to allow all such individual requests. Until now, the US has been relatively stringent, even going beyond the CoCom list in its restrictions on off-the-shelf software (although those restrictions have not always been observed, especially by individual travelers).

But now the US seems to have swung the other way, says Digital's Jack, who has followed this area closely for the last eight years. And although "officially Hungary and, say, the Soviet Union are on the same footing," he adds, "the difference is what gets decided behind CoCom's closed doors." Hungary, Poland and Czechoslovakia generally receive the most lenient treatment and East Germany enjoys a special (temporary) set of arrangements, while the
Soviet Union and Rumania (and of course Albania) suffer the most stringent application of the restrictions. (Yugoslavia, not part of the Warsaw Pact, is covered by lesser restrictions similar to those for Sweden or Austria.)

The July 1 revisions are the first major step by CoCom following the events of the last year. There's another CoCom meeting coming up in September where the list may be pared to a much shorter "Core List" -- totally eliminating some categories of special-purpose equipment rather than simply lowering the hurdles -- but any decisions aren't likely to be reached until early next year. Much will depend on the speed of the various countries' moves towards political liberation generally and implementation of internal export/import regulations in cooperation with CoCom specifically.

Yes, CoCom has reduced its grip. But don't ship anything until you've consulted your lawyer!

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AND NOW A WORD FROM OUR SPONSORS....

Almost all the people in this issue (see pages 35 and 36) and many from our previous issues on Central Europe and the Soviet Union (89-5, 89-10, 89-12, 90-5, 90-1) will be attending the East-West High Tech Forum in Budapest this October 21 to 24. We hope you'll be there too. Please write, fax or call us for a registration form if you don't have one. (Our fax is (212) 832-1720.)

The conference begins with orientation at 1 pm on Sunday, October 21, with registration and orientation followed by an evening reception. It ends Wednesday afternoon, October 24, with lunch. The conference will consist of speeches and panels in the mornings, followed by smaller simultaneous sessions in the afternoons: country by country roundtable sessions, software demos from Eastern vendors, and Western technology/market updates from Bill Joy of Sun and Mort Rosenthal of Corporate Software. Rusty Schweickart, the former astronaut now selling networks in the Soviet Union, will give a featured speech. The preliminary day-by-day schedule is as follows, with additional panelists/speakers to be announced:

**Monday: Meet the players** Business strategy, corporate structures, distribution channels  
Sam Tramiel, Atari (US); Richard Handyside, Autodesk (UK/US); Zelimir Ilic, Compaq (US); Tania Boyagieva, COMSIC (Bulgaria); Gerard Bloch-Morhange, Groupe Bull (France); Elek Straub, IBM (Hungary); Misha Krasnov, KOT (USSR/US); Peter Vadasz, Microsystem (Hungary); Reiner Hallauer, Siemens (Germany); Matjas Lenassi, Unicom (Yugoslavia); Csaba Barath, Videoton (Hun.)

**Tuesday: Focus on software** Software protection, pricing issues, marketing practices, software standards, localization, support issues  
Irina Savalyeva, LECS (USSR); Ivan Todorov, COMSIC/COMSED (Bulgaria); Jack Byers, JV Dialogue (US/USSR); Christian Wedell, Microsoft (US); Vanessa Wade, Nantucket (Belgium/US); Stepan Pachikov, ParaGraph (USSR); Ivan Zerko, SRC (Yugoslavia)

**Wednesday: Facing the issues** Export restrictions, regulations, logistics of trading and investing in the East, sources of financing  
Jim Spillars, Apple (US); Bruce Marquart, Ashton-Tate (US); Bob Jack, DEC (US); Mikhail Davidov, Demos (USSR); Gabor Bojar, Grapheisoft (Hungary); Jack Littman-Quinn, Merisel (US); Gabor Renyi, Novotrade (Hungary); Milan Razga, FORS (Czechoslovakia)
OPEN CODE PAGES: FROM LOCAL TO GLOBAL OPTIMA

Standards concern more than just operating systems and graphical user interfaces. Take code pages (a fancy term for the part of the operating system that implements character sets; see box), a fundamental if pesky problem in Central Europe that has now been resolved in principle although it will take costly conversion and time to effect in practice. Simply, each Central European country has one or more of its own standards for extending the Roman alphabet and representing its character set -- all the diacritical marks in Czech and Slovak (Czechoslovakia), Slovene and Croatian (Yugoslavia), and others, the umlauts and double s in German, the slashes in Polish, and so forth. (Bulgarian, Serbian and Ukrainian use Cyrillic characters, but not quite the same ones as Russian or as each other.) All told, Central Europe uses about 80 extra characters that we lack in the US.

Early this summer, a number of companies led by Ashton-Tate and Microsoft held a 25-person workshop in Budapest to resolve the issue, and settled on IBM's code page 852. Co-organizer Paul Robson of Microsoft stresses that the number attending was limited not to keep people out but to avoid "death by committee" -- or as Philippe Kahn pronounces it, "death by comedy." Participants included units of Aldus, HP (the printer folks), IBM, Lotus, Cherry Keyboard, MSP Ltd. and Infoservice of Poland, Novotrade of Hungary, Infosport

Background: Decoding the code page

A code page is basically a list specifying the 256 characters a computer should generate -- on screen or printer -- for a given 8-bit number. The first 128 characters of the standard US code page, known as IBM 437 -- "the lower half" -- are the upper- and lower-case letters of the English alphabet, plus several columns of control characters, punctuation marks and digits. The "upper half" comprises graphics elements and the like. These graphics elements are used to make pseudo-graphic objects such as boxes and borders in text interfaces. In recent years, IBM has moved towards code page 850, which has a variety of West European characters -- accents and the like -- in place of some of the graphics elements. This means that 850 users will occasionally see strange foreign letters at the corners of a box, where an application developer using 437 expected them to see borders. This issue will diminish as people move towards graphical user interfaces, but that process has barely begun in Central Europe and the Soviet Union. Already, most new text applications are being written for 850, sidestepping the problem.

In the Soviet Union, IBM uses 855, which has Cyrillic characters for Russian and a variety of other alphabets, again obliterating many of the graphics elements. The so-called Alternate Code Page (ACP), widely used in the USSR, puts the Cyrillic characters in the upper half but avoids the locations used by the graphics elements, and is equivalent to IBM 437 with Cyrillic characters in an unused part of the upper half of the code page. Microsoft standardized on the Alternate Code Page and enhanced it with Ukrainian and Belorussian support, but left out languages included in 855 such as Macedonian and Serbian. IBM has not endorsed ACP, but it has agreed to reserve the "name" 866 for it, and organizations such as Aldus, A-T, Borland, Lotus, ParaGraph, and the Soviet Academy of Sciences have also committed to use it.
of Bulgaria, Abakus of Czechoslovakia, Unicom of Yugoslavia, the Leningrad Institute of Informatics and JV Dialogue of Moscow (Microsoft's Soviet distributor, although no longer exclusive). Robson is now attempting to spread the word to vendors who weren't there.

Why 852? Basically, by default

When everyone was using typewriters (and not communicating much outside the home country anyway), proliferation of code pages didn't much matter, but now it does. The disparities hinder international correspondence, e-mail and other data transfer. So, while the installed base of each of many potential local would-be "standards" is still relatively small, the group has started the move for all vendors to rally round a single standard that encompasses all the countries' characters. That means that most local vendors will have to change to a "standard" almost no one is using -- IBM's 852 (also called Latin 2). As a multi-national vendor, IBM already had a single format in use in all these countries, although it has not gained wide acceptance outside IBM. The result is that the burden of changing is fairly evenly distributed -- and even IBM doesn't get much direct benefit since it doesn't sell much applications software anyway.

The decision was fairly controversial, however, since each country has its own favorites, and since the equivalent standard for Cyrillic, IBM 855, was a non-starter in the Soviet market; see box. Robson recalls, "I went to the meeting totally opposed to 852," as did many of the other participants. But after sitting through four one-hour sessions, one to a country, everyone concluded that the mess was horrifying and that 852 might actually be an acceptable compromise. Not only were the solutions different from country to country, they were different within countries, especially in Czechoslovakia and Yugoslavia, with their different national groups. "In Yugoslavia there was a different code page in each village," says Robson. So even though 852 also lacks the same graphics characters (the corners) as 855, this is not an unnecessary drawback as it was in IBM 855, the Cyrillic code page.

So that's where it is now. (Either Robson, who is Eastern Europe marketing and localization manager, or Christian Wedell, Microsoft Germany general manager, will give a brief progress report at the East-West High-Tech Forum.) The problem is that many printers don't yet support 852; they support one of the code pages of the many vendors described below who perform custom localization services. Standards generally don't get set in a vacuum; they get set by people rushing to escape from too many standards to the relative safety of a clear move in a single direction. "We're not a bunch of Western companies issuing a mandate," Robson hastens to point out. No, they're a small group settling on an arbitrary foundation so that the industry as a whole can start building a coherent superstructure of compatible applications for communication across borders as well as across vendor platforms.

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TALENT AVAILABLE

We don't want to set a precedent by doing so, but we'd like to publicize the availability of a couple of experienced Moscow hands who have recently left JV Dialogue. They are eager to work in Moscow for a US company; in fact, they like Moscow so much that they left JV Dialogue rather than return to the US. For more information, call Bob or Ginger Clough at (404) 993-8089.

Release 1.0 21 August 1990
AUTODESK: PROFITABLE PIONEER

Autodesk was one of the first companies to become active in Eastern Europe. The company now has a successful joint venture in Moscow, Parallel (no relation to ParaGraph), which supports and resells the AutoCAD line (also resold by JV Dialogue, Quest and eight other dealers in several Soviet cities). It also has training centers, distributors and dealers in Czechoslovakia, Yugoslavia, Poland and Hungary. Currently managing these markets is Roman Albrecht, who knows them well. In January, he left his job at Prague's Zenit-centrum to work as Eastern Europe Area Manager for Autodesk.

Autodesk is also one of the few Western companies to buy software from the East and resell it in the West. It has a couple of advantages over, say, Lotus in doing so: From the start, AutoCAD has been technically modular and Autodesk has been emotionally open to third-party contributions. The product is a tool rather than a stand-alone application, and Autodesk has worked closely with third parties from all over. Finally, AutoCAD is a technical product, where skill with algorithms counts as much as marketing expertise, and it does the kind of work appreciated by communists, who tend to discount the value of business information management.

The first trade show

The basic reason for Autodesk's success overseas (in both Western and Eastern Europe) is simpler -- sheer presence, and the quality of that presence. Richard Handyside, managing director of Autodesk Ltd. UK and responsible for the company's move East, has been involved with Autodesk since before it existed. Formerly a book publisher who needed a computer to run his business, in 1979 he became a reseller for Marinship Systems, the predecessor company of Autodesk founders John Walker and Dan Drake, and joined them in founding Autodesk itself in 1982. He was one of four founders in Europe (and 16 overall) who gave the company a strong presence in Europe from the start.

The move started in 1986 when Handyside, who had already traveled widely throughout Europe in his earlier career, attended a trade show in Moscow devoted to measurement systems. Commodore had invited Lotus, Ashton-Tate and Autodesk to exhibit in its booth. "We gave seminars and it was clear there was massive potential," says Handyside, but not much happened until late that year, when the US Department of Housing & Urban Development invited Autodesk along to another trade event sponsored by the Soviet state committee on construction. Amidst the vendors of building materials and construction equipment, Autodesk stood out. AutoCAD was already widely used, and people were eager to meet someone from the company who might be able to answer their questions.

Among them was an analyst/manager man from a building ministry's research institute, Spartak Chebataryof, who had been trying to get the package adopted as a standard throughout the building industry. With no copyright protection and thus no incentive for distribution, people tended to write and use their own CAD software -- resulting in a world of incompatible, bug-ridden, unsupported software.

Somehow, Chebataryof said, he wanted to get involved, ideally as a dealer. He knew lots of AutoCAD users who might be persuaded to pay for the product in return for support, upgrades, consulting and training.
Training first, trading later

At that time, however, it was even more difficult to do business in the USSR than it is today; joint ventures were barely on the horizon. You could deal with a trade rep who would take you on as his 200th client, says Handyside, or you could spend 2400,000 to open an accredited office. Instead, Handyside decided on a tack that had proven successful elsewhere for different reasons, and designated Chebataryof's institute as an Authorized AutoCAD Training Center, which it remains to this day. All he had to do was sell services for rubles -- a relatively simple business and one hampered by a minimum of regulatory requirements. Autodesk donated computers, software and training, but the Institute remained independent of Autodesk. Unfortunately, notes Handyside, "they were programmers, not trainers, but one or two of them became really good teachers." Meanwhile, AutoCAD users were introduced to the pleasures of support, and Autodesk got a foot in the door.

Two years later, in 1988, private businesses were easier to start. Chebataryof's group left the Institute and set up a co-op called Infograf. Then Infograf and Autodesk established Parallel, registered as the 128th Soviet joint venture in January 1989. "The aim of Parallel was not just to sell and support Autodesk products in the Soviet Union," says Handyside, "but also to create advanced AutoCAD-related software tools for sale in both East and West. From the outset, the concept was a bidirectional flow of product on the same technological level -- something still unusual, where the flow is commonly high-tech in and low-tech or no-tech out."

Under Handyside, Autodesk took much the same route later in Czechoslovakia, Poland and Hungary. Its partners include Inorga, an Institute of Ministry of Metallurgy & Heavy Engineering, which controlled 60 percent of manufacturing in Czechoslovakia; Zenitcentrum and Alwil, a software firm and its subsequent spin-off, and three other new private companies, all in Czechoslovakia; Pro International and Aplikom, a small company founded by engineer Elzbieta Szymczak expressly to support AutoCAD in Poland; Muszertechnika (see Release 1.0, 89-5) and several other private companies in Hungary; and three companies in Yugoslavia. It is negotiating with two firms in Bulgaria. Everywhere except Hungary training center activity was the first step.

Selling first, buying later

But again, much as in other countries, Autodesk didn't stop there. It also encouraged its partners to write and sell their own applications and add-on tools. One of AutoCAD's nice features is AutoLISP, a language particularly suited to manipulating the arbitrary groups of objects used in CAD -- but unfortunately, as an interpreted language, slow. The Soviets especially suffered from its slowness, because most of their hardware was low-end. In September 1988, programmer Yura Petrov, who joined Parallel when it was established, and a consultant, Petr Petrov (who had earlier written a LISP compiler for PDP-style machines), saw that problem as an opportunity. Nine months later they had produced the AutoLISP compiler, which improves runtime performance 3 to 6 times.

The AutoLISP compiler is distributed free with the Russian version of AutoCAD, and for an upgrade fee of 250 to users in Western Europe. It has also been used for and included with Release 2 of Autodesk Ltd. UK's AutoCAD AEC for architects and builders. So far, about 1000 copies have been distributed.

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in the Soviet Union, 3000 in the West, and a release in the US is due soon. (AutoCAD itself sells for £3000 (or about $4800), while the Russian version sells for only £1200 ($1920) -- based on "a judgment of the possibilities of the local market," says Handyside. Programmers tend to prefer to work with the English version, he adds, but the pricing makes it easier for them to sell the Russian one to end-users. The English version has the same price as in the UK, partly to avoid cross-border arbitrage, but includes two years of upgrades just like the Russian version: Getting any amount of hard currency on a yearly basis is tough for Soviets, and they'd rather pay upfront.)

It's early yet to judge Autodesk's success at West-East trade, but this is a promising start. Autodesk wants to take on the same path West with two other Parallel products, ABase, a database-cum-spreadsheet for AutoCAD drawings, and GLISP, a parametric object generator (below). Meanwhile, Autodesk is preparing to launch and sell to the Western education market an English-language version of AModel, a solid modeling package from software house Software Slusovice in Czechoslovakia (page 27). "We're still working on the documentation, which was written for Czech programmers rather than English users," says Handyside. One of the package's benefits is minimal hardware requirements, which suit it for the Eastern market -- and for the Western education market. "It runs twice as fast on a low-end pc as Boxer [a similar package] on the Apollo," says Software Slusovice's Richard Havlik.

To further these efforts, Autodesk holds an annual AutoCAD Expo in Moscow, where customers and third-party suppliers can meet. In 1988, this was the first large-scale software-only exhibition in the USSR, says Handyside; 10,000 people came. This year (29 October to 2 November), he expects 25,000. One big drawing card: During the five-day event, AutoCAD is sold for 4000 rubles to educational institutions; for the rest of the year and to anyone else, it is sold only for pounds sterling. "We had people flying back to Siberia to get their contracts executed on time," says Handyside.

Autodesk provides a fine role model for companies who want to enter Eastern markets. Without a lot of fuss, it has quietly established a strong presence. And through the cultivation of developers described above, it has even found a way of generating extra hard currency for its resellers without going through the distracting countertrade rigmarole of selling wood, building hotels or otherwise straying from its basic business. "The East shouldn't be treated as a cheap code factory," says Handyside. "If you treat them as equals, you'll find that that's what they are."

Parallel and straight ahead

Parallel's offices, like those of many private Soviet enterprises, were tucked away at the top of a noisome staircase in a crumbling residential apartment building on the outskirts of Moscow when we visited in July; the company has since moved to somewhat finer quarters. This is a successful venture, with 25 people, which generated revenues of 3 million rubles in the first half of 1990, selling both its own products and Autodesk's to a variety of factories, institutes, construction companies and other customers. Parallel gets to keep 40 percent of the hard currency revenues it makes for selling the Autodesk line, while it sells services and its own products for rubles. The Parallel products include the AutoLISP compiler, GLISP (4000 rubles) and ABase (5000 rubles). GLISP supports parametric objects, where you specify the dimensions and the system figures out how to draw them.
ABase is a database that lets you create and maintain multiple versions of such objects with varying parameters (what-if for objects, so to speak). It maintains complex relationships among objects and groups of objects, as well as simple storage and retrieval of all varieties of design information, including not just drawings but texts, spreadsheets and images.

In toto, Parallel has kept revenues of £178,000 and $300,000 in its two-year existence. This hard currency is vital for traveling and for buying computers and other things you just can’t buy for rubles.2

Parallel’s aim, says co-founder Semyon Becker, is first of all to survive in an environment that’s still hostile to small businesses. For example, the company simply wanted to be able to move into more comfortable quarters with several phone lines instead of the current single one. But beyond that, says Becker, “We want to grow new ideas, build not just a graphics drawing system but something that can manage entire projects. We are consciously modeled after Autodesk itself. But not entirely: We don’t have product managers, and it’s very hard to get good technical writers.” (That doesn’t sound so different to us!)

Not Parallel but "Orthogonal"?

As also happens in the US, one of Parallel’s finest programmers (who worked on the AutoLISP compiler) has left because his aims did not match the company’s: Rather than move towards project management, he wanted to work on enriching the design parts of the program. That programmer, Yura Petrov has joined Petr Petrov, his AutoLISP compiler co-author, and Ivan Archipov, a co-founder of Moscow’s Interquadro joint venture, to work on a high-end next-generation design system in a new 6-person firm called Basis. "The problem we’re addressing is that most parametric CAD systems aren’t hierarchical," says Petr Petrov. That is, you can’t easily design in a modular fashion so that you can change a component independently of the rest of the creation as long as you follow specified constraints (such as A must fit into B, or C must provide support for D).

The Basis toolset would allow for explicit statement of such constraints, represented in an extended LISP. Obviously not for beginners, the system would provide syntax for expert designers and developers, whereas most CAD tools "are like trying to program off a menu," says Petr Petrov. They’re fine if you want to do what the menu allows, but they don’t offer the flexibility and power of a language. The project is still at the design stage, with a prototype planned for the end of this year. To carry on to the final stage of fine-tuning, beta-testing, marketing and sales, the group is looking for funding or other support, preferably from someone with marketing skills.

2 As we have noted before, converting rubles to dollars is like converting apples to oranges... A hard ruble costs $1.60, but you can buy soft rubles on the black market for five cents or less. (When a price or bill is denominated in rubles but you can pay only with a credit card or foreign currency, that’s "hard rubles.") The average state salary is from 200 to 400 rubles; programmers can get three times that by working for a private company, even part-time.
Like Autodesk, Ashton-Tate has succeeded by dint of a long-term commitment to this market, and has begun to resell products generated by its customers. Lotus UK managing director Floyd Bradley and Ashton-Tate's German sales manager worked beside Autodesk's Handyside at the trade show where Commodore had invited them into its booth. Handyside followed up quickly, but Bradley subsequently left for Ashton-Tate, where he let UK sales manager Bruce Marquart take on Eastern Europe as manager of "business development." Since then, Marquart has traveled widely in the East, signing up one or more distributors in Czechoslovakia, Poland, Hungary and Yugoslavia as well as the Soviet Union. Dealers currently number 30 in Czechoslovakia, 30 in Yugoslavia, 8 in Hungary, 8 in Poland and 5 in the USSR. "The trouble is," he says, "these people treat our product line like their own little monopoly. They want an exclusive on the whole country." Meanwhile, they compete with hundreds of dealers selling illicit copies. Last year, on the basis of two years of "investment," says Marquart, A-T actually made a sizable profit in Central Europe and the Soviet Union on "seven-figure dollar sales." That of course is before R&D costs, but it's encouraging nonetheless. It represents incremental revenues and profits -- and a presence in a growing market.

Like many other vendors, Ashton-Tate has a large and enthusiastic customer base in Central Europe and the Soviet Union, most of whom never paid for the product, and news of the company's problems has had less of an effect over there. Marquart is busily trying to turn that presence into revenues. In the last year, the company has started a joint venture with the Leningrad Institute for Informatics and Automation (LIIAS), a branch of the Soviet Academy of Sciences.

Called ATLAS (for A-T/Leningrad Academy of Sciences), A-T's joint venture will sell not only A-T products but also Informontage-2 (see Release 1.0, 90-1), a localization tool developed by Sasha Barilov. A bundle of Framework and Informontage-2 will sell for 2500 rubles through dealers managed by ATLAS, which will also "provide user support...in accordance with international standards" -- if the phones work!

The agreement has been signed, but the joint venture still needs official authorization from the Soviet government, a process which may take another six months. Even so, the joint venture came only after the relationship was firmly established, like those set up by Autodesk. Is there a message here?

As is the case for other software vendors, the challenge for A-T is not to get people to use its product (the original or copies or clones), but to get them to pay for the privilege. The company's new policy of selling for rubles (even if only for older versions -- dBASE IV 1.0 for 5000, and dBASE III+ for 4000 and Framework III in English for 3500) should help in that regard. It may make less hard currency initially, but it will have rubles to use for support within the Soviet Union and a larger user base eager for upgrades that has learned the habit of paying for software.

Ashton-Tate has also just set up its first authorized Soviet training center, with the Novosibirsk Institute of Electrical Engineering. The Institute has 1100 faculty and research people, and 15,000 students. (Lots of companies offer dBASE training in the USSR without formal relations with Ashton-Tate.) The center will not just train people, but will develop Russian training materials for resale and use by other training organizations.

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A-T has taken an active role in opening up the market in other ways too. Marquart is also a perennial on panels in the West, espousing the opportunities in Central Europe and the Soviet Union. Together with Microsoft, he helped organize both the Soviet movement for software copyright (a still unfinished task, but getting there) and the Budapest workshop on code-page standardization (page 8). Marquart is also involved as an individual in a pro-bono effort to build a database of information for Union Chernobyl, a charity/foundation coordinating medical and environmental activities.

**NANTUCKET: A MATTER OF PRINCIPLE**

Nantucket, a much smaller company but also serving a customer base of database developers, has begun to convert a widespread presence in the Soviet Union into a paying customer base by selling the Summer 87 version of its Clipper database tool for rubles. Now, in a clever strategy, it offers customers an upgrade to the current version for half-price in dollars. Vanessa Wade, managing director of the company's new Belgian subsidiary and architect of its Soviet strategy, hasn't yet taken any dollars out of the Soviet Union and isn't trying to for now. "They pay us in rubles, which we put right back into local marketing," she says, "but it gets them into the habit of paying. We're luckier than some companies, because our users are developers; they want to sell software themselves. They need to be legitimate, especially if they want to sell abroad; they don't want bugs or viruses."

The company's Soviet office started via an intricate arrangement typical of this market: Nantucket donated computer equipment, software and most of the rubles from its Clipper sales to a Moscow charity called Kirovetz that helps disabled children by teaching them to use computers. In turn, Kirovetz has learned Clipper and supports and markets it, and has now hired 10 people devoted to that effort. (Actual sales are handled by resellers such as JV Dialogue, MicroAge and Gorsystemotechnika, a technical institute in Kiev.) No money changed hands, and no regulatory approvals were needed. Now, with 800 copies sold since March and 25,000 in use, Wade estimates, she wants to move forward and establish a joint venture which could collect dollars and ultimately send some back to Nantucket in the US. She is currently talking to a number of prospective Soviet partners.

Experience has taught Wade some interesting lessons. For example, don't translate your software completely. This may be a temporary rule, and for development tools only: The quality of the translations is generally so poor -- and translations of technical terms so nonstandard -- that programmers prefer the original English, she says. (This bespeaks a market for the consistency provided by machine-assisted translation.) On the other hand, some degree of localization is necessary, if only to prevent pirated or simply grey-market copies, sold for rubles or cheap dollar prices on the Soviet market, from flowing back into Western markets.

Wade is using much the same strategies in Central Europe, selling through Videoton and Ecosoft in Hungary (500 copies so far), and just starting up in Poland and Bulgaria. Currency convertibility is less of an issue there, but reasonable pricing and the presence of local support are just as important in encouraging users to become buyers.

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IBM: A CHANGING ENVIRONMENT

It's an old saw that IBM isn't the competition; it's the environment. But in this part of the world IBM has been at the mercy of its own environment, dependent on the local governments for its very existence, and generally has had to operate with policies determined by those governments. Certainly all these issues were negotiable in some sense or another, and IBM has benefited from maintaining a presence in all these countries in one way or another. But at the same time this somewhat special treatment has meant that IBM did become part of the environment. It has longstanding relationships with the old power structure and, frequently, people who have navigated their way through the old system for years.

In contrast to other, newer entrants from the West, then, IBM may face special difficulties in adjusting to the new conditions. Neither IBM nor the bureaucracies in each country seem to know what to make of the proliferation of pcs -- commercially, technically or legally. However, Eugen Hahn, managing director of IBM ROECE (responsible for Central Europe) disputes this assessment vigorously: "These societies appreciated IBM's presence over difficult times in whatever systems existed. Now they see us expanding and once again taking on a more Western appearance, as they are doing, and our steadfastness is appreciated and rewarded as we become partners in a new economic system."

Yugoslavia

Intertrade is a large Yugoslavian trading concern which handles the IBM business in that country. Based in Ljubljana in the country's developed northern region, it is moving to employee ownership. Its IBM Technical Services subsidiary (ITS) is a separate entity in a modern office block that feels more like IBM (as you'd expect in Yugoslavia) than does the small IBM rep office in Poland inside a forbidding state building, or the Prague office in a spacious residence-like building on the riverfront.

ITS has access to IBM's internal electronic network -- something not yet enjoyed by IBM units in the Warsaw Pact. "The relationship has grown up over 25 years," says Igor Pretnar, director of professional services for ITS. "We have a contract that's 60 pages long, but the spirit of the relationship is to behave like IBM unless it's against Yugoslavian laws." The unit had 40 people in 1967 when Pretnar joined, and now has 650 out of Intertrade's total of 1300.

IBM/ITS has invested heavily in the Yugoslavian market with people and support, and operates a fancy residential training center in Bled, near the Austrian border, which provides 32,000 student-days of classes per year. IBM has a strong presence with mainframes in Yugoslavia, with an installed base estimated at 1000 units. It also assembles pcs, under the name of PS/IT/2, since until recently the government was loath to allow imports of machines that could be built locally (for economic, not political, reasons). Legally, these pcs are not IBM products, and local customers generally seem to prefer grey-market imports or, nowadays, legitimate imports such as Compaq's. (You can buy pcs for 60 percent of the Yugoslavian price from an authorized dealer in Italy, notes one helpful Yugoslavian, and still get Intertrade service under the IBM warranty.) Intertrade sells its own Yugoslavian word-processor, PC-Pis, but mostly works with third-party software houses and remarketers who
have contracts directly with IBM in the convoluted business arrangements typical of this part of the world. In particular, the AS/400 is coming on strong, says Pretnar.

Poland, Bulgaria, Czechoslovakia

In Poland and Bulgaria, as in Yugoslavia, IBM is represented by organizations that have other, non-IBM businesses, while in Czechoslovakia the local office is staffed by people who are officially employees of a Czech state organization but the office itself is standalone. In Hungary, the most advanced, IBM Hungary is a true IBM subsidiary (see Release 1.0, 90-5).

In Poland, IBM's representative, Dernan, is a private company founded seven years ago by Zdzislaw Matkiewicz, formerly a Polish staff member at the UN in New York, to acquire and run a furniture factory (now grown to 300 people and diversified into glass-making). In 1988, Dernan took over the IBM representation contract as a subcontractor through a government institute for public administration, hiring seven people from the institute to handle it. Just a few months ago, he signed directly with IBM; his hope is to make his relationship with IBM closer, as Polish laws may allow. He has hired a manager for the furniture business and his spending most of his time on the computer side, which is at an interesting juncture right now. The seven people he started with have increased to 35 now as business picks up, especially in AS/400s, many of them replacing grey-market System/36 and /38s. Matkiewicz estimates there are 100 4300s in Poland, about half of them acquired through IBM and half in other ways. His first job, he says, is to "take care of IBM property," and then to establish branch offices throughout the country and support third-party software houses.

In Bulgaria, the IBM representation is merely a sideline of state company Software Products & Systems Corporation; the last manager of the unit was promoted to run the outfit's education efforts -- passing on the wisdom he gained at IBM both to SP&S's own people and to its customers.

In Czechoslovakia, IBM has just concluded an agreement to supply a mainframe to the local university community (as in Poland), and has rapidly increased its presence, opening three new branch offices outside Prague since June 1 and expanding to 21 people from less than half that (with another 15 likely by year-end). Where do all these people come from? "We have a buffer of people who have wanted to work with us for some time," replies office manager Jan Dohnal -- some from customers and others from universities or private companies. (IBM always takes care to get the consent of the employers when employees come over from customer sites.) They get sent to Vienna or London for training not just in technical matters but in business skills.

COMPAQ: HOW TO THINK LIKE A LOCAL

First step: Be born there.

Compaq has just signed with four dealers in Yugoslavia, its first in Central Europe with others likely to follow. We visited several of them, and found them the usual motley crew of entrepreneurs, but of uniformly high quality. Compaq is following its traditional policy of selling only through dealers (see Release 1.0, 90-5) -- although the definition of dealer is fairly broad.
in some cases. The man who runs Eastern Europe for Compaq, Zelimir Ilic, is Yugoslavian-born, while second-in-command Matias Rajkay comes from Hungary.

Not just an affirmative-action program, this is the way to do things. Even more than in the West, where Dun & Bradstreet reports and formal criteria get in the way, business is based on personal relationships and understanding. We're not talking just about friendship and long dinners, however, but also about people's abilities to understand the markets they're entering. Time and again, people told us that they knew each other's track records. Especially in a world where most businesspeople are likely to come out of institutes or large government companies where individual contribution was both discouraged and hard to measure, personal knowledge of people is vital. We heard the refrain again and again: "We have lots of people applying to be distributors/dealers/salespeople/third-party software houses. We know which ones are good." An entering company may lack that knowledge, but it's one step ahead if its representatives know the local language -- and another step ahead, like Compaq, if they know the local people.

Compaq faces the challenge of selling a high-end, high-priced product line in a cost-sensitive market -- but that's nothing it hasn't faced before in the West. The education process may be a little tougher, but from what we can see, the company has acted wisely in picking the people to carry it out.

APPLE: MACS FOR THE REST OF THE WORLD

For a variety of reasons, including former CoCom restrictions on the 68000 that powers its Macs, Apple until now has been fairly inactive in Central Europe and the Soviet Union. However, the company has sent people over on a frequent basis, especially to the Soviet Union; John Sculley has met Gorbachev and is on good terms with chief science advisor Evgeny Velikhov. Apple is now opening an official office in Moscow, and a number of Mac-based projects are starting up in the USSR, including a Mac-based retail distribution network called InterImpulse (see Release 1.0, 90-7), which received its joint venture registration early this month. Others include a publishing venture with the Academy of Sciences, and the growing presence of Alpha Graphics. But altogether Macs in the USSR probably don't number more than 1000.

In Central Europe the installed base is even smaller, but the company has just signed up distributors in Hungary and Czechoslovakia, and is opening an office in Poland. Each faces a virtually empty market with a machine that should be easier to train people on than its competition, but that costs at least twice as much. With the proliferation of small businesses, all in need of business cards, advertising, spec sheets and the like, desktop publishing services are likely to be a good business for many budding entrepreneurs. They will gradually give way to inhouse Macs, providing a whole new market for support and expertise -- and for new software.

Graphisoft: A beneficiary of CoCom

Graphisoft, Hungary's first Mac distributor, is one of those rare companies that has managed to make a business of selling software in the West -- and more than that, it does so under its own name. Founder Gabor Bojar worked at a state geophysics institute in the late 1970s, but left to start his own consulting company in 1980 when the institute declined to do further work on
the modeling tool he had built on its seven-year-old HP computer with 186K and two tape drives of 99K each -- but a superb graphics display and a plotter. He and a student set up shop, finding jobs abroad for hard currency, especially in West Germany.

Their lucky break came when the state power ministry got into trouble trying to install a new nuclear power plant based on Soviet designs -- but with a number of incompatible updates. The project was already three years late, says Bojar, and none of the pipes fit together in this complicated three-dimensional structure. The ministry needed help, and it solicited bids for some engineering assistance. There was existing technology in the West, but it was out of bounds because of CoCom (and was horrendously expensive anyway). Competitors, as he recalls it, were Szamalk, Videoton (see Release 1.0, 90-5), SzKI, the Technical University of Budapest -- and two-man Graphisoft. "We had one hope of winning," says Bojar, which was to finish the software before the six-month decision period was over. Six months later they had done the job, renting the Geophysics Institute's computer to use at night and producing some 300 engineering drawings. The Ministry used them to prove its point -- that the Soviet plans were inconsistent -- and paid Graphisoft $30,000 for the plots. (The ministry had no computer either, so Graphisoft kept its software.)

Fit to use but not to sell

That was 30 times Graphisoft's $1000 in start-up capital, and funded the company for the next two years. It took the software to a Munich trade show to negotiate a deal with a hardware vendor, but had little success. "We asked too much," says Bojar now. "We didn't know the difference between a program and a product you could resell." But eventually he and his partner won support from Apple in the form of a loaner to use to rewrite the software for the Lisa. They showed the product at the Hanover Fair in 1984 to rave reviews -- but the Lisa itself was a failure. All told, they sold 14 copies -- ten to an Italian firm and four in West Germany. But that was enough to keep them alive through to the Mac version.

Now with 50 people (30 developers), Graphisoft sells through a variety of re-publishers (a cross between publishers and resellers who handle localization as well as local marketing) throughout Western Europe, but there are few Macs and thus no market in Central Europe or the USSR. Its products include ArchiCAD for architects, topCAD for mechanical engineering, and PlotMaker, a layout program for CAD drawings (cf. PageMaker). Sales reached 2000 units last year and should hit 4000 this year, Bojar says.

One of the more businesslike people we encountered, Bojar recognizes the handicap Graphisoft suffers by having no domestic market (cf. Michael Porter, Release 1.0, 90-5), and thus little direct feedback from customers. Accordingly, he decided two years ago to enter the US market directly. After a series of misadventures, Graphisoft has established a five-person office in South San Francisco. The goal is to set up a professional reseller network in the US, and to support them and customers directly. Sales aren't yet up to expectations, but the dealers and 200 customers are satisfied and providing the feedback on enhancements and positioning that Bojar was seeking.

Still, there's a better way to solve the problem of no domestic market, and Graphisoft is about to do so -- by signing up to distribute the Mac. Graphi-
soft R&D will continue to develop software and sell directly to its customers in Hungary and the US, while Graphisoft Trading will be a distributor, setting up and supporting a network of dealers in Hungary, including Novotrade with several stores (see Release 1.0, 90-5) and Sztaki, against whom it probably bid for the Apple business. By concentrating on desktop publishing and engineering, Bojar hopes to sell 1000 Macs the first year. That will soak up some pent-up demand, he acknowledges; the second year is likely to be tougher than the first.

Technical & Information Service: From typewriters to clones to Macs

Playing a similar role in Czechoslovakia will be Technical & Information Service, another, more recent software start-up in Prague. "Last year we had 15 programmers and two businessmen," says founder Ivo Burget, 36, who looks a bit like Mick Jagger in a rumpled suit. "Now, we still have 15 programmers, but we have 20 businessmen." The company started informally a year ago when a group of programmers left Czech Technical University to form their own co-operative, and became a private firm last May as soon as the law allowed it.

Until recently, the company focused on reselling pc clones and providing software for them, primarily systems software for networks based on NetWare, dBASE applications, accounting and other day-to-day applications. The company also provides user training and sells documentation for 20 Western packages in Czech. It's up to the customers to get the software themselves, since TIS is not a dealer. More of them are doing so legitimately, notes Burget, for the usual reasons -- reliability, safety, honor -- but rarely more than one to a company. TIS, for one, buys its dBASE from Programmers Paradise, a US mail-order house with better prices (but only English versions) than anything locally.

But with the Mac business, TIS should grow rapidly. The company has plans to open an Apple Center with 20 Macs on a main street in Prague by September. It has no Macs now (instead, we saw an aged Underwood upright typewriter as well as a pc clone in Burget's office). It will go after the typical Mac applications -- publishing, multi-media/training, newspapers -- and government, which needs them for computer-illiterate administrators and has the money, unlike most new businesses. Also, if it can find such a package, TIS is eager to localize and sell an industrial-strength Mac accounting package to meet demand that is sure to grow as other groups follow its example and form private companies. Localization of accounting is more complex than, say, localization of word-processing, because you have to modify the content as well as the language.

TIS will sell Macs for crowns, converting the funds to dollars to pay Apple through channels it knows; Western firms want to invest in Czechoslovakian real estate right now for obvious reasons -- and for the first time, the law allows them to.
Most companies in Central Europe do custom software work because traditionally there has been no market for packages for a variety of reasons. One, computers tended to be used for serious business -- engineering and industrial design, accounting, payroll (keeping track, not issuing checks, since people are still paid in cash), inventory management, but not "personal productivity." When salaries average a few hundred dollars a month and computers cost thousands, personal productivity is less of an issue (maybe those salaries could rise if it were). Two, the market is too small to make it worthwhile to develop a whole package on the quality level of, say, your run-of-the-mill $200 word-processor sold in the US, let alone MS-Word or WordPerfect. Three, the market just isn't used to paying for horizontal packages. When we asked someone in Poland what a typical word-processor would cost, and he smiled: "I don't know. I have lots of friends." Companies may buy a single copy of a package and use it throughout a company, but multi-unit sales to a single customer are extremely rare.

And finally, folks in the East want to buy from the West. After decades of looking over the fence at the greener pastures of the West, they don't want to settle for home-grown now that they can buy from abroad -- even when West isn't best.

But there are some counterexamples. For instance, 10-person Software602 and its Text602, Czechoslovakia's leading word-processor with 8000 copies sold at 3000 crowns each ($100) -- and doubtless many more copied. T602 is WordStar-like, with keyboard commands, but it's not a clone and has additional features such as indexing and screen display of underlines and boldface. In the fall, T602 will incorporate a spell-checker developed by Software Slusovice and will cost 4000 crowns. Also this fall, Software602 will launch Calc602.

The name comes from the company's position as unit number 602 of about 1000 units of Swazarm (Union for Cooperation with the Army), a giant youth organization that sponsored a variety of activities such as parachuting, orienteering, motorbike racing -- and computing. Swazarm has lost momentum, but it still has substantial resources spread among about 1000 units. Unit 602, the country's biggest computer user group, was developing software for hobby machines such as the Spectrum in the mid-80s; in 1988, three member/leaders developed a word-processor for the pc. That was T602, which they decided to sell to help fund the unit's operations. This casual effort paid back handsomely, to the tune of 20 million crowns ($500,000) last year, and helped Software602 buy its dowry of 20 computers. The "company," like its peers, is an entity of uncertain legal standing; T602 co-author and company chief Richard Kaukchy and his colleagues want to take it private, but the way is unclear. Regardless of who owns it, the funds are there for Software602 to open a software store (Shop602?) where it will sell only its own products at retail. Until now, the products were distributed (like almost everything else) by giants such as Software Slusovice to other giants; now smaller outfits are coming into the act as both sellers and customers.

CompuDrug: Finding a niche around the world

CompuDrug is a model of success for Hungary, and indeed founder Ferenc Darvas was profiled in John Kiser's 1989 book "Communist Entrepreneurs" (and in a subsequent Wall Street Journal feature controversial for its closeness to the
book). Darvas worked in the pharmaceutical industry in Hungary long ago, but had frequent run-ins with the authorities because of both his high-class, intelligentsia parents and his own stubbornness and refusal to be ashamed of that background. In a final insult to a culture of equal results, he received royalties from a patent on a drug he had developed. In the mid-70s he joined the computer center of the Ministry for Heavy Industry, where he had a little more freedom and discovered artificial intelligence. As the domain expert, he and a couple of computer people developed an expert system for drug design.

In 1983 Darvas founded CompuDrug, which develops and sells a variety of content-laden expert systems for analysis of drug interactions, design of drugs (by analysis of desired or undesired effects), and environmental assessment. The company now numbers 35 people, seven of them family members. It also has a variety of spin-offs, with more family members, doing everything from glare-reducing glasses (a well-known best-seller in Hungary), to computer cleaning kits. The spin-offs were partly to give each unit its own identity and incentives, says Darvas, but also to make sure they retained the flexibility and quick response time CompuDrug started with.

The firm isn't really part of the software "community," since most of its sales are to hospitals and research institutes and major drug and chemical companies, and those mostly outside Hungary. However, it's an excellent example of the rewards to persistence and doggedness, and of the exportability not just of software algorithms but also of knowledge and scientific techniques that are not culturally sensitive. Biochemistry is (mostly) the same the world over. On the other hand, CompuDrug is now trying to raise money to expand further, but the process is slow; investors are still nervous about investing in Hungary, the meaning of the numbers is unclear, and a lot of people would rather buy drug factories than software for designing drugs.

**USSR & Bulgaria lead the way**

Sales of local packages are slightly more common in the Soviet Union, where the potential market (even with piracy) is larger than in any single Central European market, and resistance to English-language applications for end-users is greater because of alphabet differences. Furthermore, the Soviet Union is more geographically isolated and has a large development community.

Finally, the Soviet Union has relatively established distribution channels of companies such as Interquadro and JV Dialogue (see Release 1.0, 90-5) -- although which is cause and which is effect is hard to tell. Successful developers of packages include most notably ParaGraph, with a stable of best-sellers, and Interquadro, with its own office-automation software. There is also a great variety of expert systems, games, translation packages and other products which we will cover at greater length in the future.

Aside from its lack of distribution channels (a big difference), the situation is similar in Bulgaria -- which also sells a lot of computer and software product to the USSR. One notable success in Bulgaria itself is QR DOS, a package from SP&S (below) that provides help in Bulgarian for DOS users. SP&S has sold about 23,000 copies at 100 Levas ($20 to $80, depending on whether you use official or black-market exchange rates) each. There is a market if you price right!

*Release 1.0*  
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BULGARIA: SHORT ON BUSINESS, HEAVY ON SCIENCE

Commercially, Bulgaria is the least developed country we visited, but perhaps for that very reason its software community is among the most advanced (see above). Because of the dearth until now of small businesses, much of the work is either custom systems for government outfits, or development tools and scientific or graphics packages, frequency for the Soviet Union, to which Bulgaria is a big supplier of both hardware and software. "We're sophisticated here," says entrepreneur Tania Boyagieva. "We produce boards like buttons. We produced Apple [clones] in 1982, and pcs in 1983, but 90 percent goes to the Soviet Union." The New York Times just cited the Bulgarian Academy of Sciences as the developer of a 576-megaflop supercomputer. The software market per se is limited not just by software "sharing" and lack of machines, but also by technical people's inclination to do everything themselves once they have DOS and a C compiler.

In January 1989, Bulgaria issued a new law (Decree 56) providing for private companies, ending the government's monopoly on foreign trade and generally allowing for the development of private enterprise. The mechanisms for all this are still unclear, but small firms are springing up and large firms are organizing themselves into parts that could be spun off.

The major commercial software house is Software Products and Systems Corporation, a giant state-owned combine with 1700 people that has been profitable by its own account and growing since it was assembled from a group of smaller companies in 1984. It reached revenues of $20 to $80 million last year, depending on how you figure exchange rates. It has 20-odd subsidiaries doing everything from building CASE tools and selling and supporting IBM equipment, to building add-in boards (the fab-line water system ends in a fish pond as an indicator of its environmental soundness). It also owns 40 percent of Novintech, a Soviet-based joint venture that's an umbrella for a hundred-plus computer-oriented small enterprises throughout the USSR.

Right now, the management of SP&S and its many parts are trying to adjust to a rapidly changing world. The company has ploughed its profits back into "social development" such as cafeterias and company housing, and into its own expansion. It is building an impressive new headquarters complex near the center of Sofia, using Polish construction crews and materials from Poland paid for in computers and software. Overall prospects for business are good as the Bulgarian economy opens up, and there's the chance to take many of SP&S's parts private, either as local software houses or as product firms. With a limited home market, SP&S has learned to market more effectively than companies based in larger home markets. About 65 percent of SP&S's revenues come from exported goods and services, including 30 percent to the USSR.

Among SP&S's units is Interprogramma, a 200-programmer research institute owned in a joint venture with the Soviet Ministry of Electrotechnical Industry and Instrument-Making (MinElectroTehkPribor). Its products include a sophisticated mainframe text database, more than just an index-and-retrieval system, which manages documents as objects with structure and hierarchy:

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3 Bulgaria as a whole exported 23 percent of its GNP last year, vs. 20 percent in Poland and the low teens or below elsewhere in Central Europe.
Multi-C, a hierarchical development environment for the C language that lets you manipulate and edit your code at four levels; and GrafCAD, a CAD package for the PC. It also has some high-end modeling tools and, atypically, comprehensive brochures for each of these.

Many of SP&S’s other divisions sell or use this software to provide custom systems for customers. They also have their own products, such as MULTIPRO, a CASE tool that generates COBOL, C or Pascal. Another unit runs a training company (managed by Christo Georgiev, who earlier ran the IBM representation office) which trains 5000 professionals a year. It will shortly open a modern training center in Plovdiv (Bulgaria’s answer to Silicon Valley) with 50 classrooms and a 200-bed residential complex.

The smaller guys

One of the most technically advanced companies is the Centre of Ocean Engineering, a hotbed of technical activity now 51-percent owned by its employees; the Bulgarian Shipbuilding Industry Corporation and the Technological Centre of Marine Resources still own the other 49 percent.4 The company designed and assembles its own line of 16/32-bit VME workstations, and is now working on a high-performance real-time data acquisition system based on an 18-megaflips array processor in conjunction with the Bulgarian Academy of Sciences. The customer is in the Soviet Union. COE also produces technical software and systems for shipbuilding and seismic exploration, including remote-control imaging, expert systems and robots for modular underwater vehicles (think of the movie "The Abyss"). It is co-sponsoring the Black Sea Conference on Ocean Engineering in seaside Varna this September.

Since cars are rare in Bulgaria, so are garages. Most of the start-up firms seem to work out of bedrooms or attics. They include Deltron, in the home of founder Dobromir Dobrev, formerly automation department director in the Bulgarian Association of Electronics, a consulting group. Deltron is a custom software house which will build its own line of modems in response to a customer order. Dobrev knows how to find the factory and staff it with qualified engineers to get the requisite quality cheaply, he says. (The factory's usual staff can't be relied on, he says, but even with overqualified people it's cheaper to do it this way than to buy from abroad.) The founding group of five includes Stayko Staykov, moonlighting from a job in a state trading company, dealing with computers. (Does Staykov's boss mind? Not really. He sells real estate on the side.)

Another start-up is Decart (originally Descartes). Its first product was Descartes, for 3D CAD and modeling ($1000); the line now includes Movies for animation with 3D objects ($1300). The firm has sold about 200 copies since it was founded last spring by eight professionals from the mathematics and informatics faculty of Sofia University. "We have good contacts with student programmers," says co-founder Boris Bekyarov. Decart plans to open a shop in downtown Sofia shortly, where it will sell its own software in space co-

4 The new brochure is a monochrome copy of the old one, with the ownership figures neatly changed and a new block representing the staff members delicately inserted. What a tale it tells -- but one co-founder Kostadin Yanev doesn't discuss much because it's still a sore issue with his co-owners.

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leased with a pc/office-equipment seller. This will be one of the first real computer stores with a storefront in Bulgaria, where your average customer is hardly an impulse buyer.

COMSIC (for COMputer Services and Information Consultancy) is ready to do anything in business or educational software for anyone, and already has contracts with Swan Consulting (a training specialist) in the UK and with Ernst & Young. COMSIC also does a fair amount of general business consulting and arranges local activities for Western business people. COMSIC founder Boyagieva works in computer-aided training at the mathematics institute at Sofia University and has kept her job. "With all the uncertainties about pensions and insurance [and things in general], it's better that way," she says. Her husband, Ivan Todorov, is general counsel to COMSIC and has played a role in advising the government on its new business policies. He also represents the Lego company in a fight against a Bulgarian company that is allegedly infringing the Lego copyright -- and has helped to develop Bulgaria's new software copyright law. In this connection he works with COMSED, an educational software company that works with Lego and develops software for electronic toys, among other projects.

Other companies include Infosport, which represents Microsoft and is talking with Ashton-Tate. It is the computer arm of the government sports organization, an area to which Communists have always devoted ample funding to support national pride. Comsyst, a spin-out from the Institute of Industrial Cybernetics and Robotics of the Bulgarian Academy of Sciences which makes boards and instruments.

CZECHOSLOVAKIA: NEW RULES AND NEW ROLES

Prague is one of the most enjoyable places to visit in Central Europe. While business has been relatively unfettered in Hungary and Yugoslavia for some time and people have grown realistic about the problems, in Czechoslovakia things are still pretty much an adventure. The "Velvet Revolution" took place in November, and a new law allowing small private businesses took effect in May. New companies are sprouting up and spinning off all over the place, and people are excited about their prospects. None of the laws are settled yet, so people rightly value experience and relationships more than legal or commercial creations. The downside, as state-owned companies such as SPS and Zenitcentrum are discovering, is that you may be able to take your company away from the state, but your programming team is also free to take itself away from you.

The software companies we met in Prague were descended, variously, from agricultural cooperatives (Software Slusovice and Dialogue, related to Moscow's JV Dialogue), an international student organization (PC-Net/Kasst), a writers' union (SPS), a Party youth organization (Zenitcentrum), an army youth organization sponsoring leisure/club activities (Software602, page 21), the government distribution system (FORS), and a giant government construction firm (Algo). Two were spin-offs from these: Alwil from Zenitcentrum, and Abakus from SP&S. Inorga, an Autodesk dealer we did not meet, is an arm of the computer institute of the ministry of metallurgy and heavy engineering. Finally, there is a genuine start-up with people from a university, Technical & Information Service (page 20), the new Apple distributor.
In most cases, the spin-offs or units have a ready customer base, but compe-
tition should make life more interesting (and more pleasant for customers) in
the years to come. There are now enough genuine start-ups (and there will be
more) to steal customers away, and newly created small firms coming on stream
as customers.

PORS, for example, provided data-processing services to all the country's
retail and wholesale operations, through a huge 3500-strong workforce includ-
ing 20 subsidiaries and 600 programmers. They use almost 100 IBM 4300 clones
from Czechoslovakia and the Soviet Union for batch processing as well as four
NCR System 10 mainframes for inventory management. Now the firm is moving
forward to UNIX. "We were a monopoly, reflecting the world around us," says
sales manager Milan Razga, "but now we have to change with our customers.
They used to just send us paper, but now some of them are gaining experience
with pcs" which they buy from other vendors. As a unit of a large government
organization, PORS was able to bypass the state trading companies, so it al-
ready has relationships with suppliers such as NCR for whom it now aims to be
a reseller. It may get into distributing pcs just as its own structure goes
from a giant centrally managed company to a holding company of 20 or more
self-sufficient units -- one for each branch.

Unlike Hungary, Czechoslovakia doesn't have a lot of computer stores yet, but
a number are slated to open. Aside from TIS's Apple Center and Software602's
own new retail outlet, PC-Net is about to spin off from its parent to join a
much smaller, private firm, Kasst (founded by a former PC-Net manager), which
sells office equipment; together, they will open a store in downtown Prague.
PC-Net, which began as the computer arm of the International student union,
is a reseller with lots of experience selling and supporting Novell equipment
and software. (It buys the Novell products legitimately from dealers in
Austria and Germany and would like to buy directly from Novell, but hasn't
yet managed to establish contact, says general director Vitezslav Jelinek.)
He readily admits that not all his customers' copies are legit, but he sees
attitudes changing and wants to lead the way.

The establishment I

Software Slusovice is Czechoslovakia's largest pc seller (competing with ROCC
Computers of the UK, which imports Commodore clones), and also runs a sizable
custom and packaged software operation. Based in the farm town of Slusovice
in Moravia 200 miles from Prague, it is part of the Slusovice agricultural
co-operative. Established during the land "reforms" of the Fifties, it (like
many other co-ops) started diversifying in the Seventies, entering such
businesses as farm equipment, hotels, department stores and, of course, com-
puters. It gets more than 90 percent of its profits from these sidelines.

Last year it assembled and sold 10,000 PC-AT clones and 1000 386es, mostly
using components from Singapore and Taiwan. The company also represents Mi-
crosoft, Borland and Novell; last year it sold 1000 copies of dBASE IV and
several hundred of Framework, and 300,000 DM worth each of Borland and Micro-
soft products. It sells Czech documentation for these products and others,
and a wide range of books. It also develops products for resale, notably the
spell-checker for the next version of Text602, and AModel, the 3D modeling
package picked up by Autodesk Ltd.

All in all, this has been a good business -- especially in a market that used
to discourage other entrants and where the competition mostly sold imported

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pcs for hard currency. Now, says Richard Havlik, head of the foreign co-
operation department, smaller private companies also selling pcs for crowns
have shaken SS from complacency and forced it to lower its prices: "Until
November we were so overloaded with people hungry for computers we didn't
worry about business issues." But in June the co-op spun off most of its
computer operations into self-standing hardware and software units, with 100
and 80 people respectively. They are still owned by the Slusovice co-op,
which doesn't want to sell them, but there's a gleam in Havlik's eye that in-
dicates he'll win his independence one way or another.

The establishment II

While Software Slusovice is the premier vendor of products, Systems and Pro-
gramming Service is a large contract programming firm, with a staff of 60 and
a roster of 4000 programmers for hire. It started in 1984 as an arm of the
International Union of Journalists, a government-sponsored guild, and per-
forms a wide range of project work for large customers. In addition, S&PS
was the Ashton-Tate representative, with responsibility for localization, but
pretty much lost that business when founder Miroslav Cimburek departed last
spring to found Abakus, a private share-holder firm -- one of the first under
the new law. (Both S&PS and Software Slusovice still resell A-T products.)

S&PS competes with Zenitcentrum, founded three years ago by a Party youth or-
ganization devoted to the development of young programmers and the spread of
computer literacy. Zenitcentrum, grown rapidly to 300 people and seven bran-
ches, used to be one of two authorized training centers and dealers for Auto-
desk in Czechoslovakia, but it lost most of its Autodesk staff when the group
responsible left to start Alwil, yet another private systems house. But
Zenitcentrum has regrouped and is hiring replacement staff.

Much more focused, primarily on turnkey systems for surveying and civil en-
gineering, is Algo, with only a dozen people. Its general manager is Josef
Havas, a software engineer who left PragoProjekt, a giant state construction
firm, a couple of years ago. Once he had seen the world while working on
construction projects in places like Baghdad, he says, "I wanted to leave
this cage." Having established his independence, he then came back to Prago-
Projekt to help it start a joint venture with Digiplan, a Swiss engineering
company. The new stockholder company took "some of the best computer ex-
pertise in Czechoslovakia" from PragoProjekt, he says, but sells mostly to
Digiplan customers. Right now, Algo is working mostly on pcs, with Inter-
Graph's MicroStation software, but Havas is eager to move up to UNIX if he
can find a supplier.

The story thus far...

In short, as the state allows private businesses, a lot of the larger firms
are discovering that there is little to hold them together. They are rapidly
disintegrating into smaller groups. Those who leave generally have some
definable focus or skills to ensure them a market; the liabilities and the
people with less marketable skills (or less marketing skill) get left behind.
On the other hand, many of these larger firms have the resources and customer
bases that the smaller firms still lack. It may be that with the incentive
of a clear plan for private ownership and some encouragement (and products)
from outside, they will be able to leverage their existing capabilities.
GERMANY: THE MARKET AT WORK

The former East Germany no longer belongs in "Central Europe," but here's some follow-up on Ulrich Zimmer of ORT, whom we visited last May (see Release 1.0, 90-5). At that time, he was wondering how to buy his 80-person software firm from the state, which owned it. A second possibility was simply to leave and start over from scratch, the path he has now taken with nine partners from ORT.

"There were too many problems that we would have kept along with the company," he says. Now, with only ten high-quality people (including six programmers and two hardware specialists) who are all owners, each has a tangible incentive to work hard and avoids the burden of carrying those left behind. (Zimmer’s deputy, who was not invited to join the team, will manage the old ORT, says Zimmer, but he was unhappy to see ten of the most motivated, aggressive people leave.) Zimmer’s new firm, Software direkt, will concentrate on selling and supporting standard PC packages from vendors such as Microsoft, Software Products International (Open Access) and SCO (Xenix).

Software direkt will also sell and support IBM PCs. That came about partly through a stroke of luck, says Zimmer. In July, ORT had a visitor from SES, Senior Expert Service, a sort of West German Peace Corps of retired managers who consult at low fees for new firms in developing countries. This particular senior expert, Guenther Simons, offered valuable advice on marketing and bookkeeping. But best of all, he had contacts. He had been an IBM marketing executive in Dusseldorf for 30 years, and put Zimmer in touch with all the right people. (Zimmer would also like to handle Compaq as a foundation for UNIX, but we suspect that one line is enough for now.)

The company will start this September with 100,000 DM in funding -- 75,000 from a bank and 25,000 from the 10 partners. They will rent space that ORT was using, and inherit three phone lines (perhaps the most important asset -- two for voice and one for fax).

Bypassing the middlemen

We caught up with Zimmer as he was returning home from a trip to Seattle to talk with software vendors directly. In East Germany, he notes, resellers tend to come at the end of a long distribution chain -- with four people taking a cut before they reach retail. Most software companies already have channels in West Germany, but Zimmer hopes to find a few newcomers who will deal with him directly.

All in all, Zimmer is an individual, but his story indicates how quickly the market starts to work once you let it. Zimmer’s trip to the US was his first. His band of ten people will probably create as much value within a year as the old firm did with 80. The question, of course, is what happens to the other 70? Ten have joined two joint ventures with West German firms in consulting and hardware service, 25 have joined a West German processing-services bureau called RZS (which will take over much of ORT’s clientele), and 20 have found other jobs, leaving Zimmer’s deputy at ORT with 15 people. With luck, all these people may work harder and more effectively in the new firms than they did in the old. Zimmer is surely right in his implicit Weltanschauung: It may be possible to change or revitalize people one by one, but you have to start over to create a new organization.
Poland: Bread First, Software Later

Of the countries we visited, Poland has the most economic troubles short-term. But the long-term prospects are good; you might say Poland is going through a curative fever while other countries are solving their problems more gradually -- or perhaps not facing them yet.\(^5\) In Poland, there simply is no money for people to buy software, and until recently there hasn't been much hardware for them to run it on. The stores that do sell hardware (low-end clones) don't offer software or show much interest in it. We did visit one software store, Intersoftland, which will copy software while you wait. (The price list shows the prices for documentation only, ranging from 10,000 to 590,000 zlotys.) Though the zloty is freely convertible into dollars (9500 per dollar), Poland is unusual for Central Europe in that even the local currency is in short supply.

There are about 200 computer dealers in Poland, says one of their number -- Marek Greniewski, a former scientist who founded Logika three years ago. Of those, only about ten sell custom turnkey systems; Logika is one of them. Others generally throw in copied software to enhance the value of the machines, but they don't provide much support. And even the systems houses tend to use a single copy of a package to support a whole programming team -- if not a customer base. Thus the paying market focuses on custom software.

Logika's big customers include the state social security administration, for which some of its nine programmers are building a benefits-administration system using B-trieve and NetWare and C. It also has a contract from the Ministry of Industry to give training in the use of computers for business and financial management to people in the top 200 companies to be privatized by the government. Logika also runs a computer trading business, importing mostly Taiwanese computers for sale both in Poland and in Czechoslovakia and Hungary. And it supports what it sells, with technical and maintenance services out of its office in the old part of Warsaw, and 48-hour hardware service countrywide. Logika has also just signed to distribute PertMaster Advanced from PertMaster International of the UK, which it will resell with hardware copy-protection. Greniewski hopes this is just the beginning of a broad selection of software packages for resale. He sees a lot of customer interest in multi-user systems, and would like to start selling UNIX systems and applications. He also wants to find some good productivity tools; the issue isn't saving programmers' salaries, he says, but overcoming his inability to find good ones.

A hotbed of database high-tech

However, it's not all that bleak. In fact, we found one high-end database company, Zeto-Rodan, doing leading-edge work in database design tools and methodologies and object-oriented systems. Its founders have led world-class development efforts at CRAI in Italy and the UN Statistical Center. They spun the firm off from the government computer service firm Zeto: "We went

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\(^5\) Even though the Warsaw Marriott was by far the finest hotel we stayed in. We thought the publicity was all hype but no, everyone actually smiled. In both Hungary and Czechoslovakia, by contrast, when we tried to check out the clerks told us to come back when it was more convenient (for them).

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to the managing director and said either you fund us to leave, or we leave anyway," says co-founder Witold Stanisziskis. The government owns 3 to 4 percent, but the rest belongs to the employees.

A group of longtime database specialists with about 30 people in all, Z-R has done work abroad for customers such as the Kuwait Ministry of Planning and French consulting firm Progrespace, but recently lost a substantial bid for the Polish tax system to Bull, even though Z-R’s bid was substantially lower. (The free market has losers, too.) The firm works with Oracle, Adabas and other databases as well as its own Rodan, a mainframe Codasyl system extended to support the relational model and SQL. It is also building its own client/server object-oriented multi-media database for DOS and Xenix, but it could use help marketing it abroad.

Stanisziskis’ work with CRAI resulted in two database-related products currently marketed worldwide by DBMS Inc. Z-R is looking for a closer relationship with a database supplier, but for now most of its revenues come from contract work for big clients. It is also angling for support from IBM as an approved software vendor, and is in discussions with McDonnell Douglas Information Systems. Revenues were 4.5 billion zlotys ($450,000) last year.

YUGOSLAVIA

Never part of the Warsaw Pact, Yugoslavia is quite well-developed economically, but it is increasingly troubled by political frictions among its constituent republics. The north, Slovenia and Croatia, is within easy reach of Italy and Austria and even West Germany, and has relatively strong ties with them both economically and politically. With about 30 percent of the country’s population, the region has 60 percent of its pcs. The less developed south, including Serbia and the capital city of Belgrade, still lags behind.

This disparity reflects historical differences left mostly unchanged by the Communists’ economic policies, which stressed state (or "society") ownership but left most control in local hands.

Whereas in the Soviet Union, say, the Party seemed to own and control everything, in Yugoslavia nothing owned anything. The difference is subtle, but it has resulted in a culture of midsized firms. They operate fairly independently but, until recently, without much entrepreneurship or concern for profitability or growth. The prospects of private ownership of substantial firms still seem more distant than in Poland, Hungary or Czechoslovakia, and right now the government (or factions within it) seems to be reconsidering its liberalizing measures as various national groups battle for supremacy. Overall, the big issue here is politics and nationalism rather than economics, and there’s less scurrying to start-ups than elsewhere in Central Europe. Companies tend to compete in their region rather than nationwide, as in the two parts of Czechoslovakia but more so.

In the past, no one got the profits (or the incentives to make them), but company managements were generally in control as long as things went reasonably smoothly. If you did well, you could expand your power; if you did poorly enough you could get into trouble. (This is just like large US corporations, where managers have little direct stake in the financial success of the firms they run. However, US salaries are generally more dependent on performance than in Yugoslavia -- and more attention is paid to profitability.
In the first place.) Foreign trade was carried on by large state trading companies, and local computer makers operated in a relatively protected market. Minis are more prevalent here than elsewhere, but government protectionism rather than CoCom limited their number.

Newgoslavia

Now all that has changed. The dinar is convertible, pegged to the German mark. Typical pc prices have dropped in the last couple of years from 12000 DM to 3000 DM, or from $7000 to $2000 (after allowing for a devastating inflation that lives on in four extra 0000s on most banknotes), and clones are common. The state's big electronics company, Iskra, has now more or less disintegrated, leading to erosion of market share for DEC, which it represented. (DEC is now gaining share back through other channels. IBM fared better with its partner, software/service-oriented Intertrade, page 16, but even for Intertrade increasing competition poses a threat.)

Growth in the installed base of all kinds of computers makes software a promising business, but custom programs are still generally a better business than packages right now for copyright reasons. Likewise, most vendors prefer to sell turnkey systems rather than just the software, because that way they can get the customers to pay for both. "We sell 500 solutions a year," says managing director Branko Car of Tera in Zagreb, one of the four dealers recently signed up by Compaq and an eager student of US marketing talk as well as of Russian and German.

Iskra and Intertrade are exceptions in a country of mostly mid-sized and now smaller firms. The few we describe below are representative, although at the top end of the quality scale. They are generally more mature than those elsewhere in Central Europe and the Soviet Union; Yugoslavia is the only place where dealers routinely dedicate individuals to telephone customer support -- perhaps because the telephones work a little better here.

Given the base of mid-size firms, there's a profusion of accounting and small business systems lacking in other parts of Central Europe, and a lot of development is done in COBOL. PCs have long been available through trading companies, which don't provide much support, and are now also available to anyone willing to take a day trip north, as well as through an increasing number of dealers with direct ties to foreign vendors.

Tera: Early in, still here

Tera is the closest thing to a traditional dealership, started 40 years ago as a state-owned firm selling typewriters. "We've been around for 40 years and we plan to be around another 40," says Car, who once worked for Siemens and joined the small firm after getting fed up with the lengthy series of

6 There is also a Belgrade state trading house called Interkomerc, which is now looking for a new line to replace the Burroughs/Unisys business it lost ten years ago when a unit called Informatika split off. It still does a big business in electronics and consumer goods, but is now also looking for the software expertise it will need to handle a business computer line. And there's Unis, which handles NCR.
delays and buck-passing in job interviews with a large state electronics company. He has grown the business to $14 million in revenues last year, without much help or interference from the state, reinvesting the surplus in a network of seven branches. The company built its own 8088-style micro and sold 800 of them over the years, but now it resells foreign-made products and has just signed on as one of four new Compaq dealers in Yugoslavia. The Compaq line is attractive, says Car, because it is leading-edge technology and will support Tera’s move to multi-user systems with UNIX.

Tera’s basic business is general-business systems and software on pcs and a line of dedicated smart printers for bus tickets, bank statements and the like. It also sells a dedicated word-processing system with its own software called Ed3 for 4000DM (about $2300). When Tera worked on the LA Olympics with ABC, it got its network up faster than anyone else after a power outage. "We’re used to such things," says software manager Damir Gluhak.

SRC: Better business through chemistry

SRC, by contrast, has a narrower, higher-end customer base growing out of its past as the systems arm of a government chemical outfit in Ljubljana. Former banker Ivan Zerko joined Kemija, the chemical company, to manage its data-processing operations six years ago. The company was an amalgamation of five units to whom Zerko had to sell his services. He acquired a used 4341 to do heavy-duty processing and also built an information center, with standard packages for end-users and user training. Now the company has expanded into the modern building next door, where it runs a cheerful training center.

SRC almost inadvertently became a distributor for ADR’s Datacom, which it originally wanted to license just for internal use. ADR wanted to provide local support, so SRC took on the job. "The first year we did nothing, but the second year we sold four licenses," says Zerko, now general director. For a mainframe package at $200,000 each, that wasn’t bad. The next year, Computer Associates bought ADR from Ameritech, and the relationship ended. "But," says Zerko, "we had gained a good reputation," which subsequently enabled it to earn reseller contracts from SAS Institute, WordStar, Computer Systems Advisers (the POSE CASE tool), Lotus and ultimately Novell and Compaq -- whose machines it started to use when it found that the graphics-intensive SAS software wouldn’t run on clones or even on Intertrade’s IT/PS/2s.

As one of the larger software package resellers in the country, SRC has been active in supporting copyright legislation, and is helping to organize the establishment of an independent agency to foster the application of copyright laws, a sort of Yugoslavian Business Software Association. SRC had revenues of $2.3 million last year and is hoping to reach $3.9 million this year, now that it has started selling Compaq. It has 50 people overall.

Compaq’s other two dealers in Yugoslavia are Mikrohit of Ljubljana and Micro-LAB of Zagreb, which we have not visited yet. Stay tuned...

Unicorn: A node of experts

Unicorn is a free-standing programming house of eleven people -- small and it wants to stay that way. It’s a collection of highly skilled people who design and install high-end network systems for anyone from Adria Airways (the regional competitor to the Yugoslavian national airline) to the state bank.
One current job is for Merkur, a trading company, which needs to network the mainframe in its warehouse to its headquarters and four other locations up to 35 kilometers away, using fiber optics. The company was founded a year ago by three people from the government computer center in Ljubljana with 2000 Deutsmarks and one signed contract for 60,000 DM ($36,000). Once they left, the center had no resources to do such high-end work, explains co-founder Matjaz Lenassi, and so Unicom is picking up much of its business and potential business, with the center's grudging consent (or perhaps envy?).

Unicom distributes for Ashton-Tate and Persoft and is negotiating with Gandalf, a heavy-duty communications equipment supplier. Finding dealers is easy, says Lenassi; since the laws allowed private enterprises about 3000 companies have started up in Slovenia alone. Of those, about half are involved with computers in some way, but only a quarter of that half have more than one person. Unicom earned $500,000 on revenues of $1.8 million in the first half of 1989, says Lenassi.

Belgrade also has Ibis Sys, long a value-added reseller and high-end software house for Germany's Mannesmann Kienzle computers and printers, which it has managed to lead to a winning market position in southern Yugoslavia. Ibis Sys makes a point of its obsession with quality, and proudly proclaims that it is not the cheapest supplier in the market -- a courageous, novel approach. Although it's 15 years old, the company emphasizes hiring and training young employees; overall, the average age is under 30. More than that, says marketing manager Mihail Petreski, "A lot of time we even work on Saturdays!" Ibis Sys has managed to prosper with a demanding customer base of banks and post offices, competing against more powerful government firms. Now, of course, this tough training should enable it to continue to prosper in the even more competitive times ahead. Revenues exceeded $8 million last year, with only about 150 people.

USSR: AN INSIDER'S VIEW

We support intellectual property protection, but we also espouse reuse of good work with due credit. In that spirit, we reprint the following, edited slightly, with full attribution to the author: Eugene Stollberg, chairman of Tor, a Leningrad co-operative working closely with Raima Corporation of Bellevue, WA. We have seen no better or more heartfelt analysis of the damage caused the software industry by the Soviet Union's lack of a market system.

The Soviet market has good potential; however, it's not clear how to make it work. We have a shortage of computers with almost no real domestic manufacturing, but we have millions of people and specialists in the computer industry and a great amount of industrial facilities which are being used with confusing inefficiency. Many skilled programmers' and engineers' groups were hidden in large state enterprises and had no opportunity to offer the results of their activity to the market. We have a very poor system of technical and business information.

So the problems are high and global and I think we cannot solve them without the West and its help. Our present computer boom (the computer business in the USSR provides exchange rates between rubles and dollars higher than any other field of activity) indicates that it's high time to get to work.
...The price of a pc database in the US is approximately 0.2-0.3 of a programmer's monthly salary. Using the present market exchange rate, we pay 3 or more years of a qualified programmer's salary for the same product in the Soviet Union. I think this is the real reason that most Soviet programmers use stolen copies. They are not evil men by nature, but if they are forced to buy for such prices they will go out of business immediately.

The second problem is that Soviet programmers don't feel themselves to be independent software manufacturers that have to respect the economic rights of their peers. They aren't used to selling their products so they don't understand why they need to buy software instruments. When Steve Smith from Raima Corporation entered our office in Leningrad he saw Norton Commander on the screen of the nearest computer and asked whether we bought it. Our answer was honest and negative. "What a pity," Steve said, "if you send him some money maybe he will write new programs for you." Such a conscience is yet unusual for most Soviets.

I think that Western software manufacturers and sellers need to work out a special promotion strategy in the USSR. Maybe it will be useful to propose to current Soviet users to register their illegal copies (deleting non-used copies) and then to legalize copies in use by paying a reasonable fee. Such a fee might be different depending on some conditions (receiving documentation, support, etc.). For instance, ruble payments could go to a special foundation for software business promotion in the USSR, for business-center construction, for translation and publication of documentation in Russian, or for computer magazines and advertising. The owners of the software paid for have no real way to use such ruble funds each separately, but this foundation could benefit them all together in the USSR. A sufficient amount of rubles might be convertible efficiently into assets really valuable for Western partners, such as goods, buildings and business facilities.

Stanching the brain drain

One more problem. We have a big army of relatively cheap programmers and the West has a shortage of such specialists. The standards of living are so different that the brain drain is becoming a problem for us. However, it may be more beneficial for the West to give us orders to develop software here and to invest money in our software business, than to pay labor and social insurance costs for a mass immigration of programmers into Western countries. Payment in hard currency, and the opportunity to travel and participate in projects, job training, seminars and conferences in the West, are good alternatives to the inconveniences of leaving our native country. Certainly nobody pretends to force people to live here or there, but in any case we should offer counterbalanced alternatives.

I think it's high time to choose a group of independent Soviet software manufacturers and to provide them the support necessary to make them really useful for the Western market, both as software developers and buyers for the West, and as distributors and dealers for the East. One form of such aid is assistance in management, marketing and sales organization in our software companies. During our visit to the US we realized that we had good programmers but no real practice in such things as sales, marketing and project organization. I think that the best form would be short- and medium-term training in US software ventures. Practical work inside American business is the only way to get real business skills.
RESOURCES & PHONE NUMBERS

* Asterisks identify people expected to attend the Budapest East-West High-Tech Forum.

<table>
<thead>
<tr>
<th>Name, Organization (City), country code (city code) phone; fax [country &amp; city code the same unless noted]</th>
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<tbody>
<tr>
<td>*Bob &amp; *Ginger Clough, at large, 1 (404) 993-8089</td>
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<tr>
<td>*Miroslav Cimburek, Abakus (Prague), 42 (2) 7909/308 or 309; fax: 795-2246</td>
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<tr>
<td>*Josef Havas, *Karel Stastny, Algo (Prague), 42 (2) 59-06-59; fax: 46-05-65</td>
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<tr>
<td>*Jim Spillars, Apple Europe (Paris), 33 (1) 4901-4901; fax: 4778-0960</td>
</tr>
<tr>
<td>*Bruce Marquart, Ashton-Tate (Slough), 44 (753) 27262; fax: 70787</td>
</tr>
<tr>
<td>*Roman Albrecht, Autodesk (Prague), 42 (2) 367-873 (fax c/o UK)</td>
</tr>
<tr>
<td>*Richard Handside, Autodesk Ltd. UK (Guildford), 44 (483) 303-322; fax: 304-556</td>
</tr>
<tr>
<td>*Petr Petrov, *Ivan Archipov, Basis (Moscow), 7 (095) 924-14-23 or 16-73-64; fax: 923-56-04</td>
</tr>
<tr>
<td>*Kostadin Yanev, Centre of Ocean Engineering (Sofia), 359 (2) 524241; fax (Varna) 359 (52) 823-386,</td>
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<tr>
<td>*Zelimir Ilic, *Matias Rajkay, Compaq (Munich), 49 (89) 92697-122, 92697-206; fax: 914-110</td>
</tr>
<tr>
<td>*Ferenc Darvas, CompuDrug (Budapest), 36 (1) 112-48-47; fax: 132-25-74; Austin office, 1 (512) 331-4222 (Mike Smithing)</td>
</tr>
<tr>
<td>Esther Schachter, Computer Law &amp; Tax Report (New York), 1 (212) 371-5554</td>
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<tr>
<td>*Tania Boyagieva, COMSIC (Sofia), 359 (2) 719-212 or 687-274; fax 759-012</td>
</tr>
<tr>
<td>*Bob Jack, DEC (Geneva), 41 (22) 7969191 fax: 41 (22) 797-2879</td>
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<tr>
<td>*Roger Lang, DEC (Budapest), 36 (1) 1850881; fax: 1669-715</td>
</tr>
<tr>
<td>*Boris Bekyarov, Decart (Sofia), phone &amp; fax: 359 (2) 71-80-24</td>
</tr>
<tr>
<td>*Dobromir Dobrev, Deltron (Sofia), 359 (2) 668291; fax: 668391</td>
</tr>
<tr>
<td>*Zdzislaw Matkiewicz, Dernan/IBM (Warsaw), 48 (2) 694-3735, 694-38-00; fax: 694-5574</td>
</tr>
<tr>
<td>*Gabor Bojar, Graphisoft (Budapest and South San Francisco), 36 (1) 183-4662 or 183-7396; fax: 1834662 (same as phone)</td>
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<tr>
<td>*Mihail Petreski, I bis Sys (Belgrade), 38 (11) 60-96-50; fax: 69-90-81</td>
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<tr>
<td>Elena Asparhouva, Infosport (Sofia), 359 (2) 80-16-81; fax: 88-54-64</td>
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<tr>
<td>*Slobodan Milanov, Interkomerce (Belgrade), 38 (11) 340-301, 342-225, 338-916; fax: 341-447</td>
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<tr>
<td>*Vesselin Spiridonov, *George Krushkov, Interprogramma, part of SPS (Sofia), 359 (2) 80-06-31, 84-181 or 800-631; fax: 88-13-69</td>
</tr>
<tr>
<td>Intersoftland (Warsaw), 48 (22) 29-59-77, 41 Wspolna Street, suite 49 (three blocks from the Marriott)</td>
</tr>
<tr>
<td>*Igor Pretnar, Intertrade/IBM representation (ITS) (Ljubljana), 38 (61) 322844</td>
</tr>
<tr>
<td>*Vitezslav Jelinek, Kasst/PC-Net/(Prague), phone &amp; fax as of September 1: 42 (2) 29-25-12</td>
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<tr>
<td>*Irina Savalyeva, LEGS/JV Dialogue (Moscow), 7 (095) 928-29-82; fax: 265-57-14</td>
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<tr>
<td>*Marek Greniewski, Logika (Warsaw), 48 (2) 635-1461, fax 48 (2) 635-1319</td>
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<tr>
<td>*Paul Robson, *Christian Wedell, Microsoft Deutschland (Munich), 49 (89) 317-050; fax: 317-05-598</td>
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<tr>
<td>*Vanessa Wade, Nantucket (New York/Belgium), 1 (212) 979-1170; fax: 979-1172</td>
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<tr>
<td>*Stepan Pachikov, ParaGraph (Moscow), 7 (095) 200-25-66; fax: 931-06-01</td>
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<tr>
<td>*Spartak Chebataryof, *Semyon Becker, Parallel (Moscow), 7 (095) 287-49-15, 268-55-12 or 946-28-37</td>
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- Application servers.
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September 5-7  *Breakaway 90 - New Orleans. Sponsored by ABCD, for dealers and vendors. With a panel featuring Mike Shabazian, Mike Pickett, Mike Swavely, moderated by Esther Dyson. Contact: Jeff Rosenberg, Computer Emporium, (914) 565-6262.

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September 18-20  Electronic Publishing '90 - Gaithersburg, MD. The premier forum for reporting new research developments. Sponsored by National Institute of Standards and Technology. Call Lori Phillips, (301) 975-3881.


September 24-30  International Technical Fair - Plovdiv, Bulgaria. 1255 Bulgarian and 2400 foreign exhibitors last year, with 360,000 attendees. US exhibits sponsored by Department of Commerce, 1 (202) 377-2645 & US Embassy in Sofia, 359 (2) 884801.


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*GSCW '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.

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Case users group meeting - Scottsdale, AZ. Sponsored by Case Research Corporation. Call Debbie Boren, (206) 453-9900.

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October 14-17 Computer services and communications & information systems seminar - Baltimore. Sponsored by Alex. Brown & Sons. Call Sarah Hess or Molly Hogan, (301) 727-1700.

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October 18 Massachusetts Computer Software Council's fall membership meeting - Boston. Call Joyce Plotkin at (617) 437-0600.


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October 22-24 Electronic Messaging '90 - San Francisco. "Beyond interpersonal communication." Sponsor: Electronic Mail Association. With Helene Runtagh, GEISCO; Mike Zisman, Soft-Switch; others. Call Anne Spence, (703) 522-7111 or send e-mail via AT&T Mail: !ema; CompuServe: 70007,2377; Dialcom: 63:FRD003; SprintMail: EMA; EasyLink: 62886257; iNet: ema.association; GEnie: EMA; Envoy 100: EMA; MCI Mail: EMA/2544290. (Do all these numbers make you long for fax?)


Oct 29-Nov 2 First annual meeting of the Soviet UNIX users' group - Moscow. Sponsored by SUUG; coordinated by the International center for scientific and technical information. Several hundred attendees are expected, including Bill Joy; representatives of the European UNIX Users' Group and usenix have been invited. Call Dmitri Volodin, 7 (095) 231-21-29, or V. Leonas, 7 (095) 120-69-21, or Esther Dyson, 1 (212) 758-3434.


Oct 31-Nov 2 MacroMind developers' conference - San Francisco. Call Scott Walchek or Amy Shelton, (415) 442-0200.

November 4-7 *ADAPSO management conference - Phoenix. Contact: Ellen Kokolakis, (703) 522-5055.

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

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