

ZESP Backup File  
1988

Bonnie Merritt  
*Knowledge Based Systems  
Programming Systems*

IBM

*International Business Machines Corporation*

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415 858 3000

5

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12/14/88 IBM:

Bonnie Merritt  
Tom Work  
Les Mezei

1. Leonard Liu - GM Santa Terese Labs  
↑  
Jim Bates

2. Tom: L-T IBM ~~man~~, IMS developer  
(+ Bob A - knows RDW)  
job = ES architecture co-wide  
(re function mgmt)

Les: 15 yrs w/ IBM, SE for S&L Dent/School/Dist.  
in Knowledge tool, org doing Intelcorp deal  
" " lending pgm to SW devchpers  
(Candle, M&Dodge,)

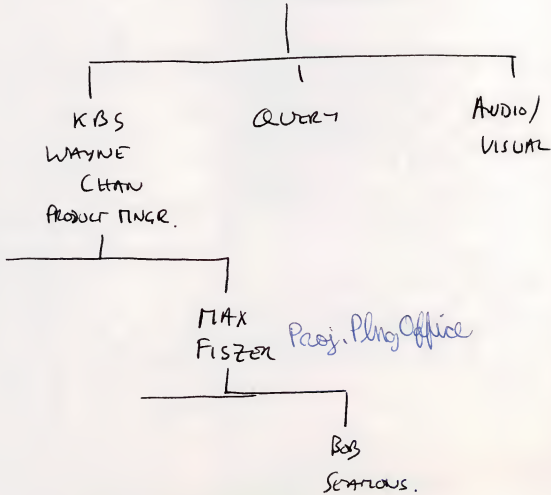
Bonnie: 1 yr IBM <sup>as competitor product analyst</sup> er; ex TI for Sys on Explorer  
and Personnel Consultant, technical  
evaluations & Bus Plng

③ QP Quo OK if no specifics on products  
& companies



137 - GPD  
SAND HILL RD  
ORGN.

JIM CATES





*on vac this week  
- Kiba will give him message*

CONTACT REPORT

COMPANY: IBM CORPORATION  
NAME: Max Fiszer  
TITLE: Manager, Project Office  
ADDRESS: Programming Systems Division  
2800 Sand Hill Road  
Menlo Park, CA 94025

INIT: RDW  
INIT: NH  
CONTACT: 11/18/88  
WRITTEN: 11/18/88  
TYPE: Phone

PHONE: 858-3012

REASON

Sales

RELATING TO:

CUSTOM

===== COMMENTS =====

11/17/88 - Max was referred to us by Jim Gates of IBM. (See PAC contact report dated 11/3.) He is manager of the Project Office for Knowledge Based Systems in the Programming Systems Division of IBM. While that office is not responsible for the development or acquisition of particular knowledge based software products, it is responsible for everything else including support, marketing, etc.

Max indicated that they were focusing on three products, all mainframe based, that are directed at three different types of users. The first, Expert Systems Environment, is a tool directed at end users. The second, Knowledge Tool, is PL1 based and designed to support DP professionals. The third, is or will be purchased and is called "KEY", a product of Intellicorp. When released by IBM this tool will be called "IBM KEY" and is a LISP oriented product primarily aimed at supporting AI and Expert Systems applications developers. All three products will be delivered over networks.

*one step shopping*

*add above*

*- embedded applic*

*more relevant applic*

Max indicated that IBM was making a very large investment in knowledge based systems. There are over 100 people involved in Menlo Park, and probably 300 hundred more if you count the efforts in Bethesda, Gaithersberg, and IBM's prime research facility. Their strategy is to have tools which can be either easily integrated directly into other applications, or which support the development of knowledge based applications that can be easily integrated into other applications environments. He estimates that there are perhaps 500 installations of host based knowledge based software environments, and perhaps 20% of these have production applications of some sort or another.

It's IBM's feeling that there are probably about 2000 installations of simlary software at the workstation (Sun, Applo) level; and about 10000 installations at the PC level. IBM also feels that the Service Sector is taking the lead in the application of this type of technology and cited the insurance industry in particular.

IBM is potentially interested in having INPUT investigate a number of items; including:





1. Users (all three classes) reactions to the software systems they are currently using (IBM and Non-IBM).
2. Users impressions of IBM's mainframe approach to providing tools that will facilitate the integration of knowledge based applications into the production environment.

In the first category they would like to know: What tools are they using, (and presumably for what kinds of applications), their perceptions of the strengths and weaknesses of the tools, etc.

I discussed INPUT's approach to Custom Work and touted Denny White's experience in this particular area. Nancy reviewed INPUT's general capabilities and gave Max some literature and a report to look over. I agreed to prepare a preliminary work statement of what we might do to address IBM's requirements, and get it to Max by Monday. This does not need to be a formal proposal, but should include some feeling for a ball park price. I suggested that he should follow up with Denny White.

I believe that they have money to spend this year and if we come up with a price that is perhaps too large, we could segment the project to get it into two different budget periods.

===== ACTION ITEMS =====

NAME	ACTION DESCRIPTION	BY WHEN	DONE	TIME
DWayson	Provide Work Scope	11/18/88		
DWhite	Follow Up As Appropriate			

=====

DISTRIBUTION

CC: Nancy, Randi, Bob, Doug

- \_\_\_ Corporate File
- \_\_\_ Originator
- \_\_\_ Route: Sales/Mkt.
- \_\_\_ Route: Progm Mgr(s)
- \_\_\_ Branch File
- \_\_\_ Sales Account Rep

MAIL LIST UPDATE AS:

- o interview content (depth)
- o qualify re #



PETER A. CUNNINGHAM  
President

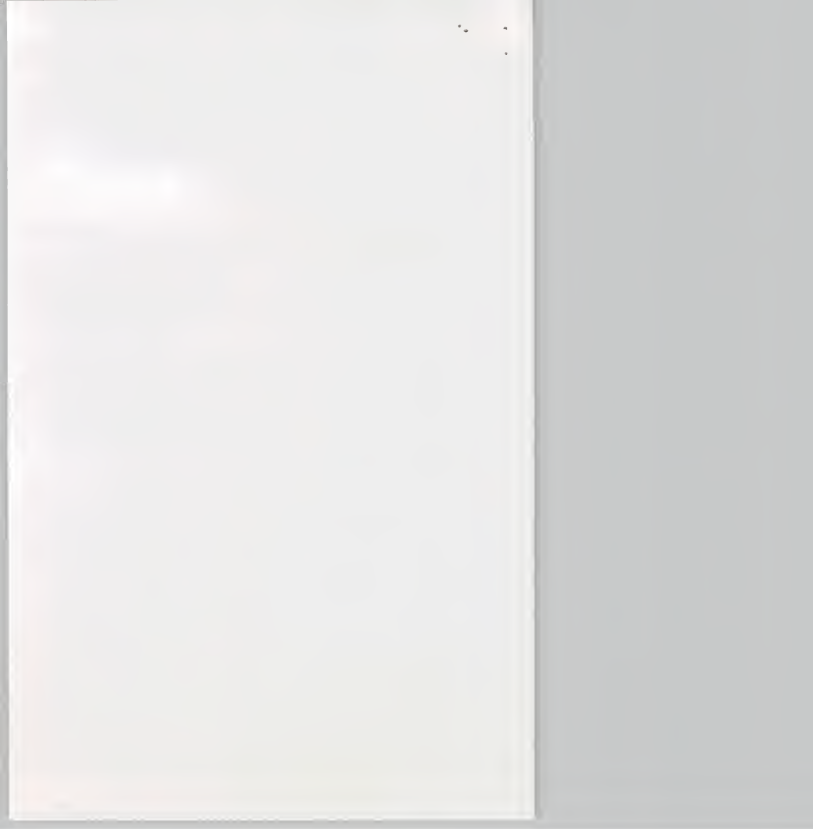
CASE Reports  
+ others for his library

Memo

TO: James W. From POE  
COPY: RANDI PAUL. Send Jim samples

of our work - (reports) from  
program IBIT subscribes to.

Maybe worth taking  
a whole "bunch" up there  
for him to ~~the~~ pick and  
choose.



DATE WRITTEN: 11/3

COMPANY: <u>IBM</u>	INPUT Staff:	REASON:	RELATING TO:
NAME: <u>JIM CATES</u>	(INIT.) <u>MC</u>	<input checked="" type="checkbox"/> Sales	<input type="checkbox"/> UISP <input type="checkbox"/> M/C
TITLE:	(INIT.)	<input type="checkbox"/> Marketing	<input type="checkbox"/> CAMS <input type="checkbox"/> FCSP
ADDRESS: <u>2500 Santa Hill Road</u>	<input type="checkbox"/> Phone	<input type="checkbox"/> Interview	<input type="checkbox"/> MAPS <input type="checkbox"/> EDIS
<u>Travlers Park</u>	<input checked="" type="checkbox"/> Visit	<input type="checkbox"/> Present'n	<input type="checkbox"/> FISSP <input type="checkbox"/> OAAP
PHONE: ( ) <u>858-3000</u>	Contact Date: <u>11/1</u>	<input type="checkbox"/> Hotline	<input checked="" type="checkbox"/> CUSTOM <input type="checkbox"/> CSPE
		<input type="checkbox"/> Support	<input type="checkbox"/> OTHER <input type="checkbox"/> ISPE
		<input type="checkbox"/> Other:	ID _____

• Jim runs three units for IBM GPD. 1) QUERY 2) KBS (AI) 3) A/V.  
 • Has about 350 people - was one of originators of DB2.  
 • He has been with IBM over 20 years and has had 17 jobs. His role is to bring new technologies to market. When he took over KBS it was staffed by theoreticians - now they have market focus.  
 • Feels he knows the QUERY market and A/V is small right now.  
 • Area he needs more support in KBS - Wants to know share of applications being generated in KBS tool - what will this grow to. Also wants to understand competitors - what applications are their customers using their products for? What would they like to use them for? What are the emerging trends for these companies? He is not interested in 'PC ONLY' companies: as he is targeting host systems and cooperative processing (PCs in networks or PC/Mainframe) markets. Particular companies are Neuron Data (NexADR) and ATON (ADS)

 EXTRA PAGE(S) ATTACHED

ACTION DIST.	TIME REQUIRED	DESCRIBE ACTION OR FOLLOW-UP	BY WHEN	DONE	INFO DIST.
D White		Possible customer for IBM on Neuron Data and ATON - wants to understand capabilities of product and reputation in the market. Needs result this year. Max Fitzer/Wayne Chan will coordinate - Let's discuss proposal.			
Pete		Send him examples of our work - right putrate library			

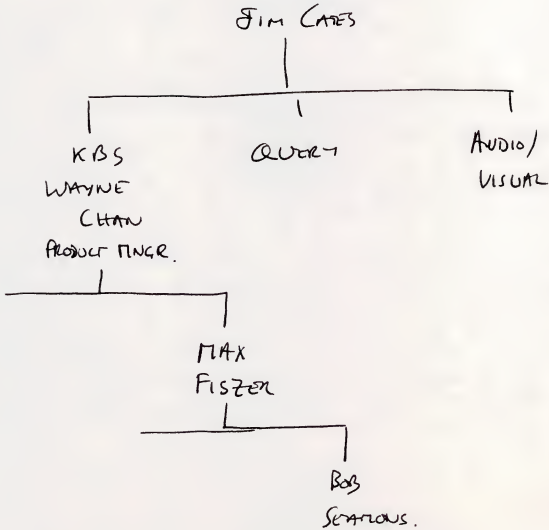
(Check all that apply)

 MAIL LIST  Client  Prospect  Press  Financial  Key Contact  Decision Maker  Product User

- COPIES:
- Dist. Copying Corp. Contact File
  - Route Mgrs.: - Sal/Mkt Files - Curr. Proj. File
  - Branch Contact File
  - Sales Acct. Rep.
  - Originator



IBM - GPD  
SAND HILL RD  
ORGN.







DISCONTINUED ESE

PAGE NO 1

19:37 12/15/88 DBI IBM CONFIDENTIAL GRIFFITH EV  
 ES118810, S2; \* 88080; VSDRT

ESTNO	NAME	STRAD	CITY	STATE
9042	UTAH STATE UNIVERSITY	UMG 4410	LOGAN	UT
84322	FIRST DATA RESOURCES INC	7301 PACIFIC ST	OMAHA	NE
5954874	COOPER INDUSTRIES INC	1001 FANNIN SUITE 4000	HOUSTON	TX
68114	BOEING COMPUTER SERVICES CO	4200 SOUTHEAST BLVD	WICHITA	KS
6174103	CITY OF LOS ANGELES	200 N MAIN ST CITY HALL EAST	LOS ANGELES	CA
77002	SCOTT PAPER CO	INDUSTRIAL HIGHWAY	PHILADELPHIA	PA
8142514				
67210				
8339796				
90012				
8428457				
19113				

ESE USERS

STATE OF N.Y. DEPT OF CORRECTIONS      ESP TOWER BLDG SUPPLY RMP1 SOUTH DOX ALBANY N.Y.  
 - DEMO - TREATMENT FACILITY ADVISOR FOR JUVENILE OFFENDERS

STATE OF CALIF. - HEALTH + WELFARE DEPT DATA CENTER      1120 N. ST. Room 6405      SACRAMENTO CA.  
 - SYSTEM ALSO USED BY THLARE COUNTY & CALTRANS

MEMPHIS BOARD OF EDUC.      MEMPHIS TN.  
 - MATH CURRICULUM ADVISOR.

U.S. DEPT OF THE AIR FORCE      USAF OMC OMI HANGER 13      RANDOLPH AFB TX  
 - HELPOESK      DEPT. TSG SAN ANTONIO

BLUE CROSS/BLUE SHIELD OF NEW JERSEY      12 VREELAND RD.      FLORHAM PARK N.J.  
~~DATA~~ ~~APP.~~

SCIENTIFIC SOFTWARE INTERCOMP (SSI)      1801 CALIFORNIA ST.      DENVER CO  
 303-292-1111 - OIL FIELD ADAPTIVE HISTORY MAPPING

BLUE CROSS/BLUE SHIELD OF MASS.      100 SUMMER ST.      BOSTON MA.  
 - PRE-CERTIFICATION OF HOSPITALIZATION

1456029661H 1

00111 53

12:50PM 1

12-16-88

RCV BY:NERO- TELECOPIER 7010 11-16-88



Preston Smith:

concepts on size

what products

sample size

speed

IBM being identified

~~on~~ INPUT Bis

Matter of different studies going on at same time

2000 interviews of F1000 on ES use  
on all platforms

203 287-7098

" Avoid denegrating what they're doing "

Note: We should carefully note the distribution of responses when reporting findings/drawing conclusions.

Rob  
pls see me  
about this.  
Denny



Thomas R. Work  
 Knowledge Systems Architect  
 Knowledge Based Systems  
 General Products Division

IBM

International Business Machines Corporation  
 2800 Sand Hill Road  
 Menlo Park, California 94025  
 415 858 3160

12/19/88

TOM - 12/21  
 out till  
 12/27

AS SOON AS POSSIBLE:

① PLEASE REVIEW THE REVISED FEATURES/FUNCTIONS LIST AND EITHER FAX BACK YOUR EDITS/COMMENTS/ETC. (TO 415-961-3966) OR CALL ME (AT 415-961-3300)

② LET ME KNOW WHEN WE CAN SCHEDULE A 30-MINUTE TELEPHONE INTERVIEW SO I CAN (A) GET AN ESE PROFILE AND (B) GET YOUR FEEDBACK ON MY "VENDOR PROFILE" QUESTIONS

INPUT

Planning Services for Management

Rob Elmore  
 Senior Consultant

Corporate Headquarter  
 1280 Villa Street  
 Mountain View, CA  
 94041-1194  
 (415) 961-3300  
 Telex 171407  
 FAX (415) 961-3966

THANKS,  
 - Rob

1/19  
 It's OK  
 Benno  
 will  
 call  
 back



**INPUT**  
**12/88 - 1/89 Knowledge-Base Systems project**  
**for CLIENT**

User Questionnaire [12/16 draft] - Page 10

**N** \_\_\_\_\_ [product] strengths and weaknesses

[Note: "Hidden" straw-man list (at inconsistent levels of detail) of features/functions for both strengths/weaknesses section and "feature wish list" section, below. Keep emphasis on higher-level, strategic functions - underlined]

DVLP [a]. Development by multiple developers [CLIENT Fax pg. 8, item A]

. Graphic approach to knowledge-base construction [B]

. List processing capabilities [E]

. Processing of sets [F]

. Support of object "types" [G]

. Support of object "status" [J]

. Support of file browsing [L]

. Support/calculation of date and time datatypes [Q]

. ? Running system commands [M]

. ? \_\_\_\_\_ Vocabulary \_\_\_\_\_ ? [H]

. ? Defining "noise words" [O]

. Determining cost of a parameter triggering [P]

. Developing on the mainframe [-]

. Developing on a PC or PS/2 [X]

. Developing on many platforms, based on Unix or C [-]

. Ability to embed in other applications [-]

PRDN . Running production on the mainframe [-]

. Running production on a PC or PS/2 [Y]

. Running production on PCs and mainframe, under "cooperative processing" [-]

. Running production on many platforms, based on Unix or C [-]

. Output of reports [C]

. Processing of records from a database [D]

. Password security [I]

.  Writing to outside disk files from knowledge base [K]

. Access to memory used in current state of knowledge base [N]

. Production can run under IBM CICS/VS [R]

. Production can run under IBM IMS/VS [S]

. Sharing application among multiple central processors [U]

. Access to DL/1 [?] databases and VSAM files [T]

*ES C E/S +  
GOT TO  
HOST  
E/W V/RECU*

*OLS*

**INPUT**





**INPUT**  
**12/88 - 1/89 Knowledge-Base Systems project**  
**for CLIENT**

User Questionnaire [12/16 draft] - Page 11

- . DB2 command support [V]
- . SQL support [W]
- . SAA support [[Z]]

From the perspective of your experience with \_\_\_\_\_ [product], what are its main **strengths**, and why is each important to you?

*[Note: Try to cross-reference to list above]*

- .. s-1: \_\_\_\_\_  
Why important? \_\_\_\_\_
- .. s-2: \_\_\_\_\_  
Why important? \_\_\_\_\_
- .. s-3: \_\_\_\_\_  
Why important? \_\_\_\_\_
- .. s-4: \_\_\_\_\_  
Why important? \_\_\_\_\_

From the perspective of your experience with \_\_\_\_\_ [product], what are its main **weaknesses**, and why is each important to you?

*[Note: Try to cross-reference to list above]*

- .. w-1: \_\_\_\_\_  
Why important? \_\_\_\_\_
- .. w-2: \_\_\_\_\_  
Why important? \_\_\_\_\_
- .. w-3: \_\_\_\_\_  
Why important? \_\_\_\_\_
- .. w-4: \_\_\_\_\_  
Why important? \_\_\_\_\_



## ASAP USER SURVEY SUMMARY

The survey was divided into four sections:

- I. User Profile
- II. Marketing Profile
- III. Performance/Satisfaction
- IV. Features/Functions

A summary of the results from each section follows.

### I. User Profile

The following eight customers were surveyed:

<u>Company</u>	<u>Type of Business</u>
Boole & Babbage	Mainframe Performance Software Dev.
Boeing	Aviation
Arthur Anderson	Consulting
Northern Telecom	Manufacturing (PBX's)
McCormack & Dodge	Mainframe Software Development
Rohm & Haas	Integrated Chemical Manufacturing
Provident	Insurance
MSA	Mainframe Software Development

All users had various mainframe systems but were making extensive use of PC's for development.

### II. Marketing Profile

Most users first heard of ASAP during a trade show or conference (such as AAAI). Two had been introduced to it by Arthur Anderson and one by their IBM Marketing Rep.

The most important motivation for purchasing an expert system package was a desire to be at the leading edge of their industry, followed by a need to stay competitive, a perceived business application, and a perceived increase in profitability.

KEE, ART, S1, GURU, and Personal Consultant Plus were the most frequently examined alternatives to ASAP. Of these, each shell except S1 had one knowledge base in production by some user



in addition to ASAP.

Seven users had considered ESE and two had actually installed it. They rated PC compatibility as the most important reason for selecting ASAP over ESE, followed by easier access to user data, ease of use, and technological and functional superiority.

### III. Performance/Satisfaction

Only one user, Boeing Corp., did not have an ASAP knowledge base in production or close to production (they have only had the ASAP package since January). The rest accounted for a total of 8 mainframe and 4 PC knowledge bases in limited or full production. Most users indicated that their knowledge base had met or exceeded their expectations and increased user productivity. Only one user felt that developing the knowledge base had cost them more than it saved and even they were not unhappy with their investment.

MSA was the only user that had experienced capacity or performance problems on the mainframe. This occurred when they tried to use a substate to do traditional record processing. Each record created a copy of the substate in memory until capacity was reached. They are still working on an acceptable circumvention for this but are optimistic that one will be found. All other capacity problems reported had to do with the 640 K DOS limit on the PC. Users generally felt that this problem would be solved by OS/2.

While no one reported that their knowledge base ran too slowly, several were unsure whether they could maintain acceptable performance once they expanded their systems for full production. Arthur Anderson indicated that they were working on a tool that would compile ASAP knowledge bases into PL/I and allow applications to run 21 times faster.

All users were satisfied to very satisfied with ASAP Corp. as a company to do business with, the technical expertise of ASAP personnel, their decision to purchase ASAP, the ease of use of the package, ASAP Corp.'s responsiveness to program bugs, the completeness of ASAP functions and soundness of code, performance of their knowledge bases, and quality of ASAP education.

Several users were dissatisfied with the documentation, particularly as it related to the mainframe version, they cited a need for an index, better organization, and more in-depth coverage of certain functions such as accessing external data. A few users were also dissatisfied with the availability of education and technical support but this was mostly due to



geography and time zones.

#### IV. Features & Functions

The respondents were asked to rate the importance of various ASAP features which are not available (or have a different implementation) in ESE. Rated very important to critical were (in order of importance):

- 1.) Ability to write to disk files
- 2.) Record processing
- 3.) List processing
- 4.) Ability to define "Types"
- 5.) Developing applications on PC
- 6.) Application development by multiple developers
- 7.) Ability to incorporate reports
- 8.) Set processing

Rated important to very important were:

- 9.) Ability to run under IBM CICS/VS
- 10.) Access to DL/1 databases and VSAM files
- 11.) Ability to "Browse" files during development
- 12.) Displaying memory used by knowledge base or state
- 13.) Date and time data types and calculations
- 14.) SQL support
- 15.) Ability to view status of objects
- 16.) Executing applications on different processors
- 17.) Delivering applications on PC
- 18.) DB2 command support
- 19.) Ability to run under IBM IMS/VS
- 20.) Ability to run system commands during development

Rated slightly important to important were:

- 21.) ASAP "Vocabulary" feature
- 22.) Evaluating the "cost" of a rule (parameters fired)
- 23.) Ability to incorporate graphs
- 24.) Password security
- 25.) Defining "noise words" in a vocabulary

No features were rated not important to slightly important. This could be interpreted to mean that all of these features are being used to some extent by some users.

Questions relating to specific products such as DB2 and IMS tended to be rated low by respondents who were not using the product.

Displaying the memory used by a knowledge base was rated





high because of the 640 K DOS limit on the PC. Users did not feel this was as important when developing mainframe applications.

The ability to incorporate graphs was rated low because most users did not like the ASAP implementation. Most would prefer to have some kind of vector or raster graphics capability.

The most frequently requested enhancements were the addition of frames with inheritance, a better screen design tool, more procedural processing capability, removal of the PC 640 K DOS barrier, performance improvements, an interface to STORYBOARD or other graphics packages, and better documentation.



APPLICATIONSBoole & Babbage

## DASD Analysis Package

- Still under development
- Runs on mainframe
- 10 KB's strung together ( 2MB )
- Some rules go for 3 pages

## MVS Performance Analysis

- Runs on mainframe
- satisfactory performance

## Capacity Planning

Boeing

No productive applications at present. Have had ASAP only since January.

Arthur Anderson

## Risk Assessment

- Analyzes risk of doing business with a client
- Runs on PC
- Fills PC capacity
- Exceeded expectations
- Easily accepted by users
- Realized quality (vs productivity) improvements

## Mortgage Loan Advisor

- Runs on PC or mainframe
- Sold to customers w/bundled ASAP
- Customized to users
- Satisfactory performance

## Chemical Formulaary

- User describes compound and system generates chemical formula

## Deposit Products Advisor

- Advises users on what type of deposit vehicle to use



APPLICATIONS (cont.)Northern Telecom

## Engineering Change Management Prototyping

- Runs on mainframe
- Would run on PS/2 & DS/2
- Part of a larger traditional application
- Multiple users input in multiple sessions
- Accepts change requests and problem reports
- Generates reports
- Allows online queries
- Does document processing
- Sends messages
- Contains about 100 screens
- Phase 1 complete by Oct. '87
- Expect 10 VM sites by Oct. '88
- Potential 47 sites

McCormack & Dodge

## Shipping Advisor

- Runs on PC or mainframe
- Analyzes where carrier service areas are and their reliability
- Advises on best carrier to use
- Useful in contract negotiations
- Saves minimum of \$8.00/shipment (\$800.00/day)
- Plan to expand to other locations

## Software Implementation Advisor

- Under development
- Customizes financial software to user needs
- 500 to 1000 objects

Rohr & Haas

## Product Usage Diagnostics

- Used by support personnel to advise on product usage
- Runs on mainframe due to distribution & security concerns
- Developed on PC



Provident

## Bond Selection Advisor

- Ranks bond yields for retirement investments
- Runs on mainframe

MSA

## M2 Form Advisor

- Advises on how to fill out M2
- Runs on PC
- Percieved monetary saving
- Coded by domain expert

## Manufacturing Application Installation Advisor

- About to be announced
- Runs on mainframe
- 2000 objects
- Good performance





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ASAP USER SURVEY  
TRIP REPORTBoole & Babbage

Boole & Babbage is a software development company which primarily produces performance monitors for mainframe systems. Their Senior Vice President, Jack Van Kinsbergen, left IBM in 1967 and has known Harry Reinstein and Larry Cohn for approximately 20 years. He was instrumental in putting them in touch with venture capitol firms and once sat on the ASAP Corp. Board of Directors when it was first formed. Consequently, he was granted special pricing arrangements to use ASAP before it was even developed. He says he saw a use for expert systems in systems management and viewed them as an integral part of the next generation of Boole & Babbage products.

He indicated that one of the primary reasons they would not consider ESE, apart from any personal relationships, was that they needed intensive data analysis and that there was no way to do this with ESE. Their requirements were for data access and number crunching versus dialogue management. ESE was never seriously considered as a solution.

Their primary ASAP application is a DASD analysis package that runs on a 4381. Although it is still under development, it has been demonstrated to potential customers and has received an enthusiastic response. The application consists of ten knowledge bases strung together like programs in a procedure. Although he would not guess at the number of rules, parameters, or objects he estimated that the application consumed about two million bytes of storage.

He didn't feel there were any physical limits on the size of an ASAP knowledge base but performance and hardware limitations would demand that large applications be divided into several smaller KB's as in conventional programming. He indicated that the amount of main storage required exploded with the amount of data processed. He didn't feel this was a problem as much as a design consideration for states. He felt that to some extent they had misused ASAP to do inferencing on number crunching applications and that some states should be redesigned to utilize PASCAL or COBOL routines for heavy numeric processing. The applications they were working on were described as "current time" as opposed to real time products. In other words, the user



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analyzes data that may have been collected over several hours or days to see what happened on the system.

Currently, their emphasis is on mainframe solutions, however he sees the PC as an important addition. They needed the mainframe for power and because they had to access a lot of online data. He felt the PS/2 and OS/2 solved this problem. They need a compatible inference engine between the PC and mainframes and would like to develop and execute applications either way.

Jack views expert systems as a next generation procedural programming tool which will allow B & B to write applications more easily and productively. He says that an expert system is equivalent to an operating system and "over time it will be the way to write programs".

#### Boeing Corporation

Boeing Computer Services' Bellview research center is responsible for developing new business opportunities for AI within Boeing. George Brown, their AI Sales & Marketing Manager explained that his department evaluates AI software and hardware, provides planning assistance and tries to transfer technology to the user computer departments. He considered this hard to do with ART, KEE, and other advanced shells and they were moving slow on these but moving ahead on rule based systems. Although he had only been in this job for six months, George felt that AI was stagnating. "The research people think AI is wonderful but the application developers think it stinks. There's lots of hype but it hasn't produced."

He thinks that the momentum is moving towards rule based systems because they're easier to use, easier to train, accessible on PC's or mainframes, have little front end expense, and can leverage the existing hardware base. Harry Reinstein gave a presentation several weeks ago to Boeing personnel. They have only had the ASAP package for about six month and are just starting to get people exposed to it. They are planning to use it to generate COBOL code and applications but now they are simply coding stand alone expert systems or integrating it with traditional code.

He indicated they have a need to interface to DB2 and would



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like to imbed SQL statements. ESE was rejected because of IBM's apparent lack of interest in providing this interface. Other reasons cited were PC compatibility, a better development and delivery environment, and easier access to user data. He also noted that ASAP "states" were similar to frames and that this was one indication of the technological superiority of the ASAP Corp. package.

Boeing has also examined several other expert system shells including KEE, ART, Knowledge Craft, GURU, TWAICE, Expertease, Nexpert, S1, OPS/5, PC Plus, and Rulemaster, however, this department had only had experience with Personal Consultant Plus and ASAP. Generally they are very happy doing business with ASAP Corp. They projected an image of being former IBM'rs who could be counted on. According to George, "It's like doing business with IBM".

Arthur Anderson

Bruce Johnson, Partner in Charge of AI Practices and Director of Research, met Harry Reinstein before ASAP was really a product. They negotiated a fixed price contract for unlimited use of the programs. Consequently, they use ASAP as a productivity aid and to develop internal applications. They have developed a Risk Assessment package for use by their field reps. as well as several knowledge bases that are bundled with ASAP and sold to their customers, including, a Mortgage Loan Analysis Package (which runs on both PC and mainframe and can be customized to individual users), a Chemical Formularies package (which calculates the chemical formulas of various compounds described to it), and a Deposit Products Advisor (which gives advice on what type of deposit vehicle to use). They also build expert systems for clients on contract. According to Bruce, ASAP is likely to win half of these competitive bids because the client can see a prototype without buying a license and it ports from PC to mainframe. He did cite one example, however, of a customer who walked away from an application because ESE couldn't do the job (even though ASAP could) and he did not want a non-IBM solution.



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In addition to ASAP, Arthur Anderson also has several other expert system packages including KEE, ART, S1, NEXPERT, Personal Consultant Plus, M1, GURU, EXCEL, and SAGE. Only GURU and Personal Consultant Plus have been used to actually develop applications (Guru because of access to a relational database, and Personal Consultant Plus because there was a requirement to run on DEC). ASAP was chosen over ESE primarily because of PC compatibility, ease of use, availability on various operating systems, and the fact that it could be integrated (imbedded) in other applications. Bruce also noted that ASAP outperformed ESE by about 3 to 1 and that they were working on a tool that would compile ASAP into PL/1 code and increase performance by a factor of 21.

Internally they use the PC version of ASAP for both development and delivery since their offices don't have access to a mainframe. Arthur Anderson Consultants use customer systems and upload from a PC when necessary. Customer applications are either PC or mainframe depending on the project. If the user has to operate in the field, they use the PC. Their philosophy is, don't use a mainframe unless you have to. According to Bruce, the only time they are allowed to use a mainframe is:

- a.) There is a centralized database
- b.) The knowledge base is frequently changing (e.g. the data base has to be updated frequently).
- c.) The knowledge base has to run on an existing network with no terminals.
- d.) You are building part of an application that needs to be centralized.
- e.) Capacity limitations.

Although he was very satisfied with ASAP, he did acknowledge that there was room for improvements. He thinks the dialogue is sometimes long and drawn out causing a bit of thrashing (e.g. the re-do function causes re-answering of all questions from that point. This could be solved by using truth maintenance). He also indicated that they often bumped against the 640k DOS limit on the PC but expected this would be somewhat alleviated by the PS/2 and OS/2. Several other employees also described a need for a procedural type language to allow more flexibility in the flow of logic, performance improvements, and user defined indexing in arrays (as in PASCAL) as additional requirements. On the other hand, ASAP was described as very easy to learn and faster to use than traditional code. It was noted that a new programmer could learn to be productive in 3 to 4 days and that they were able to code one application 10 to 15 times faster using ASAP than conventional programming.





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Northern Telecom

Northern Telecom is a manufacturer of PBX switching systems. According to Joe Sura, Manager of their CAM Program, their primary expert system application is in the area of Engineering Change Management prototyping. They have built a system using a mixture of ASAP and conventional code which requests engineering changes, generates relevant reports, reports problems, does online queries, document processing, and sends messages during multiple sessions with several users providing input to the same process.

They first got approval to build a prototype and, having successfully completed that stage, are now funded to build a corporate production system. The prototype is now in use at several locations. They expect to have a Phase I production system ready by this October and hope to have 10 VM sites running by October 1988. Eventually, they would like to have the system up in all 47 of their plants.

In their search for an expert system package, they examined KEE, ART, EXCON, and S1, as well as ASAP and ESE. They have built knowledge bases in both KEE and ART and did not use ASAP primarily because there was a requirement for these applications to run on UNIX workstations. They briefly considered ESE, but it was rejected primarily because it lacked PC compatibility. It was also felt that ASAP had more function and was technologically superior. He gave me a copy of their analysis which I have included in my report (see "ECM Prototype Project Overview" attached). Joe also noted that the IBM programming teams never really seemed to grasp what they were trying to do and the lack of coordination between the different IBM groups was evident.

Although overall, he was satisfied with ASAP, Joe did mention several areas for improvement. They did not like the way ASAP handled screen design. There were several inconsistencies between the PC and mainframe versions in the way they handled screens (e.g. the VM version does not allow data or literals past



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column 78 while the PC version does - this is not well documented) and it was difficult to get ASAP to display fixed format screens. He would like to see a fourth generation language screen painter incorporated in the package. They are also building their own generic SQL/DS interface. Their routine listens for ASAP to request data, calls SQL, and returns the information to ASAP. They would like something like this to be integrated with the expert system.

Other suggestions included the ability to format date and time values, a library of independent routines that could be called from anywhere in the knowledge base rather than recreated in each branch or state, the ability to define PF keys, control output to line 23 and 24 of the screen, and define underlines as value holders on a screen rather than boxes or blanks so that the screen looks more like a form.

They would prefer to do more work on the PC version. The main reason they haven't is because of the 640K DOS limit but they expect this will change with the PS/2 and OS/2. According to Joe, it is "outstanding" and "much nicer". They are "highly satisfied with it" and "you can do some nice things on the PC that you can't do on VM".

McCormack & Dodge

McCormack & Dodge develops accounting, financial, database, and language software for mainframe systems. They first heard about ASAP from Arthur Anderson. In their search for an expert system they also examined ART, KEE, S1, KES, and Personal Consultant Plus in addition to ESE. None of these was ever installed. John Birch, their Corporate VP and a former IBM employee, summed up their reasons for choosing ASAP;

"A number of expert systems had their base in academia with people with Phd's in computer science. ASAP was overwhelmingly better in useability. Many start up companies don't have any idea what users really want to do. Other companies said they planned to run on IBM hardware. ASAP already did. No other vendor could deliver their product with the same speed and integrity.



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ESE is technologically 2 to 3 years behind ASAP. We weren't willing to wait. ESE has a lot of catch up to do. Some people would buy a garbage can with lights if it was painted blue and had IBM on it. Why not just go along with them (ASAP Corp.). It (ASAP) was better a year ago and it's still better and they keep improving."

John cited several reasons for claiming that ASAP was a superior product including the user interface, portability across operating environments, debugging features, CICS and LU6.2 support, states and sub-states, application development by multiple developers, file access, and PC compatibility.

He said that they would not buy a product that did not run on a PC. They would even settle for less function as long as it satisfied their needs. Distributed processing is very important to them. They would like to develop on mainframes and deliver on PC's. That allows them "not to lockstep expert system applications with PC applications". For example, information for a financial application could be entered on a PC and batched to a mainframe. A PC can be brought in at a low investment to prototype an application and test the product.

They currently have one prototype in limited use internally and another under development. The former is a shipping advisor which gives information on the reliability of a carrier, where their service areas are, and the best carrier to use for a given shipment. The system reduces claims against carriers, helps in contract negotiations, and allows users in other departments to use a variety of shipping methods. They estimate that it saves them a minimum of \$800.00 per day at their test facility and they plan on expanding it to the other locations shortly.

They are also in the process of developing a software installation/implementation tool which will allow their customers to customize their financial software to their own requirements.

John noted that ASAP Corp. was very supportive concerning enhancement requests. For example they told him they would add frames if he felt it was necessary. He would like to have this implemented as well as national language support, and a PC interface to STORYBOARD or other graphics packages that would allow display of maps and slides during a consultation. He would also like to see local support expanded outside the U.S. since they have several overseas centers.

His only complaint was with the documentation, which he said needed better organization, an index, and could be made more readable.





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Rohm & Haas

Rohm & Haas is an integrated chemical manufacturer with two mainframes running both MVS and VM, yet they do all of their expert system development on two PC's with Irma boards. Ed Beaver, their Expert System Supervisor, says they would only use a package that didn't run on the PC if they needed the functionality and the cost differential was not significant.

"There will be large and small expert systems in the future. The large ones will be delivered on mainframes by D.P. but developed on PC's. We're looking at ways now to do this." He would like end users to develop small expert systems on PC's. "The benefits would match or outweigh the benefits of mainframe systems. The PC is a much more productive environment. The interface is much more powerful. People are becoming used to the nice user interface you get on the PC."

They are currently working on a Product Usage Diagnostics system to assist their support people with user questions about their products. It is expected to be in production by the end of August. They are also working on a truck loading application that creates diagrams and pictures using Personal Consultant Plus and are doing some work with VP-Expert. Both were selected for their graphical interface.

Before purchasing ASAP they also looked at KEE, ART, GURU, and NEXPERT. They would have preferred to use KEE or ART but neither was available on IBM mainframes or PC's. ED noted that KEE is more extendable (e.g. in LISP). "We're satisfied with ASAP but there is a limit to how much you can extend it. It has its place for certain kinds of applications. It gives us the right functionality to create a quality system. It's not so much a user friendly but a programmer friendly tool."

They relied on Arthur Anderson to investigate ESE for them. Based on their information they concluded that ESE had a



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substandard developers interface and that ASAP was a superior product in the areas of ease of use, PC compatibility, architecture, and functions such as CICS and LU6.2 compatibility, list processing, and type definition. They also felt that they would not be able to get close cooperation from IBM on enhancement requests and were not comfortable with the fact that ESE was only a program offering.

Ed was very pleased to do business with ASAP Corp.. "It's no exaggeration that they are the best software company that I've ever had to deal with." Nevertheless, he did list a number of enhancements he would like to see incorporated, namely;

- a.) Easier access to both IDMS and FOCUS files.
- b.) Removal of 640K DOS barrier on PC and/or implementation of virtual memory for ASAP.
- c.) Callable subroutines or states
- d.) Ability to set up a matrix or lookup table and allow screen entry of such a matrix (as in spreadsheets).
- e.) Formlike entry screens.
- f.) Frames with multiple non-hierarchical inheritance (substates which could receive values from superstates and callable routines would address this to some degree.
- g.) Truth maintenance
- h.) Better message passing ability and ability to put Text Substitution Language (TSL) statements in variables.
- i.) Forward Chaining
- j.) Better graphics interface (CAD/CAM vector type).
- k.) Ability to generate pseudo english explanations during consultations.

Provident

Provident Insurance Company had ESE installed but switched



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to ASAP. The primary reasons cited were easier access to user data, integration and compatibility with traditional DP applications, and PC compatibility. According to Mike Harter, their Project Director for New Technology, "ESE can build stand alone (MYCIN type) knowledge bases. ASAP has more DP control and can get at DB2 through COBOL. It runs in all environments and has easy access to data. It's a step towards AI that doesn't divorce itself from DP." They would pick a package that ran on both the PC and mainframes over one which ran on the PC alone unless there were features of the mainframe only system that were absolutely needed. "The internal billing for mainframe usage was too high" when they were using ESE. Consequently, when it is equally feasible to do development on the PC or mainframe, they will do it on the PC because of the cost involved.

ESE was the only expert system seriously considered because they had a requirement to deliver their applications on MVS. Nevertheless, development was split between the PC and mainframe with the mainframe used only when necessary to test external calls. They currently have a Bond Availability Advisor in production which ranks bond yields for retirement investments and is run about once a week. They are also looking at developing a Risk Assessment System for underwriting.

While overall they are very happy with ASAP, they suggested the following enhancements;

- a.) An improved screen editor. Currently message screens and input screens use different editors. Also, the user can not see what the output will look like until the screen is put into the knowledge base and you have to create your own data types (e.g. character, integer, etc.) for customized screens. They liked the way ESE handled screen design better than ASAP.
- b.) Better documentation. They indicated that there was not enough detail in areas where you need detail (e.g. how to call external routines).
- c.) Some error messages need better handling and explanation.
- d.) They would like to incorporate nested IF's.
- e.) Improved file read/write access. They do not do dynamic links, and this makes external interfaces more difficult.
- f.) Consistent math between mainframe and PC. The two don't always give consistent results because of double precision on the PC. They indicated ASAP Corp. had committed to fix this.
- g.) Generic object operations. Currently, for example, you have to know which state a parameter belongs to in



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- order to copy it.
- h.) Ability to define multiple record types in a file.
  - i.) Option to use SCRIPT instead of Text Substitution Language. Why should user have to learn both.
  - j.) Reports and messages could be smarter.
  - k.) Ability to mask output fields.
  - l.) Ability to place multiple "OR" constraints on parameters.
  - m.) Frames with inheritance.

MSA Corp.

Mark Scofield, Expert Systems Manager, describes MSA as a Research and Development and Corporate Advisor. Primarily they develop financial and accounting software for mainframe systems. Mark doesn't consider the PC as critical for their needs but nevertheless, they do most of their development on the PC because of productivity, graphics, and ease of use. They also get billed internally for mainframe time and find the PC cost effective.

They currently have a knowledge base that advises on W2 forms, and are about to announce a Manufacturing Application Installation Advisor.

They considered ESE but felt that ASAP offered easier access to their data. They also felt uncomfortable with ESE after ASAP Corp. supplied them with performance specifications and IBM could not.

Mark listed several enhancements he'd like to see incorporated;

- a.) A better "HELP" facility.
  - b.) Frames with inheritance and more object orientation.
  - c.) Ability to do modeling
  - d.) Integrated CAD/CAM type vector graphics
  - e.) An easier way to handle certainty.
  - f.) Better provisions for multi-record processing.
- Currently, this requires that substates be called



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**multiple times by a main state and this eats up a lot  
of memory and is inefficient.**





# INPUT

1280 Villa Street, Mountain View, CA 94041-1194

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Telex 171407

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## FAX TRANSMITTAL FORM

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NUMBER OF PAGES: 1 OF (23)

Confidential Yes  No

Urgent  Yes  No

DESCRIPTION: \_\_\_\_\_

AS DISCUSSED WITH REBA:

ASAP PLEASE CARRY TO

LES MEZAI FOR

HIS 1:30 MEETING

WITH JIM CATES

- ROB ELMORE

INPUT

FROM: ROB ELMORE

DATE: 12/15/88

INPUT  
Project Charge Code: ZSAT 253P

FILE:  CHRON  CONTACT  OTHER

Specify: \_\_\_\_\_



Rathy Lin

P/c

Book & Babbage

(<sup>1-2</sup>+17M)

408/735-9550

---

USON ON ROAD

Vendor

From 1-2

USONS



Cater wants to know ability to write software

(12/16)   
 OK   
 Dis

IBM: drop K.T. for K&S from AI corp

We must  
will be 24th. More difficult interview (programming) - expensive  
& less info on IBM

(1/2 eq, 375k  
based on 16, 50.0  
to view behavior - so can pay full amount

Jim: call re 858-6639

1/2 1/2

Cater: make certain AI Corp AI Corp (ICSE) (M)

Feb 24 Mgmt Council date  
Feb 17 on our rpt.

Prefer getting  
this piece

Charleen

818/715-5376

Formal Model (12/15)

CATEGORIES (IF POSSIBLE)

- ① DIAGNOSIS / CLASSIFICATION
  - (1A) DATA ANALYSIS + INTERPRETATION
  - (1B) USE ADVISORY + PROCEDURES
- ② MONITORING
  - (2A) CONTROL
  - (2B) SIMULATION
- ③ CONFIGURATION
- ④ PLANNING
- ⑤ SCHEDULING

Cater: User Preferences for

- edit alone
- embedded

most functions would  
have went to the  
the PC, V, MF?

→ cooperative (PC + MF)

500  
500  
500



# Denny / Rob -

Are gone over the questionnaire for databab purposes, and added a couple context comments. (Edits in parentheses are for databab use only)

- Its length dictates a smaller sample size - can I ask what you are shooting for? (also what is "hit rate" w/contact list?)

50  
(5 of 8/10)

13  
EACH

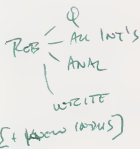
- Also, its complexity + number of open ended questions indicates that a Sr. person will be doing the actual interviewing - Who's scheduled for it?

2003

- One thing to be wary of is the number of open ended questions, if your sample size is at all over 20-25 - "tabulation" of open ended responses is, obviously, done by reading them all - not by computer.

The amount of time open ended questions added to the interview ~~is~~ affects the number of interviews you can expect + greatly complicates the analysis of the data.

- With this great number of variables, obviously, the databab development + analysis will be time consuming. In



sure you are aware of this both for scheduling + pricing purposes. (If not, it should be factored in now instead of later!)

- The numbering scheme I've outlined (after modification after testing's done) needs to be added to the questionnaire form before the "official" interviewing begins to assure accurate data transfer (in data entry.)

Will this go thru graphics?

(The testing almost always dictates changes in the questionnaire draft - this "datatab QC" + numbering really should be done after the trial runs have had their effect on the draft.)

- also - What's the charge code?

If you could respond to my questions + after testing the questionnaire (at least 3-5 <sup>COMPLETED INTERVIEWS</sup>) should be attempted to fully appreciate needed changes + best facilitate a successful interviewing project.)

return it to me, I'd be happy to QC it from a datatab + interviewer's standpoint.

Thanks -  
Kin

QUANT  
STUDY?

PROJECT  
NOT

ETSP



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THE COVER PAGE 11

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December 12, 1988

Input Corp.  
1280 Villa St.  
Mountain View, CA. 94041-1194

Attn: Mr. Denny White

Subj: Draft questions for IBM Expert System survey

Denny,

Attached you will find our suggestions for questions to be used in the subject survey. We decided to use the ADS survey of June 1987 which I told you about as a base. The first part can be used pretty much as is if you eliminate references to AIDN/ADS and say something generic (e.g. "your expert system"). I've marked up some minor changes and you'll find some additional questions attached which you can work in where appropriate. I'm also including a list of features and functions which should be added to the features and functions on the last page.

We realize that this is a "wish list" and is subject to negotiation. Since the original was designed for "in person" interviews, you may also find it necessary to reword some questions for a phone survey and eliminate some redundancy.

I apologize for the sloppy nature of some of the material but because of the time constraints, I felt it would take too long to re-type and clean it up. Let me know if you have any questions or problems. See you Wednesday at 5:30.

Les Mezei  
IBM Knowledge Based Systems  
2800 Sand Hill Rd.  
Menlo Park, CA. 94025  
(415) 858-6039



## AION/ADS CUSTOMER SURVEY

Date: \_\_\_\_\_

I. User ProfileCompany Name: SECURITYAddress: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

User Contact: \_\_\_\_\_ Phone: ( ) \_\_\_\_\_

Title: \_\_\_\_\_

Type of Business: \_\_\_\_\_ SIC Code \_\_\_\_\_

Type of System: \_\_\_\_\_ System Software: \_\_\_\_\_

Mainframe: \_\_\_\_\_ MVS/VM etc. \_\_\_\_\_

Workstations (Non-PC): \_\_\_\_\_

PC	IBM		Clones	DOS/UNIX etc.
	_____	_____		
_____	PC's	_____	_____	_____
_____	XT's	_____	_____	_____
_____	AT's	_____	_____	_____
_____	RT's	_____	_____	_____
_____	386	_____	_____	_____

ADS Development is performed on:

Type of System: \_\_\_\_\_ System Software: \_\_\_\_\_

Mainframe: \_\_\_\_\_ MVS/VM etc. \_\_\_\_\_

Workstations (Non-PC): \_\_\_\_\_

PC	IBM		Clones	DOS/UNIX etc.
	_____	_____		
_____	PC's	_____	_____	_____
_____	XT's	_____	_____	_____
_____	AT's	_____	_____	_____
_____	RT's	_____	_____	_____
_____	386	_____	_____	_____

ADS is used for production on:

Type of System: \_\_\_\_\_ System Software: \_\_\_\_\_

Mainframe: \_\_\_\_\_ MVS/VM etc. \_\_\_\_\_

Workstations (Non-PC): \_\_\_\_\_



PC : IBM \_\_\_\_\_ Clones \_\_\_\_\_  
 \_\_\_\_\_ PC's \_\_\_\_\_ DOS/UNIX etc. \_\_\_\_\_  
 \_\_\_\_\_ XT's \_\_\_\_\_ \_\_\_\_\_  
 \_\_\_\_\_ AT's \_\_\_\_\_ \_\_\_\_\_  
 \_\_\_\_\_ RT's \_\_\_\_\_ \_\_\_\_\_  
 \_\_\_\_\_ 386 \_\_\_\_\_ \_\_\_\_\_

What version of ADS are you using for: Development \_\_\_\_\_  
 Production \_\_\_\_\_

**II. Marketing Profile**

1. What was this company's motivation for purchasing an Expert System package (rate in order of importance - 0 = not important, 1 = slightly important, 2 = important, 3 = very important, 4 = critical for business)?

- 0 0 0 0 1 2 A. 0 1 Pressure from DP staff 4
- 0 0 1 0 1 0 B. 0 1 Pressure from User Departments 3
- 4 4 4 1 4 2 C. 3 3 Need to stay competitive 25.5
- 0 3 1 2 3 4 D. 2 2 Clearly defined business application 17
- 0 2 4 3 4 2+ E. 4 3 Perceived business application 22.5
- 4 4 4 4 4 2+ F. 3 4 Desire to be at leading edge of your industry 29.5
- 0 0 4 2 1 1 G. 2 3 Desire to train DP staff on new technology 18
- 2 2 3 3 3 H. 3 3 Perceived increase in profitability 19
- 4 2 4 3 1 I. 2 3 Perceived increase in programmer productivity 17
- 0 2 0 4 3 2 J. 0 3 Perceived increase in user productivity 14
- K. Other: \_\_\_\_\_

2. Where did you first hear about ADS? (check one)

- 1 A. \_\_\_\_\_ AION Marketing Rep
- 1 B. 1 IBM Marketing Rep
- C. \_\_\_\_\_ Other Marketing Rep
- D. \_\_\_\_\_ Newspaper or Magazine article
- E. \_\_\_\_\_ Advertisement
- 111 F. 3 Trade Show AAAI
- 11 G. 2 Friend or Competitor AA
- 11 H. 2 Industry or DP conference/workshop

3. Did you examine any other Expert System software (Y/N)? 4 Y N

A. If "Yes" please list:

- 1. TOP2 KES 1 ART 111 KEE 1111
- 2. \_\_\_\_\_
- 3. KNOWLEDGCRAFT GURU 11 TWAICE
- 4. NEXPERT 1 S2 111 OPS/S PC PLUS 11
- RULEMASTER EXCON





VP EXPERT  
M2  
KNOWLEDGE SHIRT  
7 WAICE  
EXPERTISE  
NEXPERT  
S1  
OPS/S  
RULEMASTER

B. List any E/S shells that were installed/tested at your location and whether they are now running productive knowledge bases:

		Productive use
1. GURU	11	4. (Y/N) 1
2. PERSONAL CONSULTANT PLUS	11	5. (Y/N) 1
3. KEE / ART	1	6. (Y/N) 1

7. If any knowledge bases are in productive use, why wasn't ADS used for these applications? \_\_\_\_\_

C. Was IBM's Expert System Environment (ESE): or Knowledge Tool (KT)

	ESE	KT	
1. Considered.....	11	11	(Y/N) 11
2. Installed.....	11	11	(Y/N) 11

3. Why was ADS chosen over IBM/ESE/KT rate in order of importance - 0 = not important, 1 = slightly important, 2 = important, 3 = very important?

0 0 0 1 0 0 1	a.)	Cost	
0 3 2 3+ 3 3 2	b.)	Ease of Use	2
3 2 3 3 2+ 1 2	c.)	Technological Superiority	16.5
		Explain _____	16.5
0 2 3 3 3 3 2	d.)	More Function	
		Explain _____	16
3 3 3+ 3 3 3 2	e.)	PC compatibility	29.5
0 0 2 2 1 0 2	f.)	Soundness of code	7
0 0 2 1 1 0 1	g.)	Installed references	5
1 1 1 0 0 0 1	h.)	Existing industry applications	4
3 2 1 3 2 3 3	i.)	Easier access to user data	17
2 3 1 3 0 2 2	j.)	Availability on Operating System	13

k.) Other... \_\_\_\_\_

4. From whom did you purchase ADS? \_\_\_\_\_

III. Performance/Satisfaction

1. Do you have an ADS knowledge base in productive use (Y/N)? 6 11 1

A. Briefly describe its function: \_\_\_\_\_



B. This knowledge base: (check all that apply)

- 1.) ~~///~~ Is still under development  
 2.) ~~///~~ Did not meet our expectations  
 3.) ~~///~~ Met our expectations  
 4.)    Exceeded our expectations  
 5.)    Runs too slowly  
 6.)    Is meeting resistance from users  
 7.)    Was easily accepted by users  
 8.)    Has saved us money  
 9.)    Has cost us more than it saved  
 10.)    Has saved us development time  
 11.)    Could have been coded easier in ???  
 12.)    Has increased user productivity

C. How big is this knowledge base?

1. \_\_\_\_\_ Number of objects  
 2. \_\_\_\_\_ Number of rules  
 3. \_\_\_\_\_ Runs on (PC or Mainframe) PC = 3  
/// /// MF = 5

D. Do you have more than one knowledge base in productive use (Y/N)?   

1. If "Yes", describe: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

E. How big is the largest knowledge base described in D?

1. \_\_\_\_\_ Number of objects  
 2. \_\_\_\_\_ Number of rules  
 3. \_\_\_\_\_ Runs on (PC or Mainframe) /// PC = 1  
/// MF = 3  
 4. \_\_\_\_\_ Is the performance satisfactory (Y/N)

2. Have you ever tried to code a knowledge base in ADS that ran too slowly or exceeded the capacity of ADS (Y/N)?         

- A. Describe the situation: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

B. Could you circumvent the problem using ADS (Y/N)?   

- C. Describe the circumvention: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



3. Please rate your overall satisfaction in the following areas:

( 0 = no opinion, 1 = dissatisfied, 2 = satisfied, 3 = very satisfied )

*4. Becoming more satisfied 5. Remaining less satisfied*

3	3	3	3	3	A.	2	3	Aion as a company to do business with	24.5
3	3	2	3	3	B.	2	3	Technical expertise of AION personnel	23.5
0	3	0	2	2	C.	2	2	Quality of education/training on ADS	14
0	1	0	2	2	D.	3	1	Availability of education/training on ADS	10.5 (6)
0	2	3	2	3	E.	2	2	Availability of technical support on ADS	16.5 (6)
3	2	3	2	2	F.	2	2	Soundness of ADS code	18
3	2	3	2	2	G.	2	2	AION's responsiveness to program bugs in ADS	19.5
2	2	3	1	1	H.	1	1	ADS documentation	13
2	2	2	2	3	I.	2	2	Performance of ADS knowledge bases	17
3	2	3	2	3	J.	2	2	Ease of use of ABS	20
3	2	3	2	3	K.	2	2	Ease of use of AES	20
3	2	3	2	3	L.	2	2	Completeness of ADS functions	19.5
3	3	3	2	3	M.	3	2	Your decision to purchase ADS	22
0	3	3	2	3	N.	2	2	The people who sold you ADS	19

O. Additional comments:

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4. What about ADS would you most like to see changed/How?

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5. What do you like most about ADS?

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#### IV. ADS Features/Functions

1. How important are the following ADS features for you to build effective and productive knowledge bases (rate in order of importance - 0 = not important, 1 = slightly important, 2 = important, 3 = very important, 4 = critical)?

2	2	4	4	4	A.	4	3	Application development by multiple developers	23
3	2	2	1	1	B.	1	1	Ability to incorporate graphs	11
3	3	3	3	4	C.	4	2	Ability to incorporate reports	22
4	3	4	4	4	D.	4	3	Record processing	26
4	3	4	4	4	E.	4	1	List processing	26
3	1	4	4	4	F.	3	1	Set processing	22
4	4	2	4	4	G.	4	3	Ability to define "Types"	25
0	2	1	3	4	H.	2	0	ADS "Vocabulary" feature	12
0	2	1	4	0	I.	1	3	Password security	11
2	2	2	3	2	J.	4	2	Ability to view "status" of objects	17
3	4	4	4	4	K.	4	3	Ability to write to disk files from knowledge base	26
2	1	3	3	3	L.	3	3	Ability to "Browse" files during development	18
0	2	2	2	2	M.	4	2	Ability to run system commands during development	14
0	2	1	4	4	N.	4	2	Displaying memory used by knowledge base or state	17.5
0	1	1	3	1	O.	2	1	Defining "noise words" in vocabulary	9
0	3	1	3	0	P.	3	2	Evaluating the "cost" of a rule (parameters fired)	12
0	2	4	4	2	Q.	2	3	Date and time data types and calculations	17
0	4	0	3	0	R.	4	4	Ability to run under IBM CICS/VS	18
0	4	0	3	0	S.	4	3	Ability to run under IBM IMS/VS	14
0	4	1	3	2	T.	4	4	Access to DL/1 databases and VSAM files	18
0	2	2	4	2	U.	4	2	Executing applications on different processors	16
0	3	1	4	0	V.	4	3	DB2 command support	15
0	3	4	4	2	W.	1	3	SQL support	17
0	4	1	3	4	X.	3	3	Developing applications on PC	23
0	4	1	4	3	Y.	1	2	Delivering applications on PC	15

6. Not available

5. Don't know

2. What additional features/functions would you like to see incorporated into ADS?

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MOSBY  
700  
707A107





## Additional Questions

1. (Which product are they using?)
2. How long have you had the product (month and year of purchase)?
3. If you were making your "buy" decision today, would you still choose this product?
  - a. If the answer is "No" which product would you rather have and why (list important features)?
  - b. If the answer is "Yes", are there still features of other current products which you wish you had and what are they?
4. Do you feel this product is "state of the art"?
  - a. If not, name a product which is.
  - b. What features do you consider to be "state of the art"?
5. What percent of involvement was/is required from each of the following skill levels to develop your application(s).

WPM 7

	Research	Prototype	Production
a. Business Professional:	-----	-----	-----
b. D.P. Professional:	-----	-----	-----
c. A.I. Professional:	-----	-----	-----



# INPUT Features Questions

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These are for Section IV Features/Functions Question 1, "How important are the following features for you..."

The responses options should also include "not applicable" because some of the features do not apply to all products.

1. Conforms to IBM SAA Common User Interface
2. Provide access to IBM SAA Common Programming Interfaces (CPI)
3. Supply functions that are identified as an IBM KBS SAA CPI
4. Ability to imbed HLL in the RHS and LHS of rules
5. Ability to imbed rules in HLL
6. Datatypes
  - a. Currency
  - b. Time
  - c. Date
  - d. Binary
  - e. Character
  - f. Decimal
  - g. Floating point
  - h. Integer
  - i. User defined
7. Data structures
  - a. Factored
  - b. Network
  - c. Hierarchical
  - d. Frames
  - e. Mixed
  - f. "Standard HLL"
8. Graphics-oriented developer interface
9. Connectivity to existing terminal facilities
10. Connectivity to existing data storage facilities
  - a. DB2
  - b. IMS DL/I
  - c. DBASE, REBASE or other PC products
  - d. LOTUS or other spreadsheets
  - e. IDMS or other MF DBMS's
  - f. VSAM
  - g. System data files

June 2, 1988

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ASAPINP2



# INPUT Features Questions

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- h. Frames
- 11. AI Functions
  - a. A..... Truth Maintenance Systems
  - b. Neural networks
  - c. Semantic networks
  - d. Forward OPS
  - e. Goal directed OPS
  - f. Emycin backward
  - g. Frames
- 12. Concurrent use of common KB by multiple users
- 13. Storage consumption
  - ◆ Real
  - ◆ Virtual
  - ◆ DASD
- 14. Performance
  - a. Workstation
  - b. Host
    - ◆ Transaction
    - ◆ Batch
- 15. Portability of application
- 16. Portability of system
- 17. Multiplatform development
- 18. Multiplatform delivery
- 19. Platforms
  - a. VM
  - b. MVS
  - c. UNIX
  - d. OS/2
  - e. DOS
  - f. OS/400
- 20. Application planning aids
  - a. Design tools
  - b. Performance prediction
  - c. Storage utilization
- 21. Knowledge acquisition tools
- 22. Active images



## INPUT Features Questions

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- ◆ For developer
  - ◆ For end user
23. Delivery on
- a. LAN
  - b. Mainframe host
  - c. Stand alone workstation
  - d. Non-programmable terminal
24. Development on
- a. LAN
  - b. Mainframe host
  - c. Stand alone workstation
  - d. Non-programmable terminal
25. Knowledge base recovery
26. Knowledge base reentrancy
27. Embeddability
- a. Transaction systems - IMS/CICS
  - b. Batch applications

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The ninth part of the document discusses the importance of technology in accounting. It explains how the use of computers and software has revolutionized the accounting profession. It also discusses the various ways in which accountants can use technology to improve their work.

The tenth part of the document discusses the importance of continuing education in accounting. It explains how accountants must stay up-to-date on the latest developments in the field. It also discusses the various ways in which accountants can pursue continuing education.



DRAFT

## COMPANY PROFILE

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### **INTELLICORP**

1975 El Camino Real West  
Mountain View, CA 94040-2216  
(415) 965-5500

Thomas P. Keller, President and CEO  
Public Corporation, OTC  
Total Employees: 175  
Total Revenue, Fiscal Year End  
6/30/88: \$20,433,000

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### **The Company**

IntelliCorp develops, markets, and supports software products used to develop artificial intelligence (AI)-based systems and provides custom systems development, contract research, and consulting professional services. IntelliCorp's leading product, the Knowledge Engineering Environment™ (KEE<sup>R</sup>), was introduced in 1983, and was the first commercial AI software product.

- IntelliCorp was founded in September 1980 as Intelligenetics, Inc. by four Stanford University scientists to develop and market software based on AI technology for genetic engineering applications. The company changed its name in June 1984 to reflect a shift to general-purpose AI products and formed a separate division called Intelligenetics, Inc. to market its genetic engineering software.
- In December 1983, the company made an initial public offering of 1.6 million shares of common stock, generating net proceeds of \$8.5 million. In December 1985, the company sold 1.3 million shares in a second offering. In January 1986, the underwriters sold an additional 277,500 shares on behalf of IntelliCorp. Total net proceeds to the company were approximately \$17.9 million.
- In May 1986, IntelliCorp entered into a joint venture with Amoco Corporation for the development and marketing of AI-based software products for molecular biology.
  - As part of the formation of the venture, IntelliCorp sold a 60% interest in Intelligenetics to Amoco for \$4 million. The \$3.2 million pre-tax gain from this sale was recognized in the fourth quarter of fiscal 1986. Amoco holds an option, exercisable in May 1991, to acquire IntelliCorp's remaining non-voting interest in Intelligenetics.
  - Intelligenetics contributed revenue \$1.9 million and income from operations of \$219,000 to IntelliCorp's fiscal 1986



results. IntelliCorp now accounts for its investment in Intelligenetics under the cost method.

In July 1987 IntelliCorp announced a realignment of the company, designed to respond more effectively to the needs of its customer base, to improve financial performance, and to refine its strategic focus on future product and market objectives. The company's strategies were redefined as follows:

- To expand the availability of its software products for a range of standard hardware platforms, with integration capabilities to conventional programming languages and data bases. At the end of fiscal 1987, about 80% of product sales were derived from versions of the company's software running on non-conventional hardware platforms (LISP machines). Currently, approximately 80% of IntelliCorp's software sales are for standard (Common LISP) hardware, such as Sun Microsystems and IBM RT PC workstations, and DEC VAXstation computers.
- To initiate a vertical marketing program that brings the company's products closer to the end user.
- To seek strategic alliances with major hardware vendors. During fiscal 1988, IntelliCorp entered into marketing/development alliances with IBM and Hewlett Packard.

IntelliCorp's fiscal 1988 revenue reached \$20.43 million, compared to fiscal 1987 revenue of \$20.35 million. Net losses were \$1.5 million, compared to net losses of nearly \$4 million in fiscal 1987. A five-year financial summary follows:



**INTELLICORP  
FIVE-YEAR FINANCIAL SUMMARY  
(\$ thousands, except per share data)**

ITEM	FISCAL YEAR				
	6/88	6/87	6/86	6/85	6/84
Revenue	\$20,433	\$20,352	\$18,597	\$8,685	\$2,076
• Percent increase from previous year	--	9%	114%	318%	255%
Income (loss) before taxes	\$(1,474)	\$(3,987)	\$5,206	\$(626)	\$(1,684)
• Percent increase (decrease) from previous year	63%	(177%) (a)	932%	63%	(131%)
Net income (loss)	\$(1,474)	\$(3,987)	\$4,906	\$(724)	\$(1,684)
• Percent increase (decrease) from previous year	63%	(181%)	778% (b)	57%	(131%)
Earnings (loss) per share	\$(0.21)	\$(0.57)	\$0.75	\$(.014)	\$(.041)
• Percent increase (decrease) from previous year	63%	(176%)	636% (b)	66%	(21%)

- (a) Includes a corporate restructuring charge of approximately \$1.7 million.
- (b) Includes a net gain of \$2.9 million (\$0.45 per share) from the sale of a 60% interest in *Intelligenetics* to Amoco and a \$1.7 million tax credit resulting from net operating loss carryforwards.

IntelliCorp management attributes the lack of revenue growth from fiscal 1987 to fiscal 1988 to the shifts in the market for its products and services away from specialized hardware environments toward general purpose hardware.

- The realignment initiated in July 1987, together with a reduction in operating expenses, resulted in a revenue increase of 8% and net profit of \$416,000 for the fourth quarter of fiscal 1988 (the three months ending June 30, 1988).
- Revenue for the three months ending September 30, 1988 reached \$5.4 million, a 6% increase over \$5.1 million for the same period in 1987. Net income was \$411,000, compared to net losses of \$649,000 for the same period a year ago.

As of June 30, 1988, IntelliCorp had approximately 175 employees. The company currently has about 200 employees worldwide.



IntelliCorp competitors include Inference Corporation,  
Teknowledge, \_\_\_\_\_

### Key Products and Services

Approximately 79% of IntelliCorp's fiscal 1988 revenue was derived from software product licenses and associated support services. The remaining 21% of revenue was derived from contract research and consulting professional services.

A three-year summary of source of revenue follows:

#### INTELLICORP THREE-YEAR SOURCE OF REVENUE SUMMARY (\$ thousands)

ITEM	FISCAL YEAR					
	6/88		6/87		6/86	
	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
Software and related services	\$16,161	79%	\$16,216	80%	\$15,390	83%
Professional services	4,272	21%	4,136	20%	3,207	17%
<b>TOTAL</b>	<b>\$20,433</b>	<b>100%</b>	<b>\$20,352</b>	<b>100%</b>	<b>\$18,597</b>	<b>100%</b>

IntelliCorp develops, markets, and supports knowledge processing software products for a range of hardware environments. The company has licensed more than 2,600 copies of its software products worldwide.

- The KEE system is an integrated package of AI development tools that provide a programming environment for building knowledge-based systems for commercial and scientific applications. The principal AI technologies represented and integrated by the KEE system are rule-based reasoning, frame-based representation, and object-oriented programming.
- At June 30, 1988, the company had an installed base of approximately 2,300 KEE systems delivered to over 700 customer sites. IntelliCorp delivered approximately 650 systems during fiscal 1988, compared to 700 systems during fiscal 1987, and more than 600 systems during fiscal 1986.





- KEE is available for the IBM PC RT; the Apollo Domain 3000 and 4000 workstation series; Sun-3 and Sun-4 workstations; Symbolics 3600 computers; Texas Instruments Explorer I, Explorer II, and MicroExplorer workstations; and DEC VAXstation computers.
- KEE is licensed for a per copy fee. The standard price charged for an initial KEE system is \$44,000, consisting of a \$30,000 license fee and \$14,000 for a support package that includes training and one year of software maintenance and support. Volume discounts are available.
- An Intel 80386-based KEE product, introduced in \_\_\_\_\_ 1988, licenses for \$15,000.
- In October 1987, IntelliCorp entered into an agreement with IBM to develop a version of the KEE system for the IBM System/370 series of mainframes. The product, scheduled for availability in December 1988, will be called IBM KEE, will carry the IBM logo, and will be distributed exclusively through IBM. IBM KEE will have an initial price of \$98,000 for a one-time charge license and \$4,900 for a monthly license. Under the agreement, IntelliCorp will receive a royalty on licenses of IBM KEE.
- The SimKit™ package, released in November 1985, adds simulation and modeling capabilities to the KEE system.
  - SimKit licenses for an initial one-year fee of \$21,000, which includes training and support. Volume discounts are available.
  - SimKit is available on Sun-3, Texas Instruments Explorer, and Symbolics workstations.
- The KEE PC-Host Delivery System, available in January 1986, allows customers that have developed a knowledge-based system using the KEE software on a workstation to use a host computer running Common LISP (for example, a DEC VAX) in combination with certain microcomputers (for example IBM PCs and compatibles) to deliver a knowledge-based system to microcomputer users.
  - The system licenses for \$7,500 to \$60,000 per copy, depending on the size of the host computer. This price includes one year of support. There is an additional fee for each PC connected to the host.



- KEEconnection™, announced in January 1987, is a bridge for passing information between data bases and knowledge-based systems built with KEE.
  - KEEconnection is available on Sun-3 and Symbolics workstations. The data base to which the workstations are connect may be on either a DEC VAX or a Sun-3 computer.
  - Shipments of KEEconnection began in December 1987. The product licenses for \$15,200 to \$47,000 per copy, which includes training and one year of software support.
- KEE/C Integration Toolkit, introduced in July 1987, integrates programs written in the C language with knowledge-based applications developed using IntelliCorp's LISP-based KEE system. The product enables developers to move easily between C, KEE, and LISP as necessary, depending on which programming language is most appropriate.
  - The product, which shipped beginning in February 1988, is available on Sun-3 and Sun-4 workstations.
  - The KEE/C Integration Toolkit licenses for \$1,500 per copy. Volume discounts are available.
- J-KEE is a Japanese language version of the KEE system for Symbolics workstations. J-KEE is currently marketed in Japan by CSK Corporation (formerly Computer Services Corporation). IntelliCorp and CSK are currently jointly developing a version of J-KEE for Sun-3 workstations.
- IntelliCorp is developing versions of the KEE system, SimKit, and KEEconnection for Hewlett Packard's HP 9000 series of workstations. Availability is scheduled for \_\_\_\_\_.

KEEtutor™, introduced in January 1988, is an expert systems software training package that is designed to be used without the supervision of an instructor.

- The package contains two video cassette tapes, training software in either tape or floppy format, and five sets of tutorial modules that cover the basic features of the KEE system.
- KEEtutor is designed for use with KEE 3.1 software and is available on 80386-based microcomputers, Sun Microsystems, Symbolics, Texas Instruments Explorer and MicroExplorer, and DEC VAXstation computers. Additional releases are planned for IBM RT and HP computers.



- KEEtutor is priced at \$4,000 to \$5,000 per copy, depending on the number of copies of supporting materials ordered by the customer.

IntelliCorp provides, on a contract basis, custom development professional services. The company undertakes these projects to help customers successfully commence development of their applications and to help broaden the capabilities of the KEE system.

- IntelliCorp occasionally licenses unproductized software modules to customers in connection with custom system projects.
- Major custom system projects during fiscal 1988 include the following:
  - A plant modelling system for electric utilities sponsored by the Electric Power Research Institute.
  - A new software tool for the Airland Battle Management System being developed by Lockheed Austin division under sponsorship of the Defense Advanced Research Projects Agency (DARPA) and the U.S. Army.
  - A configuration system for a large vehicle manufacturer.
  - A scheduling system for a semiconductor firm.
  - In February 1988, DARPA awarded IntelliCorp a 15-month, \$600,000 contract to develop two custom knowledge systems for internal administration management related to order processing and financial data tracking.
  - In February 1988, IntelliCorp was awarded a two-year \$750,000 contract cofunded by DARPA and NASA to conduct research into the use of "truth maintenance" software methods in automatic planning.
- IntelliCorp continues to provide research and development services to DARPA for the Expert System Development Tool (ESDT) which is used by the U.S. Department of Defense, related government agencies, and contractors working on Department of Defense and related agency projects.
  - ESDT, which includes the core of the KEE system, was delivered in May 1987. Ongoing efforts under the contract



include the development of functional additions to the ESDT.

- IntelliCorp retains rights to commercialized the ESDT.
- IntelliCorp has realized about \$2.3 million in revenue from this contract through the end of fiscal 1988. Additional funding of approximately \$500,000 is anticipated.

### Industry Markets

IntelliCorp's products are marketed to clients in the aerospace, energy, finance, manufacturing, and telecommunications industries and to the federal government. The company's customers are primarily large corporations, government agencies, and universities.

Approximately 14% of fiscal 1988 revenue was derived from the federal government.

IntelliCorp clients include The Defense Advanced Research Projects Agency (DARPA), Northro Corporation,, Minnesota Mining and Manufacturing, Nippon Life, Manufacturers Hanover Corporation, Boeing, Rockwell International's Avionics Group, Electric Power Research Institute,

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### Geographic Markets

Approximately 75% (\$15.3 million) of IntelliCorp's fiscal 1988 revenue was derived from the U.S.. The remaining 25% of revenue was derived from export sales, with 18% (\$3.7 million) derived from Europe, and 7% (\$1.4 million) derived from the Far East.

In addition to its headquarters in Mountain View (CA), the company has U.S. sales offices in Boston, Chicago, Dallas, Denver, Philadelphia, New York, and Washington, D.C.

International offices are located in Germany and the U.K.

IntelliCorp's products are distributed by CSK Corporation in Japan, by certain distributors in Scandinavia and Israel, and by independent sales representatives in France and Italy.

IntelliCorp has cooperative marketing agreements with several hardware manufacturers (Symbolics, Texas Instruments, Hewlett Packard, Sun Microsystems, Apollo, DEC, and IBM) that market the KEE system with their hardware.

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12/8/88 John Merrill/IBM:

1. Carter wants to keep ~~at~~ Jan 27<sup>th</sup> date

2. How 2 people working on quantities

3. Ship to us Tues. morning

meet Wed 14 5:30 pm

2800 Sandhill, 1st flr in their driveway  
Bldg 2750

i. Carter wants:

o cost perception - good or bad

o # licenses

o how ~~the~~ products are being used

[o Keep IBM's identity confidential]

o what how platform & other ES SW & HW platform

5. o Try to find out about ART / M - MF version

6. Don't mention AIGN (ASAP) study

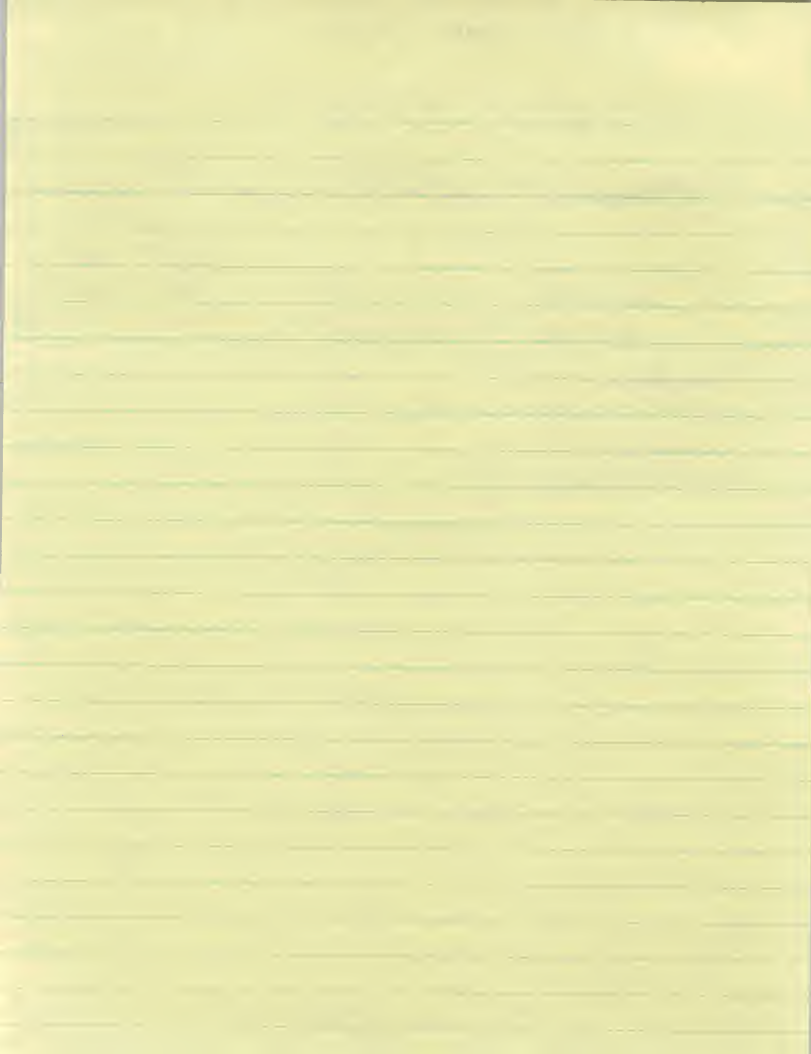


- #1 Std Alone end user developed systems (eg ESE) - ADS  
 - 1st Class (PC based)  
 - ~~Para. Consult. Eng. PC~~ (Next gen?)
- #2 Embedded applics developed by DP professionals (Knowledge tool) - ADS  
 - Next gen (WS based)
- #3 ~~Research~~ LISP Based Tool, for AI/ES researchers; - Gold Works  
 (Kee)  
 - ART

9 products (3 IBM, 6 competitors)  
 6 prod. (IBM v. leader in each of 3 segments)

10 in. <sup>int</sup> deep	5 in. <sup>int</sup> shallow
9000 x 9 = 81K	4500 = 40, 500
6 x 9 = 54K	6 x 4500 = 27,000

best efforts  
 need any 2ndary mkt? no  
 presentation? yes  
 # prod's covered 4



Les Mezée: 12/6/88

1. ASAP = code word for AION

2. Has AION & other survey info from '86  
we might want to see + "other data"

3. Treat <sup>all</sup> as IBM confidential!



DATE WRITTEN: 11/3

COMPANY: <u>IBM</u>	INPUT Staff:	REASON:	RELATING TO:
NAME: <u>FIM CATES</u>	(INIT.) <u>MC</u>	<input checked="" type="checkbox"/> Sales	<input type="checkbox"/> UISP <input type="checkbox"/> M/C
TITLE: _____	(INIT.) _____	<input type="checkbox"/> Marketing	<input type="checkbox"/> CAMS <input type="checkbox"/> FCSP
ADDRESS: <u>2800 San Jo. Hill Road</u>	<input type="checkbox"/> Phone	<input type="checkbox"/> Interview	<input type="checkbox"/> MAPS <input type="checkbox"/> EDIS
<u>Mano Park,</u>	<input checked="" type="checkbox"/> Visit	<input type="checkbox"/> Present'n	<input type="checkbox"/> FISSP <input type="checkbox"/> OAAP
PHONE: ( ) <u>858-3000</u>	Contact Date: <u>11/1</u>	<input type="checkbox"/> Hotline	<input checked="" type="checkbox"/> CUSTOM <input type="checkbox"/> CSPE
		<input type="checkbox"/> Support	<input type="checkbox"/> OTHER <input type="checkbox"/> ISPE
		<input type="checkbox"/> Other:	ID _____

• Jim runs three units for IBM G.P.D. 1) QUERY 2) KBS (AI) 3) A/V.

• Has about 350 people - was one of originators of DB2.

• He has been with IBM over 20 years and has had 17 jobs. His role is to bring new technologies to market. When he took over KBS it was staffed by theoreticians - now they have market focus.

• Feels he knows the QUERY market and A/V is small right now.

• Area he needs more support in KBS - Wants to know share of applications being generated in KBS tools - what will they grow to. Also wants to understand competitors - what applications are their customers using their products for? What would they like to use them for? What are the emerging trends for these companies? He is not interested in 'PC ONLY' companies: as he is targeting host systems and cooperative processing (PCs in networks or PC/Mainframe) markets. Particular companies are Neuron Data (NexAstr) and AION (ADS)

EXTRA PAGE(S) ATTACHED

ACTION DIST	TIME REQUIRED	DESCRIBE ACTION OR FOLLOW-UP	BY WHEN	DONE	INFO DIST.
D White		Possible contact for IBM on Neuron Data and AION - want to understand capabilities of product and reputation in the market.			
		Needs result this year. Max Fitzer/Wayne Chan will coordinate - let's discuss proposal.			
Pete		Send him examples of our work - might put into library			

(Check all that apply)

MAIL LIST  Client  Prospect  Press  Financial  Key Contact  Decision Maker  Product User

COPIES: • Dist. Copying  
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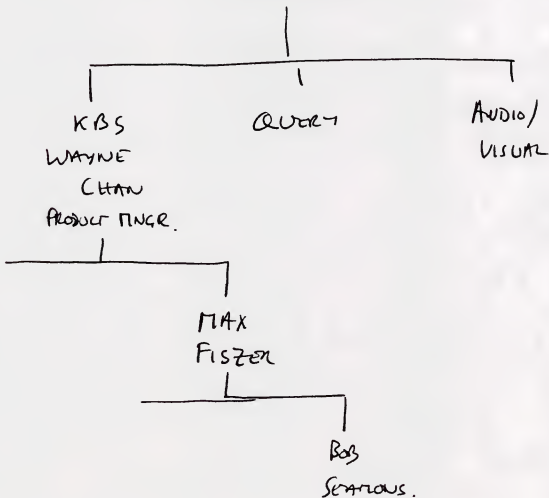
M&S 300  
1/67 (R)





137 - GPD  
SAND HILL RD  
ORGN.

Jim CASES





to JACK [unclear] [unclear]  
- Please write [unclear] [unclear]

CONTACT REPORT

COMPANY: IBM CORPORATION  
NAME: Max Fiszer  
TITLE: Manager, Project Office  
ADDRESS: Programming Systems Division  
2800 Sand Hill Road  
Menlo Park, CA 94025

INIT: R  
INIT: N  
CONTACT: 1  
WRITTEN: J  
TYPE: F

PHONE: 858-3012

REASON

-----  
Sales

CUSTOM

US. Boston  
NAME: JACK  
Switzerland  
KEY next KEY  
Knowledge Engineering Environment

===== COMMENTS =====

11/17/88 - Max was referred to us by Jim <sup>C</sup>Fates of IBM. (See PAC contact report dated 11/3.) He is manager of the Project Office for Knowledge Based Systems in the Programming Systems Division of IBM. While that office is not responsible for the development or acquisition of particular knowledge based software products, it is responsible for everything else including support, marketing, etc.

Max indicated that they were focusing on three products, all mainframe based, that are directed at three different types of users. The first, Expert Systems Environment, is a tool directed at end users. The second, Knowledge Tool, is PL1 based and designed to support DP professionals. The third, is or will be purchased and is called "KEY", a product of Intellicorp. When released by IBM this tool will be called "IBM <sup>KEY</sup>" and is a LISP oriented product primarily aimed at supporting AI and Expert Systems applications developers. All three products will be delivered over networks.

Max indicated that IBM was making a very large investment in knowledge based systems. There are over 100 people involved in Menlo Park, and probably 300 hundred more if you count the efforts in Bethesda, Gaithersberg, and IBM's prime research facility. Their strategy is to have tools which can be either easily integrated directly into other applications, or which support the development of knowledge based applications that can be easily integrated into other applications environments. He estimates that there are perhaps 500 installations of host based knowledge based software environments, and perhaps 20% of these have production applications of some sort or another.

It's IBM's feeling that there are probably about 2000 installations of simulary software at the workstation (Sun, Applo) level; and about 10000 installations at the PC level. IBM also feels that the Service Sector is taking the lead in the application of this type of technology and cited the insurance industry in particular.

IBM is potentially interested in having INPUT investigate a number of items; including:



1. Users (all three classes) reactions to the software systems they are currently using (IBM and Non-IBM).
2. Users impressions of IBM's mainframe approach to providing tools that will facilitate the integration of knowledge based applications into the production environment.

In the first category they would like to know: What tools are they using, (and presumably for what kinds of applications), their perceptions of the strengths and weaknesses of the tools, etc.

I discussed INPUT's approach to Custom Work and touted Denny White's experience in this particular area. Nancy reviewed INPUT's general capabilities and gave Max some literature and a report to look over. I agreed to prepare a preliminary work statement of what we might do to address IBM's requirements, and get it to Max by Monday. This does not need to be a formal proposal, but should include some feeling for a ball park price. I suggested that he should follow up with Denny White.

I believe that they have money to spend this year and if we come up with a price that is perhaps too large, we could segment the project to get it into two different budget periods.

===== ACTION ITEMS =====

NAME	ACTION DESCRIPTION	BY WHEN	DONE	TIME
DWayson	Provide Work Scope	11/18/88		
DWhite	Follow Up As Appropriate			

=====

DISTRIBUTION

CC: Nancy, Randi, Bob, Doug

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- \_\_\_ Sales Account Rep

MAIL LIST UPDATE AS:

o interview content (depth)

o qualify re #



## Product Assessment Study

user	<sup>77</sup> interviews
10 <sup>n</sup> interviews per product + <del>vendor interview</del>	10
vendor interview	1
per product	11

3 consultant interviews 3

- ~~Vendor Q:~~ Vendor Q:
- o time in mkt
  - o # installs
  - o Price
  - o Positioning
  - o Competitive Advantages
  - o Limitations
  - o Future direction

- ~~Best~~  
~~Elaborate~~ User Q:
- o Length of use
  - o What using it for
  - o # applics built
  - o # " " in production  
(list/describe them incl new v. older)
  - o Product - S & W
  - o Vendor Support - ~~price~~ S&W  
- ~~price~~
  - o What wanted need (wish list)





REQUEST FOR TELECOPY SERVICEDATE 1/3/89NUMBER OF PAGES FOLLOWING  
THE COVER PAGE 3

PLEASE SEND THE ATTACHED PAGES TO:

NAME: ROB ELMORE  
LOCATION: Copy to DENNY WHITE

DEPT/BLDG: \_\_\_\_\_

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MACHINE TYPE \_\_\_\_\_

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## IBM Confidential

MEMO TO: Mr. Dennis White

January 3, 1989

DRAFT 3

Les Mezei, 415-858-6039 8/466-6039  
IBM  
WD6/KBS Special Development Projects  
MS 27-7, Menlo Park, CA, 94025  
MLPVM2/LMEZEI

SUBJECT: ESE user contacts

As per our agreement, here are the contacts for the ESE accounts we recommended as subjects for the survey (as of 1/03/89);

1. Aetna Life & Casualty Co.  
51 Flower St.  
Hartford, CT.  
IBM Rep. = John Young 8-231-6402 / 203-727-6001  
contact: Barbara Muth 203-273-1923
2. Mutual Life Insurance of New York (MONY)  
One MONY Plaza  
Syracuse, N.Y. 13202  
IBM Rep. = Sharon Pembroke 8-226-2100 / 315-424-2100  
contact: Neil O'Brian 315-477-4013  
Dir. of Systems & Programming
3. AT & T Technologies Inc.  
1200 W. 120th Ave.  
Westminster, CO. 80030  
IBM Rep. = Keith Ward (Mgr) or Carol  
Giles 8-656-7800 / 303-773-7800  
contact: Russ Bulsis 303-538-3149 Senior Project Leader
4. Metropolitan Life Insurance Co.  
One Madison Ave.  
New York, N.Y. 10010  
IBM Rep. = Harry Stergis or Kevin Portella  
8-243-4143 / 212-407-4143  
contact: Paul Clancy 212-578-8032
5. American Express Travel Related Services  
4315 South 2700 West



## IBM Confidential

Mr. Dennis White

- 2 -

January 3, 1989

- Salt Lake City, UT. 84184  
IBM Rep. = Mark Hancock 8-582-6757 / 801-328-6900  
contact: Bob Long 801-965-7441 Dir. of Technical Services  
Jim Mathews 801-965-5000 Mgr. ?
6. Merck Co. Inc.  
E. Scott Ave. Bldg. 84  
Rahway, N.J. 07065 IBM Rep. = Mike Bevins or Scott Branch  
8-233-7647 / 201-669-7647  
contact: Richard Bakunas 201-594-4449 Project Mgr.  
John Engelhart 201-594-7944 Programmer/Analyst
7. General Electric Capital Corp.  
(no address on file)  
Hamden, CT IBM Branch  
IBM Rep. = Peter Hammer 8-324-2628 / 203-281-2628  
contact: Tom Jackson 203-357-4240 Mgr. ?  
Tina Ostrowski 203-357-6213 Knowledge Engineer
8. State of California Dept. of Health & Welfare Data Center  
1651 Alhambra Blvd. MS 400  
Sacramento, CA. 95816  
IBM Rep. = Joe Bogard 8-577-5226 / 916-326-5226  
contact: Jim Henderson 916-739-4234 Programmer/Analyst  
Allison Bartman Gatt 916-739-4234 Staff Analyst
9. United Technologies Corp.  
400 Main St.  
East Hartford, CT. 06118  
IBM Rep. = Charlie Gilman SE 8-231-1297  
contact: Hamilton Standard Division  
Drew Gasper 203-654-5661 Mgr. of Software Eng.  
Eric Wilson 203-654-2422 Knowledge Eng. ?  
Pratt & Whitney Division  
Chuck O'Neal 203-565-7588
10. Caterpillar Inc.  
600 West Washington  
E. Peoria, IL. 61630  
IBM Rep. = Anne Heppner MR 8-779-4065 / 309-671-4065  
contact: John Burris 309-675-3458 Mgr. of App. Dev. Research  
Paul Melcher 309-675-5875
11. NYNEX Service Co.  
1166 Avenue of the Americas  
New York, N.Y. 10036  
IBM Rep. = Pat Vorhees 8-243-6244 / 212-745-6244  
contact: Han Lee 212-395-3583 Associate Director



## IBM Confidential

Mr. Dennis White

- 3 -

January 3, 1989

George Reichert 212-395-6062 Analyst

12. Cummins Engine Co.  
1000 Fifth St. Bldg. 40  
Columbus, Ind. 47201  
IBM Rep. = Gordon Wilson 8-675-1097 / 317-267-1097  
contact: Garry Norris 812-377-3177 Systems Analyst  
Larry Morlock 812-377-3318 Mgr. ?

13. Prudential Home Mortgage  
(no address on file)  
Gaithersburg, MD.  
IBM Rep. = Melissa Armstrong 8-728-4222  
contact: Chuck Taylor 301-330-6600  
Geoff Edwards 301-330-6600

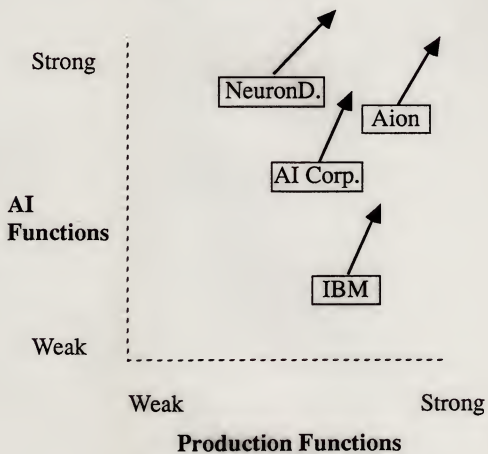
## DISCONTINUED ESE

1. Trans World Airlines  
(no address on file)  
Kansas City, MO IBM Branch  
IBM Rep. = Tom Niedzwiecki or Carlos Chavez  
8-642-6696 or 6496  
contact: Herb Tillinghast 816-464-6029 Mgr. ?  
Kathy Allison 816-464-6066
2. Shell Oil Co.  
(no address on file)  
Houston, TX IBM Branch  
IBM Rep. = Ernest Evans 8-345-1534 / 713-940-1534  
contact: Jim Roberts 713-795-1266 Group Leader, AI Group  
Vijay Arya 713-795-3121 Jim's Mgr.
3. Employers Reinsurance Corp.  
(no address on file)  
Kansas City, MO. IBM Branch  
IBM Rep. = Paul Verbrugge (SE) & Buzz Taylor (MR)  
contact: Charlotte Perry 913-676-5200
4. U.S. Air Force  
OMC OMI  
Randolph AFB, TX.  
IBM Rep. = Bill Breedlove 8-898-8506 / 512-496-8506  
contact: Lt. Mark Lepko 512-652-5034 Mgr. of App. Dev.  
Mr. Chuck Ziebell 512-652-5034 Mgr. ?  
- Made cancel decision





### Relative Product Positions and Expected Movement: INPUT's View





## **Future (1990-on) Product Directions: Vendor Interviews**

- **AI Corp - KBMS**
  - Operation on more hardware platforms: DEC VAX, Unix workstations
- **Aion - ADS**
  - Support for AS/400?
  - Implementation of IBM's SAA
- **IBM - ESE**
  - More AI capabilities
  - Wider database access
  - Operation on more hardware platforms: AS/400
  - "Non-monotonic" reasoning
- **Neuron Data - NEXPERT**
  - "Knowledge acquisition module": System will extract KB from expert through dialog
  - Learning systems: Rules will be developed by system from monitoring of production experience



## Neuron Data - NEXPERT

### Next Release: Vendor Interviews

- Date
  - Summer 1989
  
- New capabilities
  - MVS-based mainframe run-time environment
    - CICS, TSO, DB2, SQL/DS, VSAM, IMS
  - DB2 and DL/1 access through SQL/DS
  - Full semantic net
  - Graphics tool kit for end-user screen painting



## **IBM - ESE**

### **Next Release: Vendor Interviews**

- Date
  - March 1989
- New capabilities
  - DOS-based PC consultation environment





**Aion - ADS**

**Next Release: Vendor Interviews**

- Date
  - Summer 1989
- New capabilities
  - Full object-oriented development



## AI Corp. - KBMS

### **Next Release: Vendor Interviews**

- Date
  - April 1989
  
- New capabilities
  - 90% decrease in mainframe utilization
  - Support for multiple shared development
  - OS/2 version
  - Standalone or cooperative processing
  - MS-DOS execution version

INTERNATIONAL ON MATHEMATICS  
~~WORKSHOP~~ 2

## Neuron Data - NEXPERT

### Today's Product: Vendor Interviews

- Hardware
  - Mac, PC, VAX, Unix workstation,
- Mainframe operating systems
  - VM (January 1989)
- Mainframe transaction processing
  - (Not yet)
- Standard file and database interfaces
  - Through SQL: Lotus, Excel, dBASEIII, Oracle, Sybase, Ingres, Informix
- Application interfaces
  - 2-way function calls
- SQL support
  - Yes
- Top industries and applications
  - Aerospace: Diagnosis, quality control of manufacturing
  - Financial services: Trading, recommend products, insurance evaluation
  - Manufacturing: Configuration of parts, manufacturing control
- Pricing
  - \$5,000 base, Mac or PC
  - \$8,000 base, VAX or Unix workstation
  - \$2,000 to \$25,000 base, depending on workstation size



## IBM - ESE

### Today's Product: Vendor Interviews

- Hardware
  - Mainframe
- Mainframe operating systems
  - VM, MVS
- Mainframe transaction processing
  - TSO, CMS, IMS, CICS
- Standard file and database interfaces
  - VSAM, SQL-based interfaces
- Application interfaces
  - Call out from ESE to application
- SQL support
  - Yes
- Top industries and applications
  - Insurance: Underwriting, claims
  - Manufacturing: Diagnosis, configuration
  - Finance: Loan authorization
- Pricing
  - \$35,000 base, development system; \$7,500 consultation only





## Aion - ADS

### Today's Product: Vendor Interviews

- Hardware
  - Mainframe or PC
- Mainframe operating systems
  - Any one
- Mainframe transaction processing
  - IMS, CICS
- Standard file and database interfaces
  - VSAM, QSAM, SQL/DS, DB2, DL/I
- Application interfaces
  - 2-way, in-memory transfer of data, applications in C, Pascal, Cobol, PL/I
- SQL support
  - Yes
- Top industries and applications
  - Insurance: Underwriting, claims
  - Oil and gas: Chemical blending, treatment, help desk
  - Telecommunications: Network design
- Pricing
  - \$60-70,000 base (MVS vs. VM), options can take total to \$155,000



## AI Corp. - KBMS

### Today's Product: Vendor Interviews

- Hardware
  - Mainframe
- Mainframe operating systems
  - VM, MVS/XA
- Mainframe transaction processing
  - CICS, TSO, IMS/DC, IDMS/DC, CMS
- Standard file and database interfaces
  - DB2, DL/1, VSAM, IDMS-R, ADABASE
- Application interfaces
  - 2-way, through embedded SQL statements; Cobol or PL/I
- SQL support
  - Yes
- Top industries and applications
  - Insurance: Underwriting, claims
  - Retail trade: Pricing of orders
- Pricing
  - \$90,000 base, options can take total to \$160,000



**Is the Product at the "State of the Art"?  
Which Others Are?**

Vendor - Product	Number of Mentions			Others Cited
	Yes	No	Not Sure	
AI Corp. - KBMS	6	0	0	Aion - ADS Inference Corp. - ART Neuron Data - NEXPERT Intellicorp - KEE
Aion - ADS	7	1	2	No others at "state" (3) Neuron Data - NEXPERT Intellicorp - KEE AI Corp. - KBMS Texas Instru. - PC Cons. Knowledge Bldrs - Level 5 IBM - Knowledge Tool
IBM - ESE	1	8	1	Aion - ADS (4) AI Corp - KBMS (3) Intellicorp - KEE (3) Inference Corp. - ART (3) Carnegie - Knowl. Craft Knowl. Garden-Knowl. Pro Neuron Data-NEXPERT
Neuron Data - NEXPERT	9	1	0	Intellicorp - KEE (6) Gold Hill - GoldWorks (5) Inference Corp. - ART (3) Carnegie - Knowl. Craft LISP No others at "state"

**INPUT®**



## Neuron Data - NEXPERT

### **"Feature Wish List": Priority Analysis**

Feature or Function	Number of Times Stated as: "Must Have" "Nice to Have"
Window-based floating-point operations	1
Better message passing between objects	1
Additions to C-routine libraries	1
Multiple attributes for a property	1
Better control of forward chaining	1
Better Mac to PC transfer of text	1
Debugging access to rule firing sequence	1
Easier PC-to-PC transfer, different configurations	1
Remove copy protection (AT version)	1
(None)	1





## Neuron Data - NEXPERT

### **"Feature Wish List": Priority Analysis**

Feature or Function	Number of Times Stated as:	
	"Must Have"	"Nice to Have"
<b>Better tools for end-user graphics</b>	3	2
<b>Better documentation: more examples, depth</b>	2	1
<b>Interfaces:</b> - Stronger DB interfaces - Better interface with applications	1 1	
<b>Full semantic net (not partial)</b>	1	1



## IBM - ESE

### "Feature Wish List": Priority Analysis

Feature or Function	Number of Times Stated as:	
	"Must Have"	"Nice to Have"
Multiple current instantiations	1	
View trace during consultation session	1	
"Else" capability	1	
Better number/string conversion	1	
Bring AI functions up to competition	1	
Given capabilities, make easier to develop (Scrapping product in favor of KEE)	1	
More explicit manual, good examples		1
Control of end-user screens by rules		1
Non-GDDM end-user graphics		1
Hard-copy report generation		1
Decreased impact on mainframe processor		1
Cooperative processing		1
Graphics-based development		1
(None)		1

INPUT®



## IBM - ESE

### **"Feature Wish List": Priority Analysis**

Feature or Function	Number of Times Stated as: "Must Have" "Nice to Have"	
<b>Interfaces:</b>		
- Better interfaces to applications	1	
- Call expert system from another appli.	1	
- Interface with IMS applications	1	
- DB interfaces: IDMS, dBASEIII, CICS, VSAM	1	
- Better interfacing instructions	1	
<b>Object-oriented development</b>	2	1
<b>PC development/production</b>	2	
<b>CICS version</b>	2	
<b>Conditional infer., Focus Control Blocks</b>	1	1



## Aion - ADS

### "Feature Wish List": Priority Analysis

Feature or Function	Number of Times Stated as:	
	"Must Have"	"Nice to Have"
Inheritance	1	
Infer rules from examples	1	
Better date manipulation, other formats	1	
Improved string searching	1	
Better editing of data from databases	1	
Direct user access if embedded in IMS, CICS	1	
Better back up for crashes	1	
End-user graphical objects (like meters)		1
Faster operation in production		1
Diagramming of knowledge bases		1
Non-monotonic reasoning (common sense)		1
Better tracing and explanation		1
Direct access to IDMS-R files		1
Stronger report generation, incl. columns		1
(None)		1





## Aion - ADS

### **“Feature Wish List”: Priority Analysis**

Feature or Function	Number of Times Stated as:	
	“Must Have”	“Nice to Have”
<b>Cooperative processing</b>	1	1
<b>Object-oriented development (strengthen)</b>	1	1
<b>Frames</b>	1	1
<b>Expanded memory</b>		2
<b>Flexible options to format end-user screens</b>		2



AI Corp. - KBMS

**“Feature Wish List”:  
Priority Analysis**

Feature or Function	Number of Times Stated as:	
	“Must Have”	“Nice to Have”
Copy and reuse blocks of rules	1	
Split screen/windowing for development	1	
Faster operation	1	
Better object inheritance		1
Place comment statements in code		1
Rule/pattern induction from examples		1



**AI Corp. - KBMS**

**“Feature Wish List”:  
Priority Analysis**

Feature or Function	Number of Times Stated as: “Must Have” “Nice to Have”	
<b>PC development/ production</b>	3	1
<b>Modular, shared development</b>	3	1



## Highest-Priority Missing Features: Cross Comparison

Missing Feature or Function	AI Corp. KBMS	Aion ADS	IBM ESE	Neuron Data NEXPERT
Object-oriented dev't		X	X	
Frames		X		
Cond'l inferencing, FCBs			X	
Full semantic net				X
Tools, end-user graphics				X
Modular, shared dev't	X			
PC development/prod'n	X		X	
Expanded memory		X		
Cooperative processing		X		
CICS version			X	
Improved/new interfaces			X	X
Better documentation				X





## Highest-Priority Missing Features: Table

<u>Vendor - Product</u>	<u>Missing Features or Functions</u>
• <b>AI Corp. - KBMS</b>	- Modular, shared development - PC development/production
• <b>Aion - ADS</b>	- Object-oriented development (strengthen) - Frames - Expanded memory - Cooperative processing - Flexible options to format end-user screens
• <b>IBM - ESE</b>	- Object-oriented development - Conditional inferencing, Focus Control Blocks - PC development/production - CICS version - Improved/new interfaces
• <b>Neuron Data - NEXPERT</b>	- Full semantic net (not partial) - Better tools for end-user graphics - Improved/new interfaces - Better documentation



## Neuron Data - NEXPERT

### **Other Weaknesses**

- **Limited end-user graphics capabilities**  
(2 of 10)
  - Must supplement with expensive outside products
  - Not machine-independent/portable
  
- **“No significant weaknesses”**  
(1 of 10)



## Neuron Data - NEXPERT

### Top Weaknesses

- **Some problems with AI and production functionality**  
(7 of 10)
  - To edit must move between development and production environments
  - Naming of objects not flexible enough
  - Lacks object message passing
  - Impacts of "demons" not clear
  - Hard to control forward chaining
  - Needs a full semantic net (not just partial)
  - Needs the flexibility of LISP
  - Portability and interfacing not as good as claimed
  - Need new C-routines in library for error analysis
  - With Macintosh, database interfaces are limited
- **Documentation needs improvement**  
(5 of 10)
  - Some errors
  - Full use of some commands not covered
  - Not presented clearly, tough to use
  - OK as reference, but not enough "how to"
  - Not well organized or indexed
  - Special problems: Sun workstation platform
- **Problems in vendor support**  
(2 of 10)
  - Distribution/support split: Vendor, Bechtel, DEC
  - Sometimes tough to get answers
  - Vendor seems worried about stealing of secrets
- **Some bugs and crashes**  
(3 of 10)
  - Better now
  - Compared to LISP, product still immature
  - Some very ungraceful crashes encountered
  - Hard to find some crash sources



## Neuron Data - NEXPERT

### Other Strengths

- **Can be embedded within existing applications**  
(2 of 10)
  - Easy because C-based
- **Fast in execution**  
(2 of 10)
  - Because C-based (?)





## Neuron Data - NEXPERT

### Top Strengths

- **Strong "hybrid" environment of objects and rules**  
(8 of 10)
  - "A powerful combination"
  - "More than the sum of the parts"
  - Provides great flexibility and productivity for developers
  - Makes application maintenance easier
  - Inheritance handled well
  - Permits good control of inferencing sequences
  - Ideal for process control, production, configuration applications
  - Supports implementation of LISP routines
- **Graphics-based development**  
(7 of 10)
  - Greatly speeds application development
  - Provides clarity in managing structure of rules and objects
  - Very effective windowing
  - "An intuitive approach to development"
- **Portable among Macintosh, VAX, and PC**  
(7 of 10)
  - Excellent C-based approach to portability
  - Can support other environments in future
  - Can develop in one environment (Mac) and deliver in other (PC)
  - Fits with installed production machines
- **Good interfaces with databases and other applications**  
(5 of 10)
  - C-based strategy works well for interfaces
  - Applications interfaces operate either way
  - Vendor-provided run-time libraries in C save time
  - "Connects well with our pre-existing DBs and applications"



## Neuron Data - NEXPERT

### **Strengths and Weaknesses: Summary**

- **Significant strengths**
  - Strong hybrid of objects and rules
  - Graphics-based development
  - Macintosh/VAX/PC portability
  - Database and application interfaces
  
- **Significant weaknesses**
  - Some AI functions
  - Documentation
  - Vendor support
  - Bugs and crashes



## **IBM - ESE**

### **Other Weaknesses**

- **DB2 is the only database interface**  
(2 of 10)
  - Other databases are important also
- **“No significant weaknesses”**  
(2 of 10)
- **Lack of portability between mainframe and PC**  
(1 of 10)
  - Desirable for both development and production
- **Not easy enough to develop with**  
(1 of 10)
  - Versus PC-based products with comparable functionality



## IBM - ESE

### Top Weaknesses

- **Major pieces of AI functionality are missing**  
(7 of 10)
  - Functionality is not up to the level of the competition (KBMS)
  - Cannot handle sophisticated applications
  - Cannot merge two modules of a knowledge base
  - Rule editing is awkward with small on-screen window
  - Lack of inferencing control, thus get inappropriate rule jumps
  - Forward chaining needs pattern matching, and to be event-driven
  - Missing "else" function doubles number of rules
  - Lack of multiple current instantiation requires repeat handling
  - Object-oriented environment would reduce coding substantially
  - Maintenance would be much easier if object oriented
  - Needs object-based inheritance
  - Cannot watch trace facility during consultation
  - No hard-copy reports of reasoning behind recommendations
  
- **Missing some production-oriented functionality**  
(6 of 10)
  - Lots of abends result if environment not set up right
  - With memory limitations, an abend means major loss of data
  - Need a compiled version for faster performance
  - CICS production environment is not fully supported
  - Need interface for existing IMS applications
  - For CPU planning, need ability to project production resources





## IBM - ESE

### Other Strengths

- **Good graphics capabilities**  
(2 of 10)
  - Can interface with IBM GDDM for end-user graphics
  - Can tie definition of graphics to data elements
  
- **“No significant strengths”**  
(1 of 10)



## **IBM - ESE**

### **Top Strengths**

- **Easy to learn and develop with**  
(5 of 10)
  - Can get programmers up and running fast
  - No experience in expert systems required
  - Simple applications can be developed quickly
  - Vendor-provided sample applications very useful
  - System documents the application automatically
  - End-users can make changes to knowledge base
  
- **Some good AI- and production-oriented functions**  
(6 of 10)
  - Rule editors help enforce syntactic consistency, save time
  - Effective tracing of rule firing aids debugging
  - Rule nesting gives developers good visibility and access
  - Developer can immediately see end-user impact of KB changes
  - Good explanation features are built in
  - Rel. 1.1 provides good response time
  - Can test under VM and run production under MVS
  - Effective tool for configuration problems
  
- **Vendor strength and support**  
(3 of 10)
  - Vendor stable and committed to product
  - Documentation and hands-on support speeds learning
  - Both local and national support provided



## **IBM - ESE**

### **Strengths and Weaknesses: Summary**

- **Significant strengths**
  - Ease of development
  - Some good AI functions
  - Good production functions
  - Vendor strength
  
- **Significant weaknesses**
  - Missing AI functionality
  - Missing production functionality



## Aion - ADS

### Other Weaknesses

- **Database access could use some extensions**  
(2 of 10)
  - Needs better discrimination among data types
  - No direct link with IDMS-R files
- **Large knowledge bases cannot be run in PC memory**  
(2 of 10)
  - PC performance can be too slow
  - PC runs out of memory; Rel. 5.0 to correct for PS/2?
- **Performance can be slow**  
(1 of 10)
  - Compared to a compiled language
  - Limits ability to embed within high-volume applications
- **Documentation could use improvement**  
(1 of 10)
  - Tough to find some information
  - Need better indexing and examples
- **Editor for end-user screens cumbersome**  
(1 of 10)
  - Too much work to achieve some results





## Aion - ADS

### Top Weaknesses

- **Some useful AI functionality is missing**  
(3 of 10)
  - Tough to manage 150-plus rules; need more diagramming
  - Should offer inferring of rules from examples
- **“No significant weaknesses”**  
(2 of 10)



## Aion - ADS

### **Other Strengths**

- **Can be embedded within existing applications**  
(1 of 10)
  - User sees a single, integrated application
  
- **Can share development among knowledge engineers**  
(1 of 10)
  - Easy to integrate modules
  - Splitting job speeds prototyping
  
- **Good text handling in tailored reports**  
(1 of 10)
  - Reports are critical for data analysis application



## Aion - ADS

### **More Top Strengths**

- **Vendor strength, support, and credibility**  
(5 of 10)
  - Product still growing, in right ways
  - Founders involved and listen to needs
  - Year ago: Added access to multiple transaction environments
  - Coming in Rel. 5.0: Cooperative processing
  - Coming in Rel. 5.0: Object-oriented, frames, inheritance
  - Rapid response to problems, questions
  - Excellent overall support level
  - Vendor delivers as promised
  
- **Interfaces well with files and databases**  
(2 of 10)
  - VSAM, DL/1, DB2, dBASE3 all supported
  - No problems with formats of existing databases



## Aion - ADS

### Top Strengths

- **Superior overall AI- and production-oriented functionality**  
(9 of 10)
  - Easy for developers to learn and use
  - "Best product on the market"
  - Very wide range of capabilities
  - Development environment very consistent internally
  - Good structure for control of inferencing and chaining
  - Built for integration with IBM production environment
  - Excellent editing, tracing, and debugging
  - Good procedural capabilities, like looping and nesting
  
- **Portability between mainframe and PC**  
(6 of 10)
  - Develop on one, implement on that or other
  - Multiple mainframes can share one application
  - Large knowledge base on PC feasible
  - Flexible PC development, controlled mainframe production





## Aion - ADS

### **Strengths and Weaknesses Summary**

- **Significant Strengths**
  - Superior AI functionality, overall
  - Good production functions
  - Mainframe/PC portability
  - Vendor strength
  - Database interfaces
  
- **Significant Weaknesses**
  - Some missing AI functionality
  - "None"



## AI Corp. - KBMS

### **Other Weaknesses**

- **Needs better interfaces to databases**  
(1 of 6)
  - Substantial work to set up database interfaces
  
- **Limited hard-copy reporting capabilities**  
(1 of 6)
  - Report tables must be “hand massaged”
  
- **Hard to share development among knowledge engineers**  
(1 of 6)
  - Must manually integrate work of several developers
  
- **Text-based, not graphical**  
(1 of 6)
  - Would be easier to use with graphical development interface



**AI Corp. - KBMS**

**Top Weaknesses**

- **New product, still has some bugs**  
(3 of 6)
  - Bugs disrupt development
  
- **Performance: Too much CPU resource, slow response time**  
(2 of 6)
  - Limits effective size of knowledge base



## AI Corp. - KBMS

### Other Strengths

- **Integration with “natural language” capabilities**  
(2 of 6)
  - Easy to comprehend, for developer and user
- **Intelligent editor**  
(2 of 6)
  - Direct access speeds rule formulation and modification
  - Makes it easier for all to understand rules
- **Expert system is callable from other applications**  
(2 of 6)
  - Can function like an “expert sub-routine”

INPUT®





## AI Corp. - KBMS

### Top Strengths

- **Object-oriented environment**  
(5 of 6)
  - Easy definition, development, and maintenance
  - Simple and rich representation of knowledge
  - One object replaces several rules
  
- **Solid AI functions, especially chaining**  
(4 of 6)
  - "A solid implementation"
  - Most of the needed functions are present
  - Good control of forward and backward chaining
  
- **Interfaces with databases**  
(4 of 6)
  - Applications depend on existing mainframe databases
  - Objects make defining interfaces easier
  
- **Operation on the IBM mainframe**  
(3 of 6)
  - Company-standard computing environment
  - Practical problem-solving in a production environment



## AI Corp. - KBMS

### **Strengths and Weaknesses: Summary**

- **Significant Strengths**
  - Object-oriented
  - Chaining, other AI functions
  - Database interfaces
  - Mainframe-based
  
- **Significant Weaknesses**
  - New-product bugs
  - Performance



## Top Mentions of Strengths and Weaknesses: Cross Comparison

<u>Factor mentioned</u>	<u>Vendor - Product</u>			
	AI Corp. KBMS	Aion ADS	IBM ESE	Neuron Data NEXPERT
AI functions	+	+	-	+
Object-oriented	+			+
Graphics for dev't				+
Ease of development	+	+	+	+
Production functions		+	+	
Mainframe-based	+			
Portability		+		+
Interfaces	+	+	+	+
Performance	-			
Bugs	-			-
Crashes				-
Vendor		+	+	-
Documentation				-

Key: "+" = significant strength, "-" = significant weakness



**Top Mentions of  
Strengths and Weaknesses:  
Table**

Vendor - Product	Strengths	Weaknesses
<b>AI Corp. - KBMS</b>	<ul style="list-style-type: none"> <li>- AI functions</li> <li>- Object-oriented</li> <li>- Mainframe-based</li> <li>- Interfaces</li> </ul>	<ul style="list-style-type: none"> <li>- Performance</li> <li>- Bugs</li> </ul>
<b>Aion - ADS</b>	<ul style="list-style-type: none"> <li>- AI functions</li> <li>- Production functions</li> <li>- Portability</li> <li>- Interfaces</li> <li>- Vendor</li> </ul>	<ul style="list-style-type: none"> <li>- (None significant)</li> </ul>
<b>IBM - ESE</b>	<ul style="list-style-type: none"> <li>- Ease of development</li> <li>- Production functions</li> <li>- Interfaces</li> <li>- Vendor</li> </ul>	<ul style="list-style-type: none"> <li>- AI functions</li> </ul>
<b>Neuron Data - NEXPERT</b>	<ul style="list-style-type: none"> <li>- AI functions</li> <li>- Object-oriented</li> <li>- Graphics for dev't</li> <li>- Portability</li> <li>- Interfaces</li> </ul>	<ul style="list-style-type: none"> <li>- Bugs</li> <li>- Crashes</li> <li>- Vendor</li> <li>- Documentation</li> </ul>



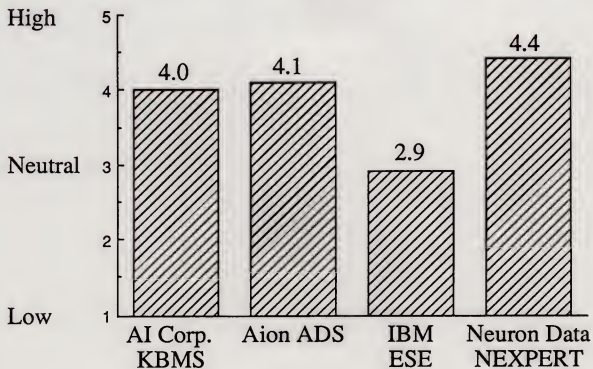


## Data-Distribution Backup for Specific Satisfaction Charts

	CLIENT data							File spread17						
	Question 7													
	01	02	03	04	05	06	07	08	09	10	#R	Avg.	NotNorml	
<b>AI Corp. - KBMS</b>	01	02	03	04	05	06	07	08	09	10	#R	Avg.	NotNorml	
7a-Range	4	5	4	4	5	4					6	4.3		
7b-CPU	2	2		3	3	2					5	2.4		
7f-Mainframe	2	2		3	4	2					5	2.6		
7g-Ease	4	4	4	5	5	4					6	4.3		
7h-Integration	2	4	5	4	5	3					6	3.8		
7i-Documentation	3	4	4	4	4	3					6	3.7		
7j-Maintenance	4	4		5	5	3					5	4.2		
7k-Customer	4	3	3	5	5	4					6	4.0		
7l-Satisfaction	3	4	4	4	5	4					6	4.0		
<b>Aion - ADS</b>	01	02	03	04	05	06	07	08	09	10	#R	Avg.	NotNorml	
7a-Range	4	4	5	4	4	4	4	4	4	5	10	4.2		
7b-CPU	4	3	5	4		5	4	3	3	4	9	3.9		
7f-Mainframe	4		5	4		5	4	5	5	5	8	4.6		
7g-Ease	5	5	5	2	5	4	3	4	5	5	10	4.3		
7h-Integration	5	4	5	5		5	3	4	4	4	9	4.3		
7i-Documentation	4	4	4	5	3	3	2	4	5	2	10	3.6		
7j-Maintenance	5	5	5	5	3	5	4	4	5	4	10	4.5		
7k-Customer	5	5	5	5	3	5	5	3	5	5	10	4.6		
7l-Satisfaction	5	4	5	5	4	4	4	3	3	4	10	4.1		
<b>IBM - ESE</b>	01	02	03	04	05	06	07	08	09	10	#R	Avg.	NotNorml	
7a-Range	3	4	4	2	3	4	4	2	1	4	10	3.1		
7b-CPU		1	2	2	3	1	4	2	3	3	9	2.3		
7f-Mainframe	2	3	3	1	3	2	4	2	2	4	10	2.6		
7g-Ease	3	5	4	2	5	4	4	4	1	4	10	3.6		
7h-Integration	3	1	2	1	3	1	2	4	3	3	10	2.3		
7i-Documentation	3	3	2	3	4	4	4	4	3	3	10	3.3		
7j-Maintenance	2	3	3	3	2	1	3	1	3	4	10	2.5		
7k-Customer	2	1	4	2	4	2	5	2	4	5	10	3.1	not	
7l-Satisfaction	2	3		2	4	1	4	3	2	5	9	2.9		
<b>NeuronD - WEXPERT</b>	01	02	03	04	05	06	07	08	09	10	#R	Avg.	NotNorml	
7a-Range	5	4	4	4	3	5	5	5	4	4	10	4.3		
7b-CPU	3	3	5	3	2		4		3	4	8	3.4		
7f-Mainframe	4	3	5	5	3		5		4	4	8	4.1		
7g-Ease	3	2	5	4	3	4	4	5	4	3	10	3.7		
7h-Integration	5		4	5	4	3	4	5	3	5	9	4.2		
7i-Documentation	3	3	4	2	2	3	3	4	2	2	10	2.8		
7j-Maintenance	4	3	5	4	2	3	3	4	3	3	10	3.4		
7k-Customer	2	5	5	5	5	4	2	3	4	3	10	3.8		
7l-Satisfaction	5	4	5	4	4	4	5	5	4	4	10	4.4		

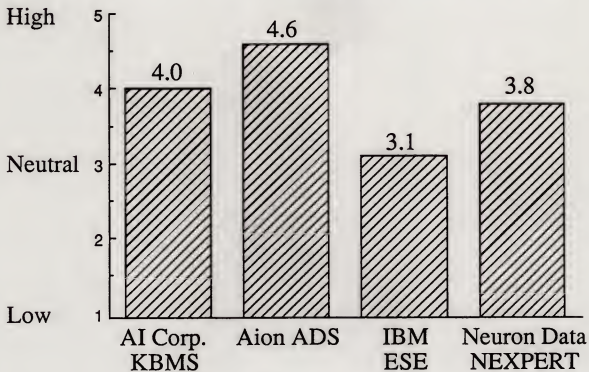


### Satisfaction: Comparing Price with Overall Value





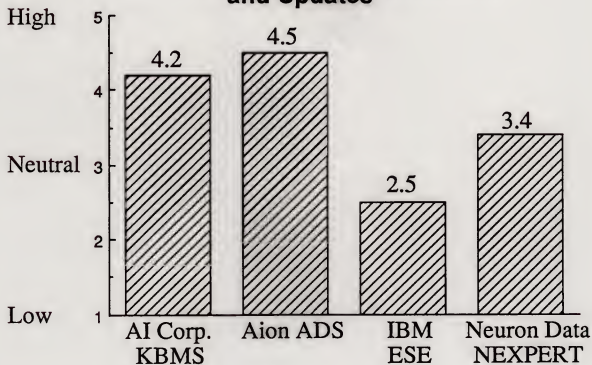
## Satisfaction: Customer Support and Hotline



Note: Response distribution for IBM-ESE was not normal, was bimodal around the values 2 and 4-5



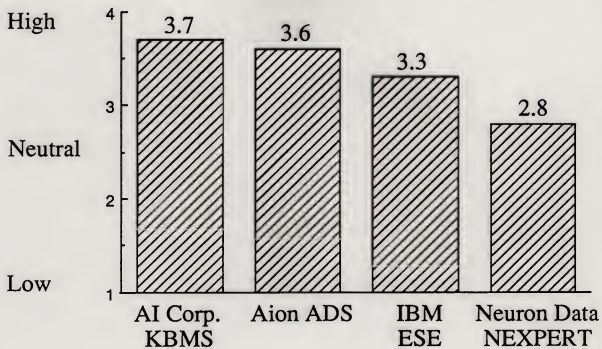
### Satisfaction: Software Maintenance and Updates





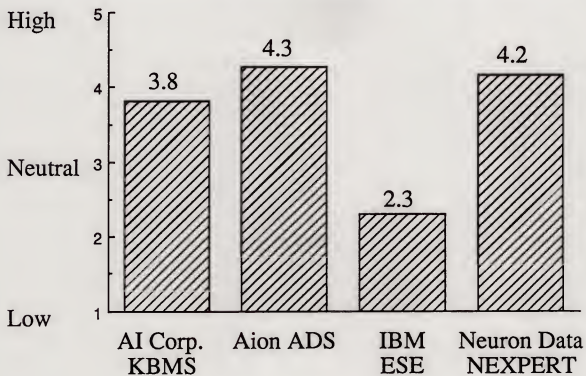


### Satisfaction: Documentation



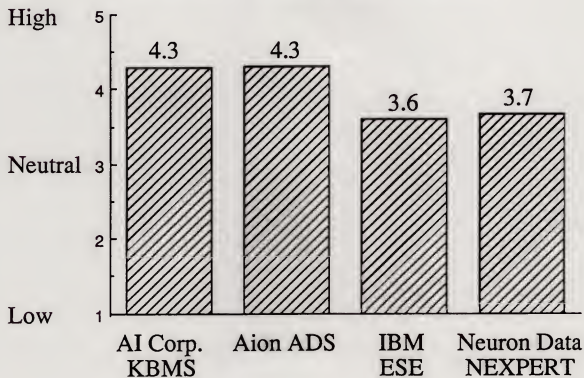


## Satisfaction: Integration with Other Applications



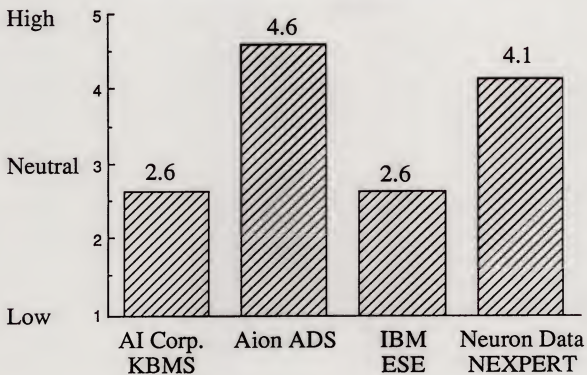


### Satisfaction: Ease of Development





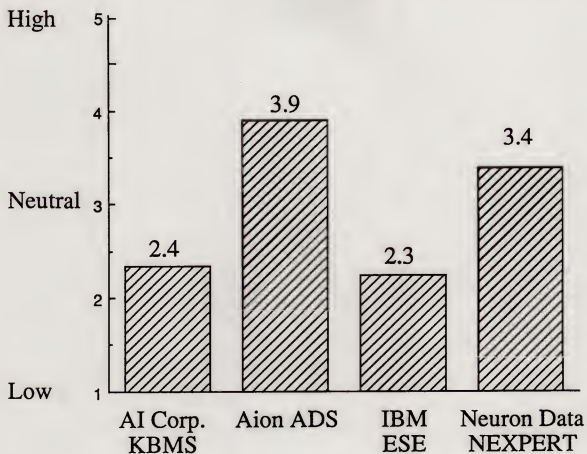
### Satisfaction: Response Time





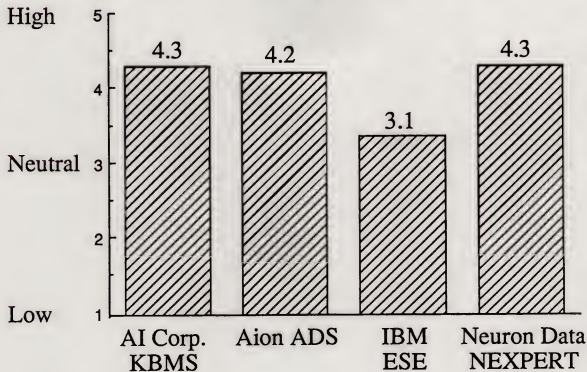


## Satisfaction: Processor Resource Consumption





### Satisfaction: Range of Capabilities





Neuron Data—NEXPERT

**Overall Satisfaction with Purchase of Product:  
Repeat Comments**

- Wide range of development capabilities
- Useful object-oriented environment
- Portable (C-based)
- Good interfaces to applications and data bases
- Negative: Some interface and portability problems
- Negative: Some limits and disappointments throughout



IBM—ESE

**Overall Satisfaction with Purchase of Product:  
Repeat Comments**

- Strong, committed vendor and support
- Good for “simpler” applications, easy to use
- Negative: Missing many functions
- Negative: No PC support
- Negative: Not compiled, therefore too slow





Aion—ADS

**Overall Satisfaction with Purchase of Product:  
Repeat Comments**

- Strong range of development capabilities
- Easy to use (development)...*versus*...
- Negative: Tough to use (development)
- Fits “production” IBM delivery environments
- Supports both PC and mainframe; applications portable



AI Corp.—KBMS

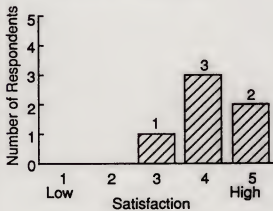
**Overall Satisfaction with Purchase of Product:  
Repeat Comments**

- Good overall functionality
- Easy to use (development)
- Effective natural language interface
- Useful object-oriented environment

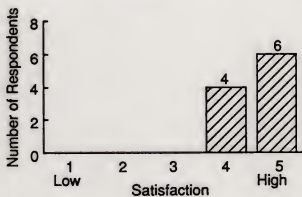


## Overall Satisfaction with Purchase of Product: Distribution of Responses

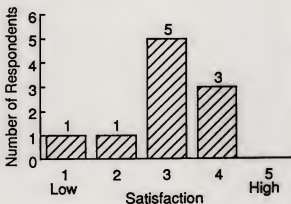
AI Corp.—KBMS



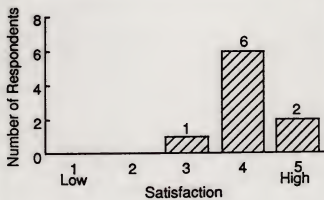
Aion—ADS



IBM—ESE

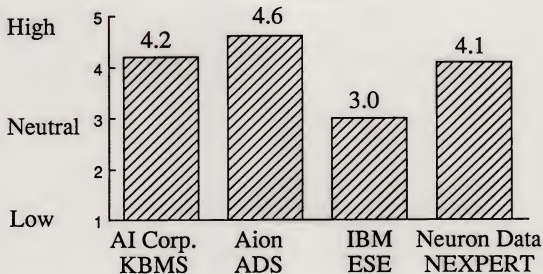


Neuron Data—NEXPERT





**Overall Satisfaction with  
Purchase of Product:  
—Averages**







### Applications In Production vs. In Development

Vendor -Product	No. in Production	No. in Development
AI Corp. - KBMS	0	6
Aion - ADS	14	9
IBM - ESE	8	13
Neuron Data - NEXPERT	10	14



**Marketplace Application Distinctions:  
Standalone vs. Embedded vs. Connected**

Vendor - Product	Number of Applications		
	Standalone	Embedded	Connected
AI Corp. - KBMS	0	4	2
Aion - ADS	11	3	9
IBM - ESE	10	7	4
Neuron Data - NEXPERT	7	7	1



## Which Types of Applications Are Being Built, by Whom

- **Mostly “diagnosing/classifying” applications**
  - Over 50%: Data analysis, interpretation  
(Examples: Insurance underwriting, bank lending)
  - About 20%: Use advising, procedures  
(Example: Help desk)
  - Others: Controlling, planning, configuration, simulating
- **95% of sample: No end-users build or modify expert system applications**
  - Almost always: “Knowledge engineers” were programmers
  - Mostly: Same person builds knowledge base, programs interfaces, and solves DP environment problems
- **Conclusion: Despite relative simplicity of applications, end-user development of expert systems is a “fiction”**



## Neuron Data - NEXPERT

### Application Types: Detailed Analysis

Type of Application	Number of Mentions	Examples
Data analysis/ interpretation	12	<ul style="list-style-type: none"><li>- Data-cataloging choices</li><li>- Photo interpretation</li><li>- Image-feature extraction</li><li>- Equipment fault diagnosis</li><li>- Front-end to data base</li><li>- Signal analysis</li><li>- Medical diagnosis/risks</li><li>- Report generation from data</li><li>- Classification</li><li>- Highlighting budget issues</li><li>- Production problems</li></ul>
Use advising/ procedures	3	<ul style="list-style-type: none"><li>- Guidance during interviewing</li><li>- Contracts: Clauses</li><li>- User interface, engineering</li></ul>
Controlling	4	<ul style="list-style-type: none"><li>- Control of VAX network</li><li>- Control of LAN network</li><li>- Intelligent user interface</li><li>- Manufacturing process</li></ul>
Simulating	2	<ul style="list-style-type: none"><li>- Estimating job costs</li><li>- Testability analysis</li></ul>
Configuration	1	<ul style="list-style-type: none"><li>- Order option configuration</li></ul>
Scheduling	2	<ul style="list-style-type: none"><li>- Constuction project seq.</li><li>- Avail. and use of auditors</li></ul>





## IBM - ESE

### Application Types: Detailed Analysis

Type of Application	Number of Mentions	Examples
Data analysis/ interpretation	9	<ul style="list-style-type: none"><li>- Insurance underwriting</li><li>- Policyholder service</li><li>- Drug-product selection</li><li>- Credit scoring</li><li>- Purchase order classification</li><li>- Accounting assistance</li><li>- Point-scoring, reports</li><li>- Account balancing</li></ul>
Use advising/ procedures	5	<ul style="list-style-type: none"><li>- Help desk</li><li>- Travel expenses</li></ul>
Controlling	3	<ul style="list-style-type: none"><li>- Production control</li></ul>
Configuration	2	<ul style="list-style-type: none"><li>- Equipment config.</li><li>- Option config.</li></ul>
Planning	2	<ul style="list-style-type: none"><li>- Inventory analysis</li></ul>



## Aion - ADS

### Application Types: Detailed Analysis

Type of Application	Number of Mentions	Examples
Data analysis/ interpretation	15	<ul style="list-style-type: none"><li>- Insurance underwriting</li><li>- Insurance claims</li><li>- Credit and loan approval</li><li>- Front-end for data capture</li><li>- Reports, medical svcs</li><li>- Product selec., financial svcs</li><li>- Risk evaluation, loans</li><li>- Filtering and sorting of data</li><li>- Payroll withholding</li><li>- Problem diagnosis</li><li>- Financial underwriting</li></ul>
Use advising/ procedures	6	<ul style="list-style-type: none"><li>- Help desk</li><li>- Training</li><li>- Assistance to programmers</li><li>- Legal checklist loans</li><li>- Human resources</li></ul>
Controlling	1	<ul style="list-style-type: none"><li>- DP room hardware monitoring</li></ul>
Planning 1		<ul style="list-style-type: none"><li>- Specifications aid</li></ul>



**AI Corp. - KBMS**

**Application Types:  
Detailed Analysis**

Type of Application	Number of Mentions	Examples
Data analysis/interpretation	5	<ul style="list-style-type: none"><li>- Insurance underwriting</li><li>- Assistance to professionals</li><li>- Customer service data base</li></ul>
Planning	1	<ul style="list-style-type: none"><li>- Power load forecasting</li></ul>



### Application Types: Summary

Type of Application	Number of Mentions, by Product			
	AI Corp. KBMS	Aion ADS	IBM ESE	Neuron Data NEXPERT
Data analysis/ interpretation	5	15	9	12
Use advising/ procedures	-	6	5	3
Controlling	-	1	3	4
Simulating	-	-	-	2
Configuration	-	-	2	1
Planning	1	1	2	-
Scheduling	-	-	-	2

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## Key Decision Criteria at Time of Product Purchase

Decision Criteria	Number of Mentions by Product			
	AI Corp. KBMS	Aion ADS	IBM ESE	Neuron Data NEXPERT
Mainfr. plat.	2	6	6	
PC plat.	1	4		1
Other plat's				5
Portability		2		2
Vendor rep.	3	1	5	1
Cust'r ref's		1		
Tech. superior.	2	4		3
Easy dev't	1	2	2	2
Easy prod'n	2		1	1
Appl. embed/interf.	4	2		1
DB access	2	1	2	1
Natural lang.	1			
Specific feat.	1			1
Operating sys.		2		1
Fits appli.		1		
Low cost			3	1
Easy proto'g				2
No other cons'd				1



## Hardware and Software Platforms

Vendor - Product	Hardware	Operating Systems	Transaction Processing
AI Corp - KBMS	Mainframe	MVS/XA, VM	CICS, TSO, IMS/DC, IDMS/DC, CMS
	4/89: PC	OS/2	
Aion - ADS	Mainframe, PC	MVS, VM DOS, OS/2	CICS, TSO, IMS
IBM - ESE	Mainframe	MVS, VM	CICS, TSO, IMS, CMS
	3/89: PC	OS/2	
Neuron Data - NEXPERT	Mainframe	VM 2Q89: MVS	SQL/DS CICS, TSO, IMS
	Mac, VAX, Unix workstations		
	PC	OS/2	

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## **Who was interviewed: Job Functions and Industries**

- Job functions (across vendors)
  - Half: Management of knowledge base application development
  - Half: Hands-on developers
- AI Corp. - KBMS
  - 4: Financial services
  - 1: Telecommunications
  - 1: Electric Utility
- Aion - ADS
  - 6: Financial services
  - 2: Software
  - 2: Petroleum
- IBM - ESE
  - 5: Financial services
  - 2: Manufacturing
  - 1: Pharmaceuticals
  - 1: Telecommunications
  - 1: State government
- Neuron Data - NEXPERT
  - 4: Software
  - 2: Chemicals processing
  - 1: Health care
  - 1: Forest products
  - 1: Construction
  - 1: Aerospace



## Management Presentation: Outline

Who was interviewed

Hardware and software platforms

Key purchase criteria

Types of applications

Who builds the applications?

Marketplace: Standalone vs. embedded vs. connected

Applications: Production vs. development

Overall satisfaction with products

Satisfaction: Specific questions

Product-by-product strengths and weaknesses

Product-by-product missing features

Who is at the "state of the art"?

Vendor interviews: Today's product, and the next release

Vendor interviews: Future directions

Input's view: Product positions and movement







## Management Presentation





## **High-Level IBM Competitive Options for Evaluation**

- 1. Radically strengthen ESE**
- 2. Plan to shift ESE users to IBM/KEE (?)**
- 3. Reposition and enhance IBM/Knowledge Tool (?)**
- 4. Purchase/remarket another, more competitive product**



## High-Level IBM Competitive Options for Evaluation

### 4. Purchase/remarket another, more competitive product

- Is any of the other three products analyzed here available to IBM?
- Functionality of another product, vs. IBM/KEE or IBM/Knowledge Tool?
- Which other vendors/products should be considered?



## High-Level IBM Competitive Options for Evaluation

### 3. Reposition and enhance IBM/Knowledge Tool (?)

- How comprehensive are its AI functions?
- Can it connect, as well as be embedded?
- How good are its mainframe production functions and efficiency?
- How adequate are its interfaces and mainframe/PC portability?





## High-Level IBM Competitive Options for Evaluation

### 2. Plan to shift ESE users to IBM/KEE (?)

- What are the gaps in IBM/KEE AI functions?
- How good are its mainframe production functions and efficiency?
- How adequate are its interfaces and mainframe/PC portability?



## High-Level IBM Competitive Options for Evaluation

### 1. Radically strengthen ESE

- Positioning: Give up “fiction” of end-user development
- Can ESE be strengthened enough to compete?
- Has Aion closed ESE's competitive window?



## **Bicycling "Racing Machine" Images, Suggesting Comparative Capabilities**

AI Corp. - KBMS: "In its limited use so far, looks like a great three-speed bicycle"

Aion - ADS: "In the city or up and down mountains, the top all-purpose choice for serious bikers"

IBM - ESE "A good kid's bike with a fine set of training wheels"

Neuron Data - NEXPERT "Could be used for the Tour de France, although the gear ratio has some annoying gaps"



## The Vendor Behind the Product: Users' Perceptions

- **AI Corp.**
  - Consistently strong technical-support organization
  - To most users, a "newcomer" with a good initial product entry
  - To co-developers, a fully supportive partner
  - To users of "Intellect" natural-language product, a solid vendor
- **Aion**
  - A company that plans well and delivers on its promises
  - A good blend of AI savvy and production-environment sensitivity
  - An involved and thoughtful management team that listens
  - Responsive and knowledgeable technical staffers
- **IBM**
  - The mainframe vendor that they and their DP shop depend on
  - A disappointing AI software vendor
  - Good or poor product supporters, depending on the local SE
  - Strong trainers
- **Neuron Data**
  - Channel confusion: "Whose product is this, anyway?"
  - Technically astute in AI functions, but disjointed on support
  - In breadth of offerings, documentation is shallow
  - Some disappointments on promised non-AI functions





## Cross Comparison of Products: Strong Capabilities

Capability	AI Corp. KBMS	Aion ADS	IBM ESE	Neuron Data NEXPERT
AI functions	X	X		X
Easy to learn	X	X	X	X
Ease of dev.	X	X	X	X
Object-or. dev.	X	X*		X
Graphics-b. dev.				X
Modular dev.	X*	X		
User graphics			X	X*
Prod'n func.	X*	X		X*
Mainframe-based	X	X	X	X*
Portab. MF/PC	X*	X	X	X*
640K+ memory	X*	X	X*	X
Coop. proc.	X*	X		X
Wide interfaces	X	X		X
Bug-free		X	X	
Crash-free		X		
Strong vendor		X	X	
Superior support		X		
Estab. product		X	X	

Notes - "\*" means planned for next release:

AI Corp. - KBMS: April 1989

Aion - ADS: Summer 1989

IBM - ESE: March 1989

Neuron Data - NEXPERT: Summer 1989



### Companies and Products: Quantitative Overview

Company - Product	1988 Company Revenues (\$ Millions)	Number of Employees	Product Licenses to Firms
AI Corp. - KBMS	\$15	90	25
Aion - ADS	\$10 (est.)	100	200
IBM - ESE	\$60,000	385,000	200
Neuron Data - NEXPERT	N/A	50	? (4,000 copies)



## Research Methodology

- **Performed by outside firm: INPUT**
  - International market research and consulting firm
  - 15 years old; privately owned
  - Information industries specialists
  - Project team: Two seniors, each with hands-on expert systems background
- **In-depth telephone interviews (36 users, total)**
  - Early January 1989
  - Carefully qualified interviewees
  - Average: 30 minutes each
  - 3 products: 10 interviews each
  - 1 product (new): 6 interviews
- **Each vendor: 2 to 4 interview contacts**
- **User questionnaire development**
  - 15 pages, 35 main topics
  - IBM review, INPUT revision
  - Pre-test validation
- **Analysis and report writing**
  - Analysis objective: Competitive patterns, not statistics
  - Emphasis: Strengths and weaknesses (qualitative)
  - Found highly consistent responses
  - Result: Picture of buyers' perceptions of each product
  - Averaging of numeric ratings
  - Competitive cross comparisons
  - Other information
  - Patterns, trends, IBM options



## Executive Presentation: Outline

- Research objectives and methods
- Industry overview and product histories
- Company overviews
- Types of knowledge base applications
- Product overviews: Satisfaction, strengths and weaknesses

AI Corp.	-	KBMS
Aion	-	ADS
IBM	-	ESE
Neuron Data	-	NEXPERT

- Product and vendor cross comparisons
- Product directions and positions
- High-level competitive options

