

Conference Analysis

In-depth reports on leading IT conferences

Business Applications Conference 98

*Presented by Microsoft
September 9—11, 1998
Las Vegas, NV*

Introduction

Business data processing has evolved over nearly 50 years. The first influential electronic computer, the ENIAC, was designed to do numeric calculations, but the ink was scarcely dry on the patent applications when project leaders J. Presper Eckert and John W. Mauchly began shopping around their design for a machine that could process both numeric and business data, the Univac.

Business data processing took off with the conversion of batch punch-card applications from accounting machines to the IBM 1401. From there, we moved to online systems with dumb terminals connected to timesharing systems, PCs connected

to timesharing systems, and then on to client-server applications with graphical user interfaces.

Now, the dramatic growth of the Internet and TCP/IP-based intranets is raising our ambitions. Since computers are primarily communication devices:

- Can we use them to integrate applications *within* an organization?
- Can we use them to integrate applications *between* organizations?
- And can we do so in a way that leverages existing legacy applications like EDI?

Microsoft wants to take us to the next phase in business data processing, and are developing and evolving many products to help us. They have several Web servers, and just released a major upgrade to their Visual Studio development suite.

During 1998 and 1999, they also promise to deliver Windows NT Server 5.0, SQL Server 7.0, Office

2000, and an enhanced Component Object Model (COM+). This conference was an attempt to raise developer (corporate and ISV) awareness of these products, provide technical training on them, and to illustrate Microsoft's vision of the future of business applications.

The sheer magnitude of the event was surprising. There were over 3,000 people in attendance. The onsite registration fee was \$995.

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A New Approach: the Case-Oriented Conference



The conference organization was rather unusual. Instead of the typical keynote talks, panels, and presentations, it centered on an in-depth technical description of an extended case study.

With the help of several independent software developers, Microsoft defined a hypothetical business situation and then implemented ten sample applications. The applications run on Windows, Unix and IBM mainframe platforms, and use software from Microsoft, Baan, SAP, and others. The fictional business situation involves two companies, Fabrikam and Contoso.

Fabrikam is a manufacturing company that sells pump and compressor equipment to the construction and energy producer markets through direct and over-the-counter sales channels. They distinguish between four types of customer based on sales volume, the percent of their business that is made to order as opposed to catalog sales, and their contractual relationship.

Contoso is a high-end "platinum" customer. They buy over \$10 million annually from Fabrikam. Of that, over 80 percent of that is custom-made, based on RFPs. Other customers qualify for lower levels of service, such as engineering and account management and calls from field sales representatives. The lowest volume customers order from a catalog.

The two organizations are very close. Fabrikam minimizes their inventory costs using just-in-time manufacturing techniques that rely on rapid order processing and ten

day purchase forecasts from Contoso. These forecasts are sent to Fabrikam daily, and the company has the right to invoice orders based on forecast figures that are within five days of the present.

The order and forecast streams come to Fabrikam over the public Internet. The Internet is also used send order status change, invoicing, and shipment notices back from Fabrikam to Contoso.

■ **CANdid Comment** ➤ *From CIOs and CEOs to corporate IT planners and consultants, everyone should take note. E-business is where we are and where we're going. —Ed.*

In a situation like this, the boundary between the organizations is a little fuzzy. The orders and invoices are analogous to charge-backs within a single organization, and for some employees, interaction with people in the other company may be more frequent than with those of their own company.

■ **CAN Comment** ➤ *It is interesting that Microsoft has chosen to highlight the high-end customer, Contoso, in this demonstration. Their emphasis is on the situation requiring close cooperation between two organizations, rather than the arms-length relationship Fabrikam has with their catalog customers. This is not Amazon.com—Microsoft is concentrating on business-to-business electronic commerce in this example.*

Fabrikam is an SAP R/3 shop, but they are still using an in-house MVS/CICS application for several

ERP applications. In order to provide an integrated front end to these two back-end environments, Fabrikam has deployed a middle-tier application server for order entry and customer management. This application server is in turn integrated with a sales force automation application, a proposal tracking application, and a sales-readiness intranet.

Contoso is a Baan IV shop. Their corporate purchasing department has deployed a procurement system that enables Contoso employees to easily order supplies from the company's trading partners, including Fabrikam. These purchase orders are securely transmitted over the public Internet.

Contoso's procurement system is integrated with Fabrikam's order processing application server, tying the two companies together with online, business-to-business transactions. Contoso has also deployed a business intelligence system for their purchasing department, consisting of a data mart integrated with several decision support tools.

The conference presented ten major applications involving these two companies. Many Microsoft products were used in development. The case assumed that the following Microsoft applications were available throughout both organizations:

- Internet Information Server,
- Site Server,
- Message Queue Server,
- Windows NT Server,
- SQL Server,
- Transaction Server,
- Exchange,

- Outlook, and
- Windows CE, 98 and NT clients

Throughout the case, application integration was achieved using Visual BASIC to tie COM components together. Say you wanted to develop an email-enabled application, for example, which sent an email to Contoso confirming receipt of a request for a bid.

It would not be necessary to program email capability into the bid-entry system because Outlook has this capability already built-in. The bid-entry program could update Fabrikam's records and use Outlook for the email, as shown in this example:

```
Dim emapp As Object
Dim emitem as Object

Set emapp = CreateObject
("Outlook.Application")
Set emitem = emapp.CreateItem(0)

With emitem
    .Subject = "Bid Request Received"
    .To = "contoso_purchasing"
    .Body = "Your bid request was
received and we are working on it."
    .Send
End With
```

The Outlook email capability can be used by any application without additional programming using Visual BASIC.

The Technical Tracks

The conference was divided into five tracks: Line of Business, E-commerce, Business Intelligence, Tracking, and Collaboration. The Line of Business track focused on the order processing systems that

interact with the SAP and IBM mainframe systems. Issues of system management, error detection, and automated recovery were also covered.

The E-commerce track covered the integration of Web-based corporate procurement integrating the Baan system at Contoso with Fabrikam's SAP and mainframe-based system. EDI and custom XML-based data formats were discussed, as was the importance of security.

The Business-Intelligence track focused on extracting management information from data warehouses located on servers. Both Microsoft and third party software were used.

The Tracking applications track provided sales force automation and order tracking using both PCs and Windows CE clients that communicated with back-end systems in both companies.

The Collaboration track described the processing of requests for bids on custom-made products which were routed between Fabrikam clerical, engineering, and management staff and the Fabrikam intranet.

It may sound as though the tracks were completely disjointed, but there was overlap between them due to the integrated nature of the case study. If an order came in over the Internet from Fabrikam's Web-based catalog, for example, the warehouse picking lists and appropriate databases were automatically updated.

A warehouse worker would see this change using a wireless

Windows CE handheld computer, and then fill the order. When it was shipped, the inventory and shipping information would be entered using the handheld machine. Invoicing would then be done automatically, and the order could be continuously tracked via the Internet.

Behind the scenes at this conference, a mix of Microsoft employees and outside contractors spent roughly four weeks designing this scenario and doing system design, and another six weeks coding. It was all running live at the conference, and used in demos throughout all of the sessions.

Although the applications were integrated, and many of the same tools and servers used in each track, attendees chose one and stayed with it the entire three days. I attended the Collaboration track.

The Collaboration Track

■ **CAN Comment** ➤ *The physical setup in the auditorium was quite effective for a class or code walkthrough for a large audience. There were two large projection screens. If a speaker was presenting conceptual material, he or she could have PowerPoint slides on one screen and show live demos as illustrations on the other screen. If the speaker was doing a code walkthrough, the listing could be shown on one screen and the executing program on the other.*

The first day some audience members had trouble reading the code as displayed from within the development tools. To their

credit, Microsoft made a mid-stream adjustment, and on the second day, code was displayed in MS Word with large fonts. Similarly, by the third day, they adjusted the balance between conceptual overview and code walkthroughs in accordance with audience feedback asking for more of the latter. The one thing that was not fixed, though, was that there were no hard copies of the slides and listings, making note-taking difficult.

The Collaboration track was taught by members of the Microsoft Outlook and Exchange development teams, as well as by a few independent developers who worked with them on the case study.

They first reviewed Microsoft client and server software with descriptions and coded examples of their use. On the server side, they used Microsoft Exchange, SQL Server, and Internet Information Server. The clients were Microsoft Outlook and the Internet Explorer Web browser. This product and technique overview was followed by descriptions of several applications.

One of the applications they walked through was the processing of a request for a bid on a custom product. First, the bid request was faxed to a clerical person who scanned it into the system. That triggered a confirmation being emailed back to Contoso, and a notification and an overview being routed to the Contoso Account Manager and the Engineering Department.

Engineering then analyzed the bid, working on design, and estimated cost and likely

profitability. During this time relevant documents were shared across both companies. Threaded discussion and chat sessions were available for collaboration within Fabrikam. In addition, Contoso could track the progress of the bid review across the Internet and Various databases were also updated for querying by authorized parties.

While this situation may not have been representative of the situation of a particular audience member, the issues of security, database access, tools for automatically rendering files and documents in HTML (for viewing in Web browsers), inter-application communication, etc. were of interest to all.

The attendees saw them all demonstrated, and received CD-ROMs with the full versions of applications to take home and study. They will receive a second version of the CD-ROM with corrections to the code and copies of all of the PowerPoint slides after the conference.

While most of the presentations were on Microsoft products and the case study, a few other companies were invited to demonstrate their products in the context of this application. Eastman Software, <http://www.eastmansoftware.com>, showed how their WorkFolder system could allow routing, discussion, and maintenance of Fabrikam's bid requests using an Exchange server as a store. This was a higher level solution than what was presented by Microsoft, offering a build-versus-buy alternative.

Casahl Corporation,
<http://www.casahl.com>, also

demonstrated the use of their replication and data export software which supports remote and frequently disconnected clients by exporting and replicating data from Microsoft, Oracle, and other servers.

These presentations were both relevant to the applications being discussed, and added to the value of the session.

■ **CAN Comment** ➤ *Microsoft is, of course, happy whether you program your applications yourself or use packages like these, since they are predicated on products like Exchange, Outlook, SQL Server, and Windows NT. And on the other hand, there was no mention of Lotus Notes, Java, and other things Microsoft would feel better that you did not use.*

Keynote Sessions

While the technical tracks were the meat of the conference, there were also five keynotes addresses. The two I found most interesting were a talk on Microsoft Research (MSR) by Dr. Jim Gray, which looked a few years to the future, and a current and near-future status report by Microsoft President Steve Ballmer.

Keynote: Research at Microsoft

Dr. Jim Gray, Senior Researcher, Microsoft, described the MSR program and some of the work they are doing there. The group employees 300 people, and is expected to grow to over 1,000 in the next two years. The research

department has a "university-like" atmosphere, and the work they are doing is open to the public at: <http://research.microsoft.com>.

Gray talked about research in user interface, large databases, and distributed computing. He noted that in the past, PCs were stand-alone devices and even when networked, were used primarily for document creation and asynchronous communication. He feels synchronous communication will be more common in the future, and showed a concept video in which a person remained in his office while an avatar representing him simultaneously participated in several online meetings.

■ **CAN Comment** ➤ *Gray credited Apple's famous "knowledge navigator" video for the inspiration behind this concept video, but did not explain why someone would ever want to participate in several simultaneous meetings!*

Regardless, this vision motivates their research in both facial animation for avatars and machine observation of the user. He showed a demo in which an actress with many tiny dots painted on her face was recorded while speaking. A highly realistic animated rendering was generated from this and shown.

Presumably, it was based on a model that could be data driven. While the rendering was impressive, this work seems a bit less elegant than animation based upon a deeper understanding of facial musculature being done elsewhere. It was combined, though, with a very high-quality text-to-speech demonstration.

■ **CAN Comment** ➤ *This demonstration of voice recognition was the best I have ever heard, and perhaps reflects work done by people who came to Microsoft when they acquired Lernout and Hauspie.*

On the input side of the user interface, Gray discussed computer observation of the user and natural language processing but did not show a demonstration. He imagines the computer watching us during a virtual meeting like that in the concept video. It would track our movement, posture and gestures, thereby guiding the position and movement of our avatar in a virtual space and also using the information in inferences about our attitude and meaning.

The computer observing us would also be doing voice recognition and subsequent processing to analyze and understand our speech. While natural language processing might be useful during virtual meetings in the far future, it is being used and refined in spelling and grammar checking today. Microsoft Word, for example, parses our sentences as we type, using dictionaries and the Encarta Encyclopedia as databases.

He indicated that they have used Encarta to build a "mind-net" in a data structure accessible to Word. Gray speculated that they might be able to "pour" all the information on the Internet into this mind-net.

■ **CAN Comment** ➤ *This is reminiscent of the work of Doug Lenat of Cycorp, <http://www.cyc.com>, who hopes to encode much of human*

common sense in a massive data structure accessible to intelligent machines.

Gray also mentioned that they are working on understanding deep grammars that are common to multiple languages in efforts at automated translation and understanding.

He moved from user interface research to large databases with a description and demonstration of Microsoft's Terraserver Web site, <http://terraserver.microsoft.com>. This is a database with over a terabyte of photos of the earth's surface acquired from the US Geological Survey and the Russian Space Agency.

Using this Web site, a user can zoom in on any spot on earth and retrieve a satellite photo. Gray demonstrated by showing us images of Washington DC, the Capital Mall, and the Washington Monument.

Terraserver runs on what Gray speculated might be the world's largest PC, a Compaq Alpha 8400 with 10 GB of RAM running Windows NT and SQL Server version 7 (which is still in beta). The server averages 10.26 million hits and 2.99 million images delivered per day. It has had 99.95 percent up time since June 1, and was not down at all during August.

■ **CANecdote** ➤ *While Gray patted Microsoft on the back for its near flawless performance recently with Terraserver, he glossed over the big hiccup the site experienced right out of the gate.*

"We initially predicted about one million hits per day," said Doug Leland, lead product manager for SQL server, to CNET's News.com the day after the site opened. "And we allocated the number of servers according to that number."

So what happens when you exceed your expected number of hits by, say, 7 million within 24 hours? The site grinds to a screeching halt. It's a good thing that the Terraserver isn't a business-critical application.

It turns out that the database was not the problem. According to Leland, it was running between 30 and 40 percent of capacity. The real problem was that there wasn't enough juice powering the web serving programs in order to adequately handle a 700 percent increase in demand.

Since then, MS has added more servers so that the Terraserver site can handle up to 10 million hits a day. And what do we learn from this? Probably that online, your reputation is always on the line; and that a surplus of power is a pretty good idea. — Ed.

He also discussed and demonstrated a data mining application. The demonstration used college application data and the program inferred a decision tree, which discriminated the students who were admitted to college from those who were not. For example, it found that strong parental support was the most important variable in predicting application success, and that IQ played a less important, though still significant role.

The decision tree "mined" from this database was found to be 98 percent accurate in predicting whether an application would be successful. This sort of program dates back to research in automating induction in the 1960s, and, along with statistical techniques, is finding application in looking for patterns in large databases.

■ **CAN Comment** ➤ Gray mentioned that it is incorporated in the Commerce Edition of Microsoft Site Server version 3, and is used to automatically suggest items you might want to buy based on past purchases and other variables. Rather than doing a demo, he referred us to a live customer site at <http://www.holtoutlet.com>. This is an online toy store, and after you make a few purchases, the "toy detective" starts suggesting items for possible purchase.

The final research area Gray discussed was the automatic and dynamic distribution of programs across a network. This may be Microsoft's answer to Sun's widely publicized Jini effort, and it was very relevant to the theme of the conference.

Microsoft looks forward to the day when you will not be able to tell whether all or parts of the program you are using reside on your computer or at a remote location on the network. Program components may also move about in order to balance loads. Programmers would develop as they do for a local machine, and be unaware of the eventual target location of their code.

Gray showed an impressive demonstration using PictureIt, a Microsoft image processing package. First the object code was statically analyzed, finding the various COM components. The next step was dynamic analysis in which the program was simply used while being monitored. Based on an analysis of the frequency of interaction between the components and the amount of information that moved between them, the program was automatically partitioned into client and server portions, and execution speed improved by 23 percent. This was done very quickly with no special action or specification!

While Gray spoke of lofty goals like machine recognition of gestures (and inference of their import) and automatic translation between natural languages based on understanding of deep grammar, his demonstrations were decidedly down to earth. One has the impression that Microsoft research is product driven, and is focused on projects that will result in new products or features in a relatively short time frame.

Keynote: A Current Status Report

Microsoft President Steve Ballmer began his talk by asking for a show of hands of the number of people in the audience who were building systems using CORBA (a COM alternative), Java, Oracle, Notes, and Netscape browser plugins.

■ **CAN Comment** ➤ One could not judge the response from the audience, but the question let us

know who Ballmer views as his primary competition.

Ballmer pointed out that business applications are getting extremely complicated and difficult to develop. As such, Microsoft will spend \$3 billion in research and development this year, \$2.4 billion of that going to Windows, Office and Back Office (NT Server, SQL Server, Exchange and Site Server). All of these products were used at this conference, and the proportion of spending indicates that this is a priority area for Microsoft.

Interoperability is another priority, Ballmer said. He stressed that Microsoft was committed to working with other vendors. At the systems level, he mentioned things like building servers for Unix, supporting COM and Internet Explorer on Unix, and creating a COM-CORBA bridge.

Application interoperability initiatives include Active Store, which promotes a set of conventions and protocols on top of COM to get applications to work together in the retail industry. He also talked about the Value Chain Initiative, which promotes a set of COM standards so manufacturing, distribution, and retail organizations can seamlessly exchange information across the Internet.

In addition, Microsoft is also supporting XML, licensing Visual BASIC for Applications, and have committed to work with companies like Baan and SAP.

He has clearly been impressed by (accurate) claims that Windows NT servers are not as robust as Unix, experiencing relatively frequent

crashes and requiring rebooting after configuration changes. He admitted that NT Version 4 was buggy when it shipped, and was less reliable than the Version 3.51 it replaced.

■ **CANdid Comment** ➤ *Okay, this just begs for the next logical question to be asked. "If you knew that it was buggy and unstable, why did you ship it?" I predict that MS and other software companies are going to see a backlash from a buying public that is becoming increasingly less impressed with the "hurry up and get it out the door" attitude. Though the science of engineering software is by no means perfect or exact, it would be nice to get software that works—not just pretty much works. —Ed.*

He contended, however, that subsequent upgrades had remedied the situation. Service Pack 4, which will ship in October, supports many new hardware devices and fixes myriad bugs, including memory leaks, security holes, Year 2000 problems, etc.

■ **CAN Comment** ➤ *That's good news! It's about time.*

Ballmer said that Service Pack upgrades will be more frequent with Windows NT Version 5, and stated emphatically that it would not ship until it was as stable as the most recent upgrade of Version 4.

He also noted that there will also be further upgrades within 8-12 months after Version 5 ships. These will include improved efficiency and manageability for file and print services, improved clustering, support for COM+, automatic

restart of services which fail, improved application performance, support for compression in the HTTP server (up to four times improvement), distributed Web authoring, etc.

Version 5 will not be a radical departure, but will offer overall improvement in reliability, management, scalability and efficiency, he said. If Microsoft delivers on Ballmer's promises, Windows NT will be a more mature operating system and will close some gaps with Unix.

Ballmer stressed that customer acceptance hinges on having a popular platform. He claimed that Internet Explorer now has a 53 percent of the browser market and stated that 33 million units of Office had shipped during the last 12 months.

This was not nearly as surprising (to me at least) as his claim that Microsoft had sold 4 million copies of SQL Server last year compared to 5 million for Oracle. There are also 1.8 million Windows NT servers operating, roughly half of which are applications servers and the other half file and print servers.

He continued, indicating that Windows NT outsells Unix and Netware combined. Ballmer thinks, but was not certain, that they had now passed Unix as an application server platform, and said that they were number one in intranet and commercial Internet servers.

■ **CANdid Comment** ➤ *Interesting notion. Makes you wonder exactly how many people are going to give up reliable, cost-effective software like Apache in*

favor of the less proven and significantly more expensive MS product. Only time will tell.
—Ed.

Other Microsoft products are also popular, Ballmer noted. Exchange, for example, has sold 11.8 million copies in the last year, and is being used for many mission-critical applications. Microsoft Site Server is used on 15 of PC Magazine's list of top commercial Web sites.

■ **CAN Comment** ➤ *The others are divided equally between Netscape and Unix-based servers. Interestingly, IBM was nowhere to be seen on the PC Magazine list.*

Microsoft is able to do all of this because they have significant resources on tap—2,000 people in product R&D, 1,000 in telephone

support of developers and so forth. But, as big as they are, they clearly cannot do it all. Ballmer pointed out that the Microsoft's extended development family is indeed much larger. It includes an estimated:

- 900 solution provider partners,
- 4,000 MSDN ISVs,
- 50,000 software resellers,
- 100,000 consulting and service firms, and
- 4.3 million individual Windows developers.

He concluded with a demonstration and description of an actual case study. In the example, Microsoft tools have been used by Toyota to revamp their forklift order entry and tracking system. The application had been running for many years on an IMS mainframe at Toyota headquarters.

Over 180 dealers around the country would enter orders on PCs using an old FoxPro application running under DOS. These would then be uploaded to the mainframe at the close of business each day, and sales and status reports were generated over night.

The new system uses Windows-based PCs running Internet Explorer in the dealers offices, and the application is now live and in real-time. Dealers can enter, modify and track orders continuously and data-entry validation is done on the client. All the middle layer applications at Toyota headquarters emit Dynamic HTML, so the client needs only Internet Explorer. This conversion was done by five people in six months, and the IMS application was not changed at all.

The Conference Corner

Microsoft imparted several messages. They believe their tools can be used to build modern, distributed, multi-organization business. They also reminded us that they are big, and their installed base is dominant, so it is a safe bet that their product line will continue to exist and evolve—your systems will not become orphans. They have people who understand their technology and your industry, and can help you out if need be. (The conference was organized by their Application Developers Customer Unit, which includes both technology and industry specialists, see <http://www.microsoft.com/industry>).

Even in areas where what they currently offer is not the cheapest and/or most efficient, you can count on their offering being satisfactory for now, and eventually catching up by copying features, improving products, and interoperating. They will offer pervasive and safe solutions. This sounds like IBM, and I do not mean that to be pejorative.

Speaking of IBM, they were quite visibly part of the conference. IBM was a major sponsor, supplying the operating mainframes and a room full of servers and workstations in a hands-on demonstration and teaching room. Some parts of IBM and Microsoft may be nursing scars resulting from their joint work on OS-2, and other parts of IBM may sell competing software. (IBM runs a TV ad making fun of developers who concentrate on flaming logos on Web pages, but cannot deliver the sorts of integrated applications which were shown at this conference). It is clear, however, that IBM is happy to sell workstations and servers, even if they run Microsoft software.

Since the format of this conference is unusual, you might be wondering who should attend. The conference focuses on code walkthroughs, so attendees should be either programmers or managers with programming experienced. (There were many technically proficient managers both in the audience and on stage).

I informally asked a number of people what they thought of the conference, and they were generally quite satisfied. For example, an executive of a company that develops software for health and medical insurance applications was sold on Microsoft. He walked away convinced that Microsoft tools could be used to build the integrated, end-to-end, applications he needed, and was returning home to make major changes in his company direction.

Another was an executive at a Lotus Notes systems house, with offices in 16 cities. They were not abandoning their Notes practice, but wanted to diversify, and had come to get started. They were quite happy with what they learned, and felt they had made excellent contacts within Microsoft. They were invited to visit Redmond, where they would be able to meet and establish relationships with the appropriate technical, management and support staff.

On the other hand, I should note, not everyone was 100 percent happy. An executive of another systems house was disappointed by the amount of time devoted to technical presentations and code walkthroughs. She would have liked a more broad overview of general architecture of the systems and a discussion of design tradeoffs that were considered. She also would have liked a better characterization of the places to use the various Microsoft tools as well as discussion of competing standards and tools. Overall, I am sure the response was generally positive, and Microsoft will be conducting more of these conferences. I was informally told by Microsoft staff that there would be conferences similar to this one in Europe, Asia, and Latin America, but plans are not yet firm.

Further, *Business data processing* sounds mundane — it is worthy of note that even the venerable Data Processing Managers Association changed its name to the Association of Information Systems Professionals. COBOL programmers have low status, and computer scientists have been known to make snide remarks about the language and people who use it. The challenges are in systems and scientific programming. Well, that may have been true at one time, but the ambitious communication-oriented, cross-organization applications Microsoft addressed at this conference are surely complex and challenging. Maybe DPMA changed their name too soon.

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