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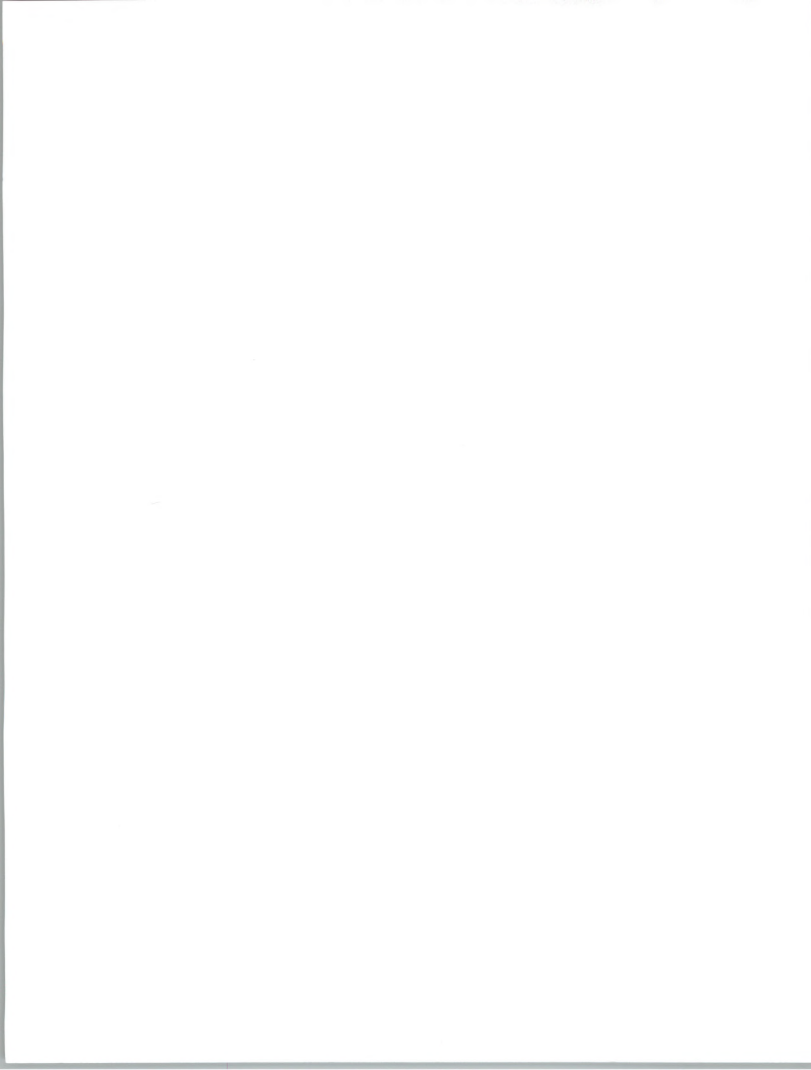
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the 1990s, the number of people in the UK who are employed in the public sector has increased by 1.5 million, from 2.5 million in 1980 to 4 million in 1995 (Department of Health 1996). The number of people in the public sector who are employed in health care has increased by 1.2 million, from 1.3 million in 1980 to 2.5 million in 1995 (Department of Health 1996).

There is a growing emphasis on the need to improve the quality of health care, and this has led to a number of initiatives to improve the quality of health care. The Department of Health has set up a number of committees to monitor the quality of health care, and has introduced a number of measures to improve the quality of health care. The National Patient Safety Agency (NPSA) was set up in 1999 to monitor and improve the quality of health care. The NPSA has a number of functions, including monitoring the quality of health care, investigating incidents, and promoting good practice.

The NPSA has a number of initiatives to improve the quality of health care. One of the main initiatives is the National Patient Safety Programme (NPSP). The NPSP is a programme of initiatives to improve the quality of health care, and it includes a number of measures to improve the quality of health care. The NPSP includes a number of measures to improve the quality of health care, including the development of standards, the implementation of standards, and the monitoring of standards.

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April 1994

Dear Colleague,

Enclosed is the seventh in a series of reports from INPUT's Client/Server Software Program, entitled *Client/Server Applications Trends—State and Local Government*. State and local governments are under tremendous pressure to cut costs. Unemployment and recession mean that their tax revenues have been lower than anticipated. They are trying to create more efficient systems.

In this report, INPUT analyzed 170 applications by interviewing 72 respondents representing states and 58 representing cities and counties. Some of the major findings of the report are:

- The main incentives for moving to a C/S architecture are to:
  - improve customer service in welfare and Medicaid applications
  - reduce paperwork
  - provide additional services to the public
- 32% of respondents indicated a move to client/server architecture
- Justice, finance and office automation provide opportunities for client/server systems
- Mainframes play a much larger role in state and local government compared with other industries. Almost half of the new applications will include a mainframe. However much of the drive to client/server computing is coming from users of PCs and LANs. Users will be involved in implementing 64% of new applications. LANs are being upgraded, with only 15% of client/server applications including a mainframe.

Three case studies illustrate the issues faced by purchasers of client/server systems. Perceptions of vendors provided from the user survey are given in the final chapter.

Your subscription includes access to INPUT's library and consultants. You may reach me using the following: Internet e-mail - amhey@cup.portal.com, APPLELINK - AMHEY, Telephone - 415-961-3300, Fax - 415-961-3966.

I look forward to your comments, perceptions and questions.

Sincerely yours,



Angela M. Hey  
Program Manager - Client/Server Software Program

DV7

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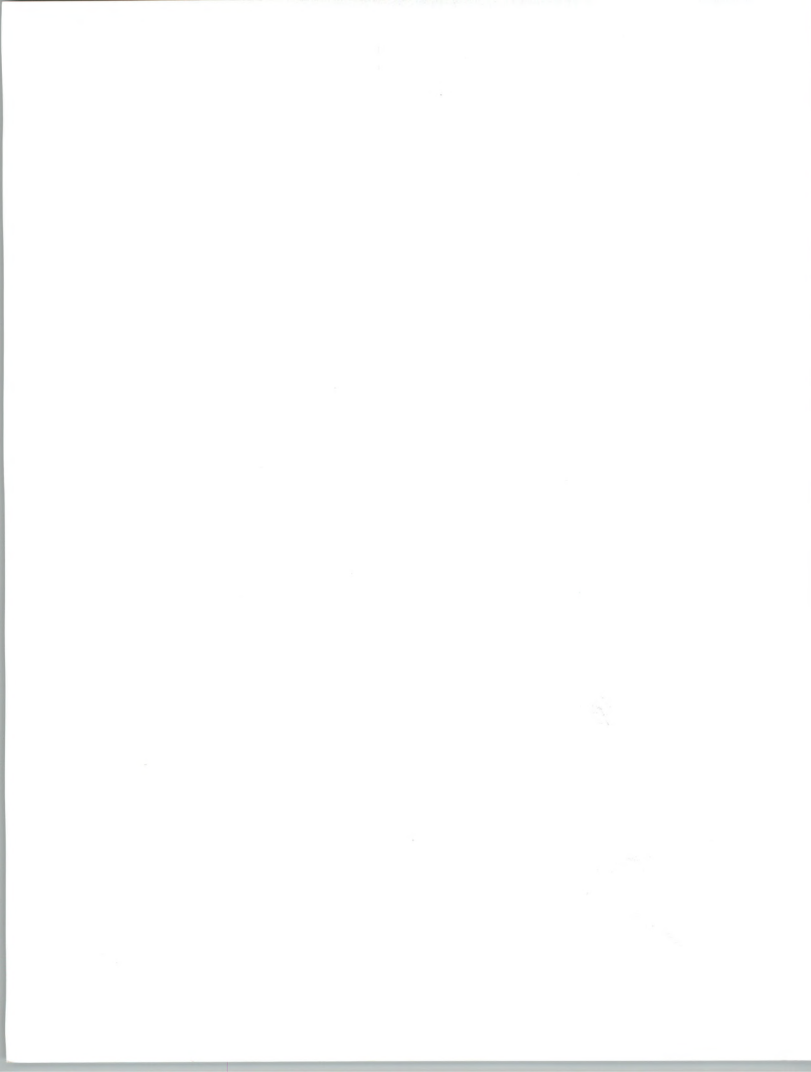
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State and Local  
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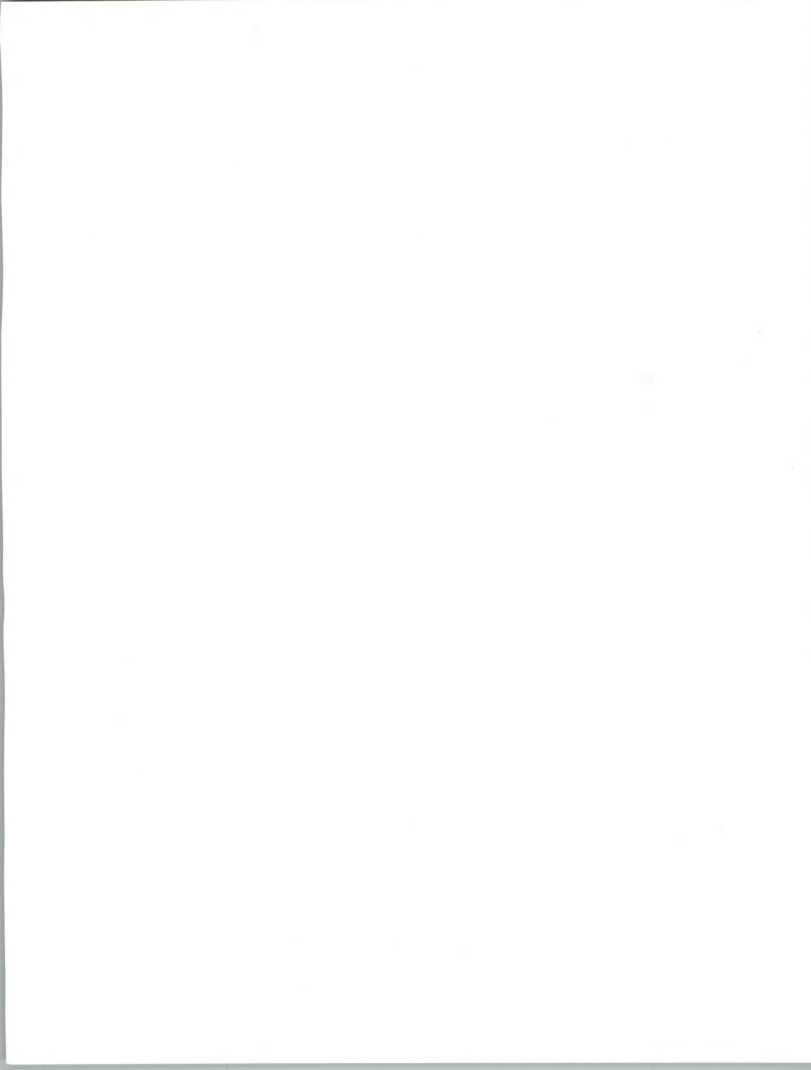
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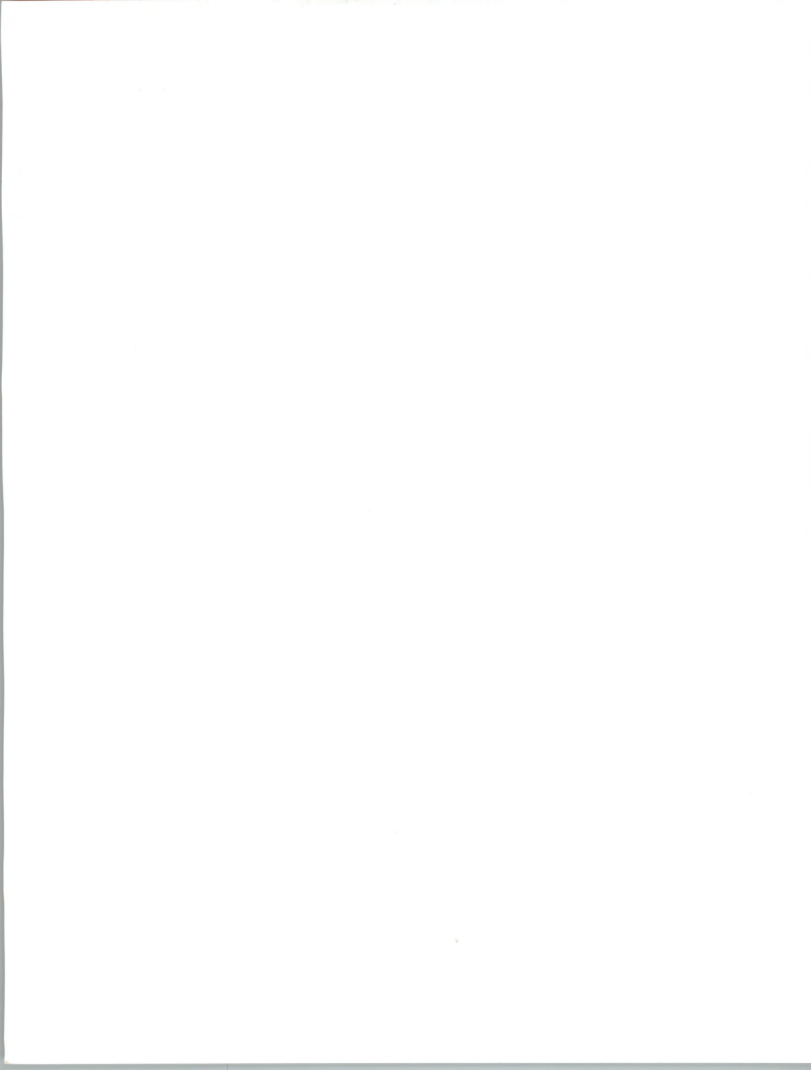
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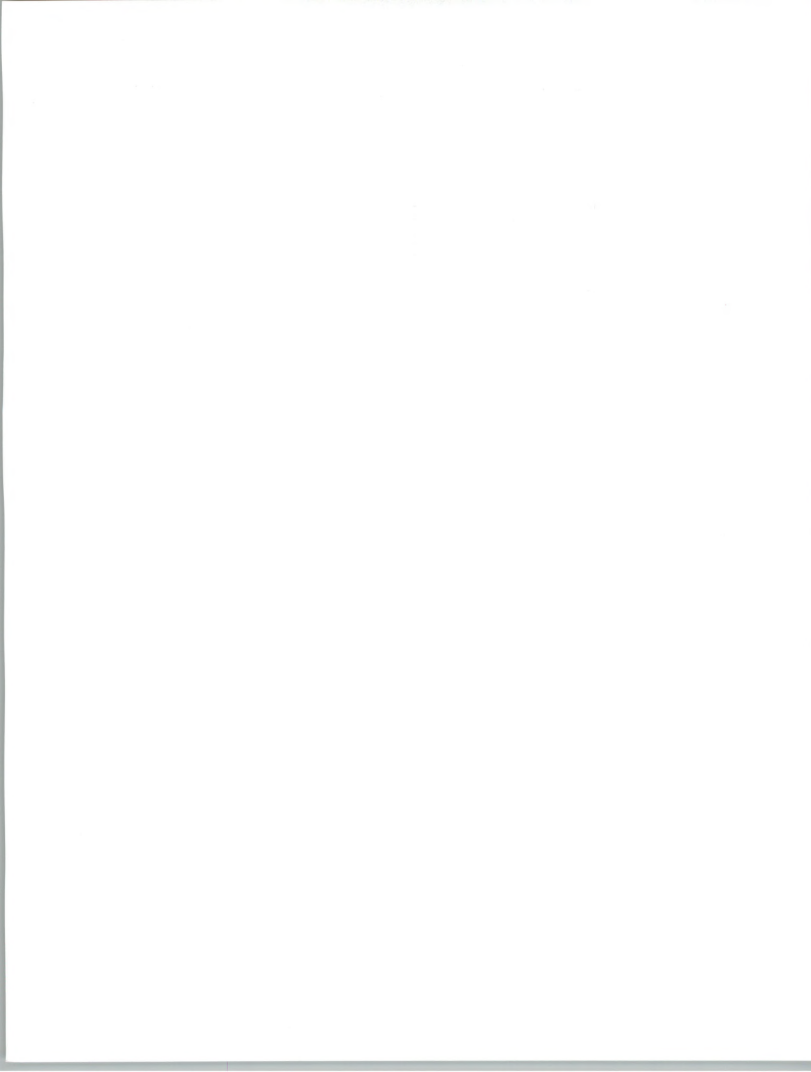
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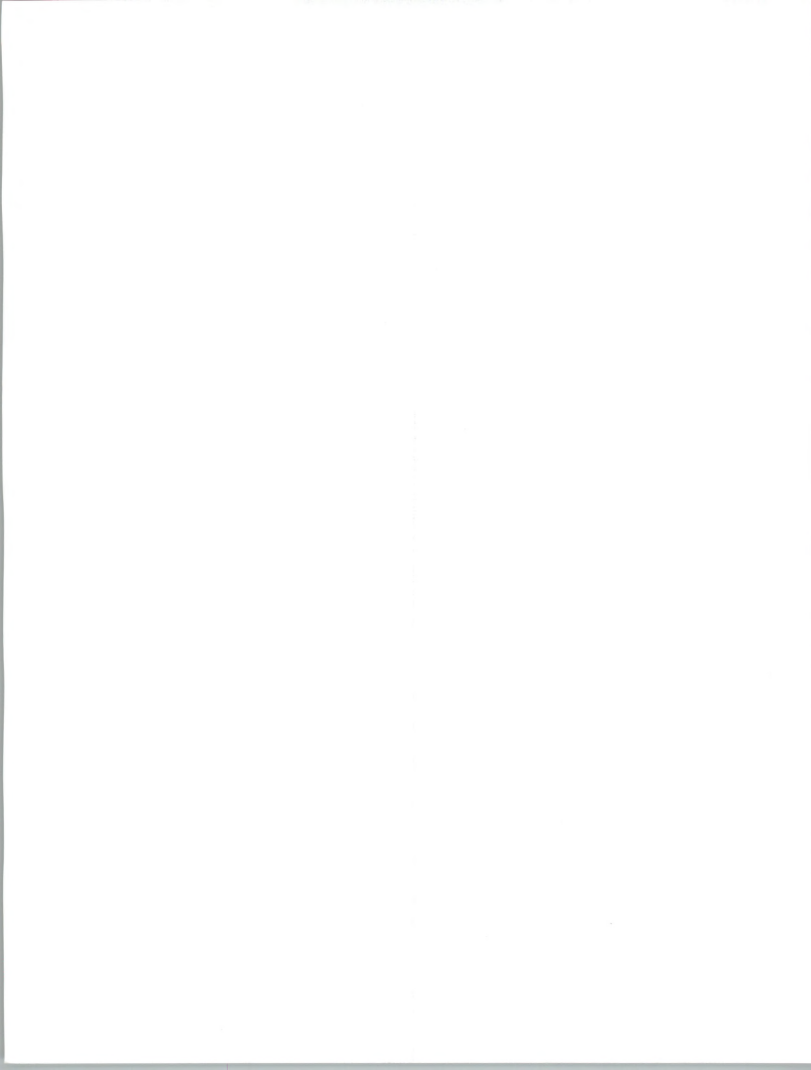
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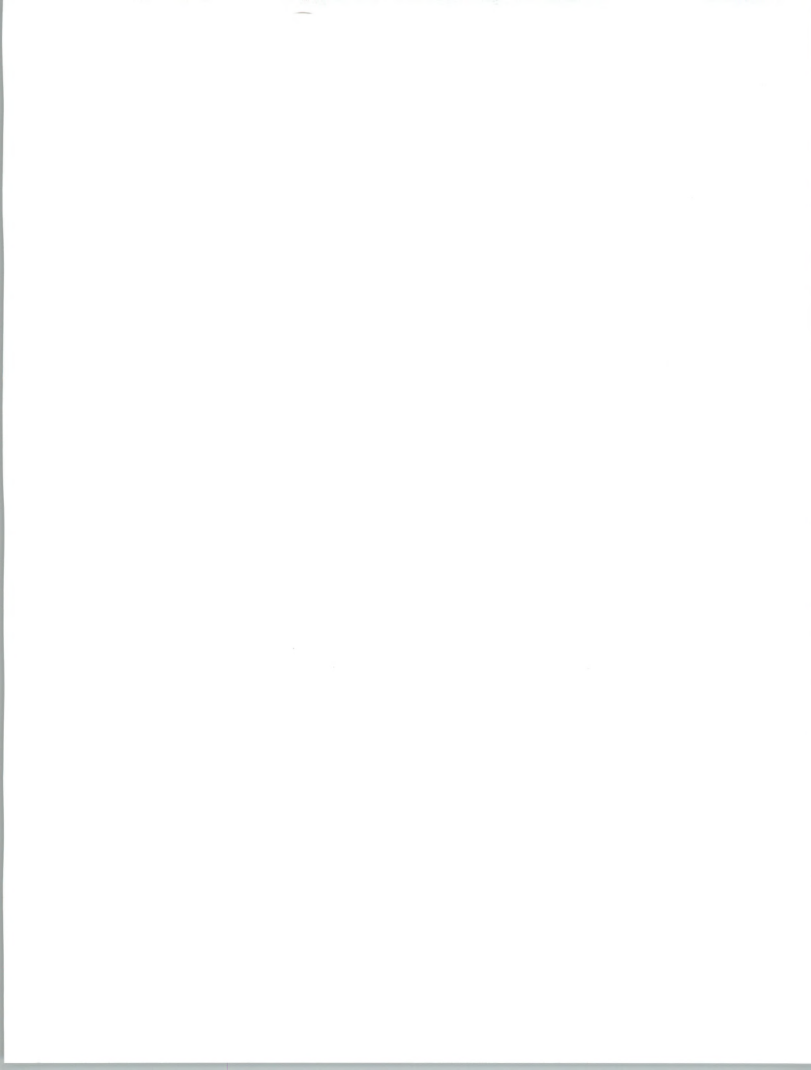
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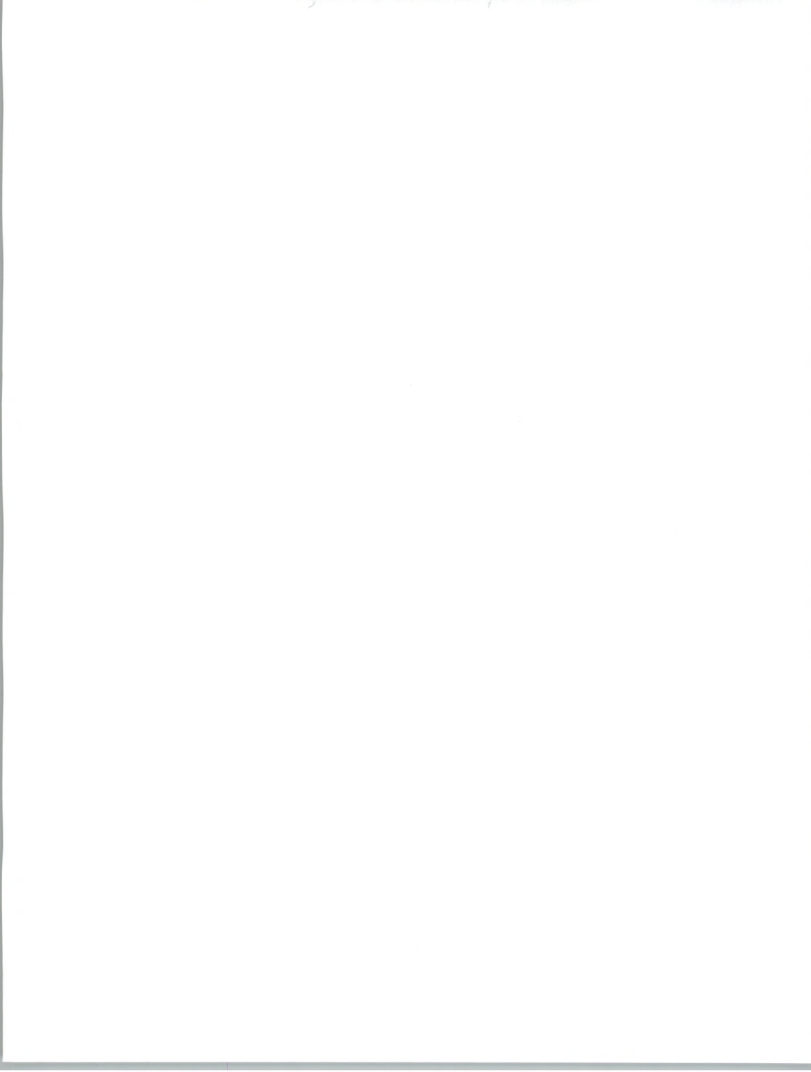
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## Introduction

This report analyzes trends in client/server (C/S) applications in the state and local government market segment. It is the seventh in a series of vertical market reports produced as part of INPUT's Client/Server Markets and Applications subscription service.

### A

#### Objectives

---

Based on a user survey, this report addresses the following issues regarding the state and local government sector:

- To what degree are state and local governments migrating to client/server architecture?
- Which applications are likely to be targeted for implementation over the next two years, and which are headed for a downsized client/server environment?
- Who is managing implementation or conversion of client/server applications: Central information systems (IS) function, local IS function, user management or third-parties?
- To what degree are industry participants looking to outside vendors for products and services?

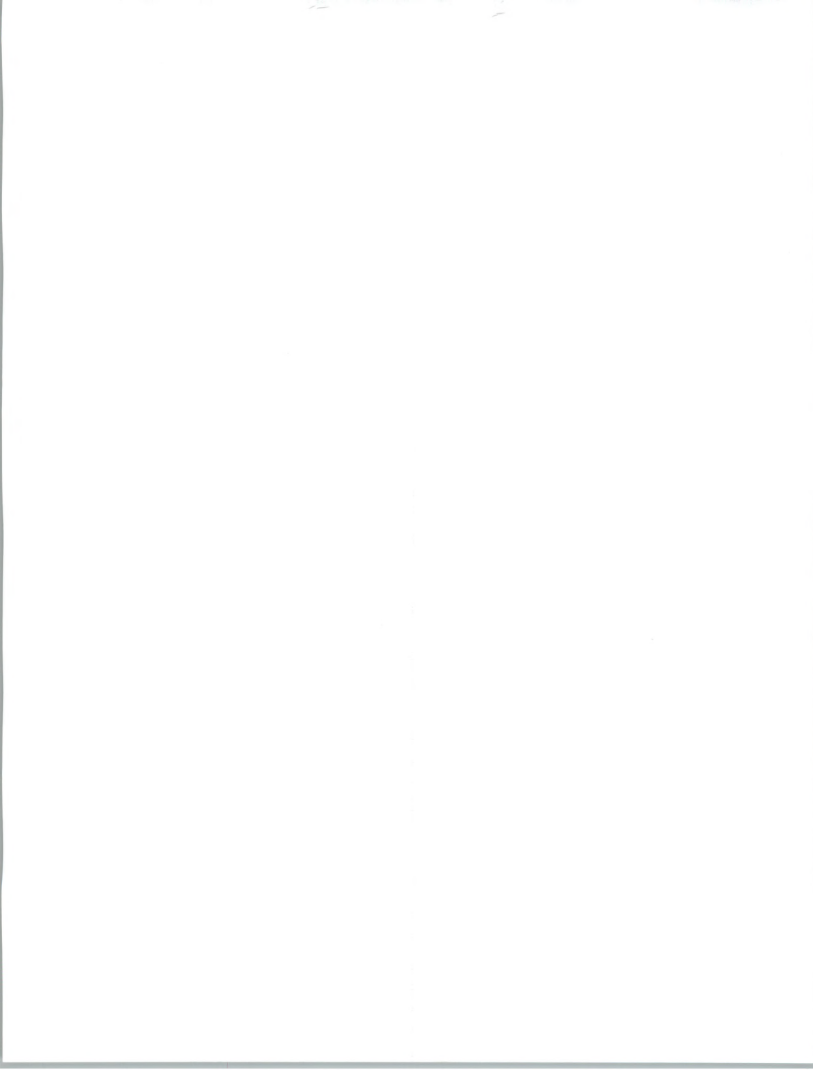
### B

#### Scope

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The analysis focuses on the state and local government industry sector within the United States. This particular study surveys 130 different organizations. About 55% of the organizations are state governments and the remaining 45% are local governments.

Exhibit I-1 shows the breakdown of organizations interviewed by type of organization.



## EXHIBIT I-1

## State and Local Government Respondents

Description	Number of Different Organizations	Percentage of Organizations (%)
State Governments	72	55
County Governments	10	8
Cities	48	37

## C

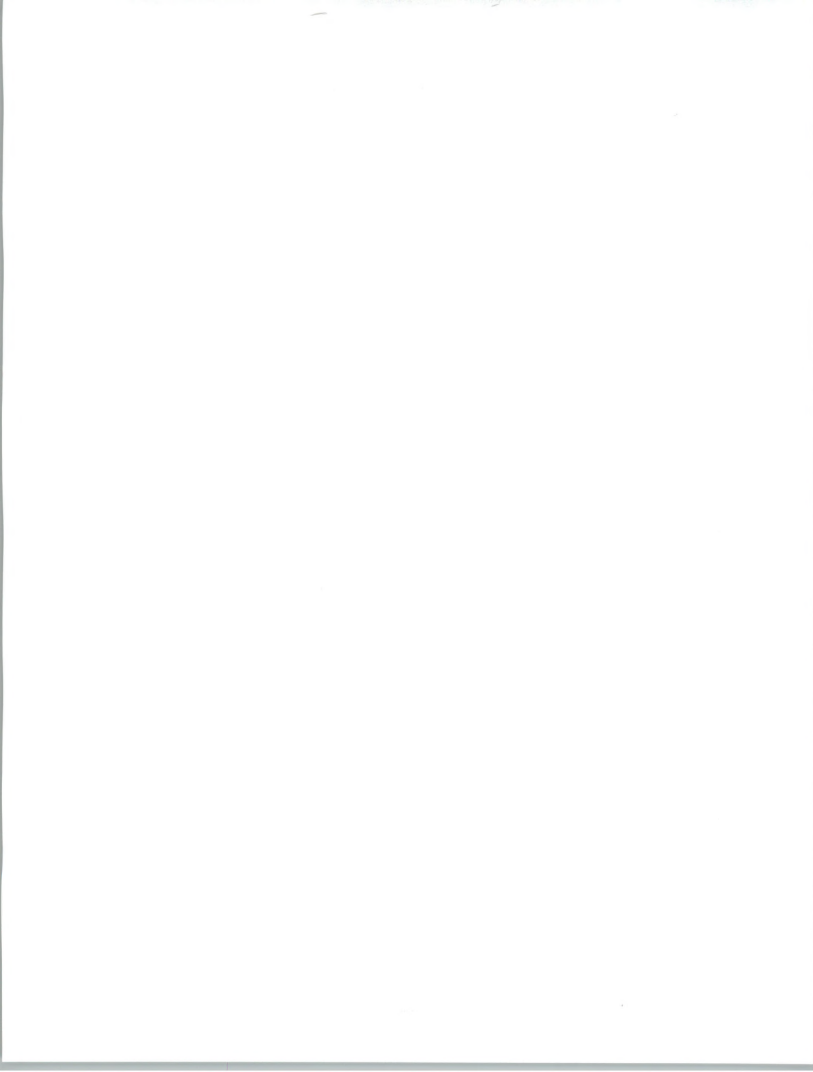
## Methodology

Data for this analysis is taken from INPUT's applications database, built from telephone interviews throughout 1993.

Respondents identified 170 applications or projects they would be implementing over the next two years using their own terminology, rather than using a predetermined set of definitions. Once the survey was completed, INPUT analyzed the project descriptions and coded them into 13 application categories.

Exhibit I-2 lists the applications in each category. Detailed descriptions of each application type are contained in Appendix A.

The sample size is relatively small compared with the size of the market. Graphs and charts are provided to supplement intuition rather than a statistically rigorous market analysis that would have required more interviews.

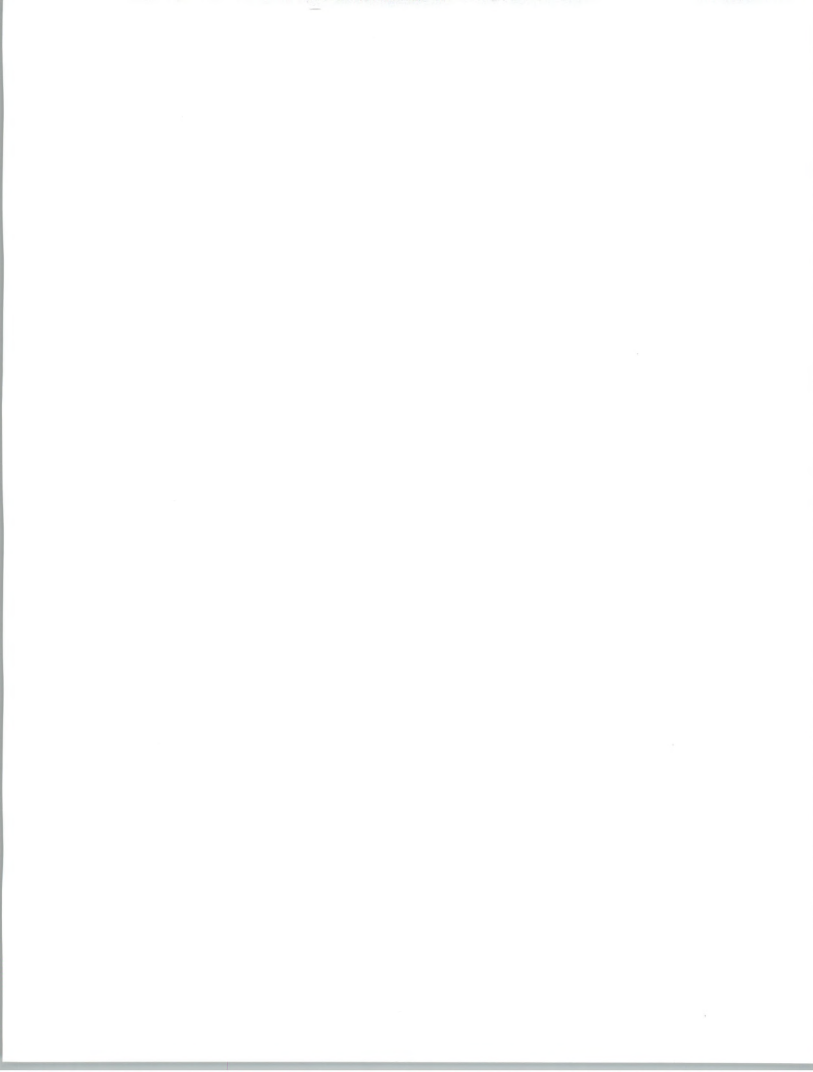


## EXHIBIT I-2

**Definition of State and Local Government Application Categories**

<b>Application Category</b>	<b>Application Type</b>
Engineering	Engineering drawings, mapping, geographic information systems
Hospital Operations	Clinical records management
Justice	Computer-aided dispatch, police record management, crime analysis, jail operations
Public Administration	Animal control, building permits, library systems, land parcel database, business license
Public Finance	Appraisal, real property tax, tax management, fiscal management, fund accounting, tax collection
Planning and Analysis	Forecasting, project management, spreadsheets
Purchasing	Purchase orders, encumbrance control
Other	Other
<b>Cross-Industry Applications</b>	
Human Resources	Applicant tracking, benefits administration, labor/job scheduling, management development, payroll, time and attendance
Infrastructure	Hardware, software & network upgrades
Office Systems (includes 3 spreadsheet applications normally included under Planning & Analysis)	Electronic mail & messaging, desktop publishing, integrated office systems, spreadsheets, word processing
Telecommunications	Voice mail, voice response systems

In addition to the survey, additional interviews were undertaken to provide information for the case studies in Chapter V. These discuss current user perspectives on C/S systems.





**D****Characteristics of the Sample****1. Sample Demographics**

EXHIBIT I-3

**State and Local Government Respondents  
by Geographic Location**

Location	Number of Different Organizations	Percentage of Organizations (%)
East	61	47
Central	37	28
West	32	25

**2. Characteristics of Survey Respondents**

User managers, with direct responsibility for line or staff operations in a functional area other than information systems (IS), responded to the questionnaire in Appendix B. Respondents frequently included the IS organization. Consequently, respondents, whose distribution is shown in Exhibit I-4, include:

- *Line Manager*—A manager/executive responsible for line operations at a government department, division or branch level; e.g., director of elections, director of finance, chief of police, etc.
- *Staff Manager*—A manager/executive in charge of staff operations at a government department, division or branch level; e.g., director of human resources, director of purchasing, etc.
- *IS Manager*—A manager/executive whose primary responsibility is the management of information systems activities, whether for a number of government departments, or a single department.



## EXHIBIT I-4

**Job Classification of Respondents in State and Local Government**

<b>Job Classification</b>	<b>Proportion of Respondents (%)</b>
Line Manager	14
Staff Manager	50
IS Manager	36

Staff managers represent the following functions:

- Office Administration
- Business Management
- Human Resources
- Compensation Management
- Accounting
- Police Records Administration
- Library Administration
- Public Information
- Purchasing
- State Courts Administration

**E****Organization**

The remainder of the report is organized into five chapters:

- Chapter II, Executive Overview, summarizes the findings of this study and provides recommendations for vendors and purchasers of C/S systems.
- Chapter III, Applications Analysis, discusses the key applications that will undergo conversion or reimplementation by state and local governments over the next three years. It addresses:



- Trends in state and local government applications
- Leading issues
- Analysis of the applications by application category
- Where client/server systems are being installed
- Target platforms and platform combinations
- Anticipated changes in the system environment
- Chapter IV, Management and Budgets, analyzes who will manage the projects and the size of their budgets. It discusses:
  - Project management and control strategy
  - Outside resources
  - Near-term expenditures for applications development
  - Growth rates for budgets
- Chapter V, State & Local Government Application Case Studies, describes client/server applications.
- Chapter VI, Vendor Analysis, reviews respondents' comments on leading vendors.

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**F**

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**Related Reports**

INPUT has published other reports on the state and local government market and on client/server applications that complement this report:

- *Market Analysis Program, State and Local Government, 1993-1998*
- *Client/Server Market Analysis, 1993-1998*
- *Client/Server Applications Trends Reports* (There are nine). Other reports focus on discrete manufacturing, process manufacturing, insurance, health services, retail trade, utilities and telecommunications.





## Executive Overview

This chapter summarizes the key findings in the report.

- Section A provides a brief overview of the C/S opportunity.
- Section B discusses the key findings and answers the questions given at the start of the report.
- Section C provides key statistics on client/server trends in state and local government.
- Section D makes recommendations for vendors who are interested in this sector.

---

### A

#### Background

State and local governments are caught in a squeeze. On the one hand, there are tremendous pressures to increase spending. An aging population is demanding increased health and public safety services, a weak economy increases social welfare costs, and inflation, though at its lowest levels in years, drives up the cost of the wages, as well as goods and services needed to operate government.

On the other hand, state and local governments' revenues are flat at best, and in many cases have decreased significantly, as a weak economy has eroded sales and income taxes. In better times, governments could watch revenues grow as incomes and sales increased, or failing that, they could simply increase taxes. Those days, however, have passed.

Several state and local government executives feel that this pressure to become more efficient is good and will force a restructuring of government at all levels, including the state and





local level. Most government executives see the increased use of technology as the only way they can reduce costs, provide additional services to the public and improve the productivity of government workers.

There have been some large and well-publicized successes involving client/server systems in the state of Michigan and in Merced County, California. In both cases, major welfare applications were developed to improve service to recipients, increase the productivity of case workers and reduce fraud. Welfare claims administration is a very complex process. One estimate is that more than 100 federal, state and local forms must be completed for a typical case, and most of the information is redundant. Both these systems assist claimants and case workers to determine which of the myriad of programs apply to a particular case.

---

## B

### Key Findings

While the demand for new systems should encourage information technology suppliers, state and local governments tend to be late adopters, rather than innovators, of new technology. Despite this, they are migrating to client/server systems at only a slightly slower pace than other industries.

Procurement cycles in the state and local government market tend to be very long—on the order of one to two years. However, few planned C/S projects in this sector are more than \$1 million, and so will likely be at the shorter end of this time period. These long cycles are due to the government procurement process which is often very formal, involving detailed requests for proposals (RFPs), and lengthy evaluations. The rules vary considerably from state-to-state. Local governments may bypass this process under some circumstances (in California, for example), but in many other states virtually every procurement is formal. Vendors considering entry into this market should expect to invest for a long time before seeing any return.

Though application software vendors and suppliers of turnkey systems, who specialize in this sector, are themselves migrating their offerings to client/server architecture, relatively few such applications are available now. Contrast this with cross-industry financial and human resource applications, or insurance



applications, where the leading vendors have client/server systems on the market.

Major IS issues will be substantially the same over the next several years. Funding will remain a significant problem, and IS managers' top priority for new development will be responding to legislated requirements. Given budget pressures, they will have a very limited capability to execute comprehensive technology plans.

## C

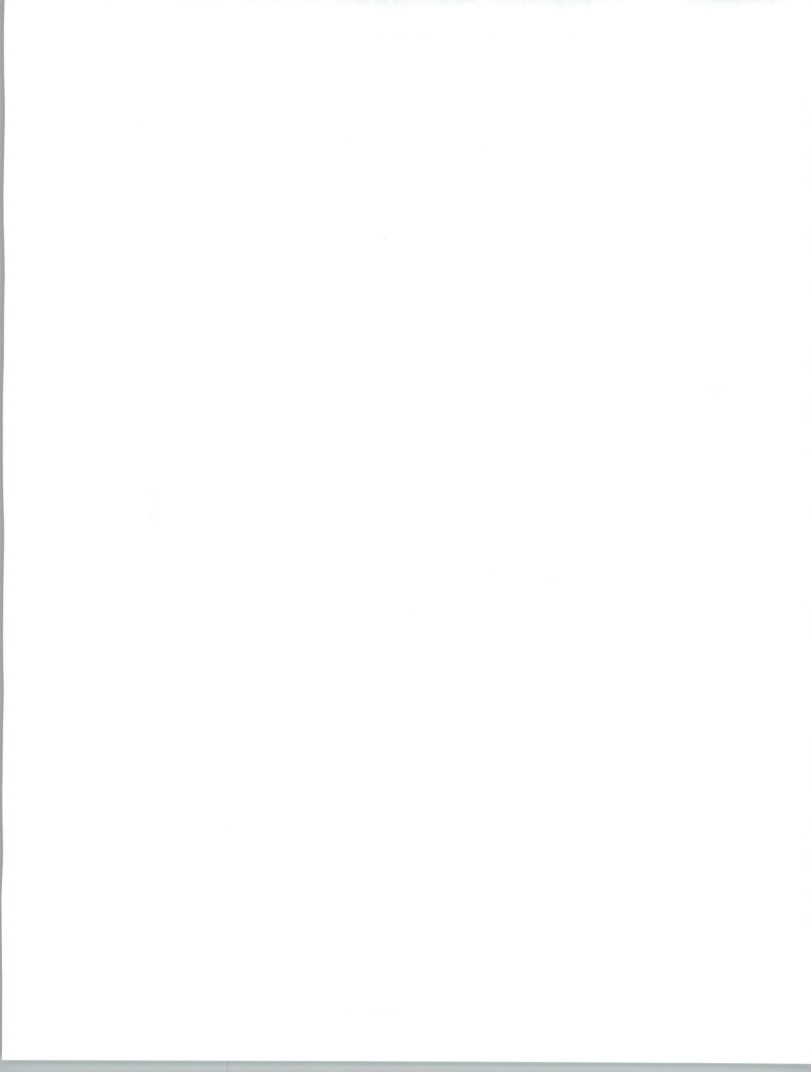
### Key Statistics

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- Thirty-two percent (32%) of state and local governments surveyed have adopted a strategy of moving to C/S, compared with 33% to 38% in other industries.
- Mainframes continue to be a much larger part of the picture in state and local government when compared with other industries. Almost half of all planned IS projects will include a mainframe, either alone or with other components. Fifteen percent (15%) of the client/server projects will include a mainframe.
- Users will implement 64% of new applications and 77% of client/server applications identified in this sector. This is about twice the corresponding rate in manufacturing.

Managers in this sector generally perceive client/server systems as less expensive to implement and easier to use than host-based systems. The greatest demand for new systems will be for:

- New infrastructure, as state and local governments try to replace antiquated systems.
- Justice systems, only 18% of which are planned as client/server systems at the present time.
- Financial systems, which rank fourth in terms of frequency of planned applications, and 35% of which will use C/S.
- Office systems, electronic mail systems in particular, are strong candidates for client/server implementation. Penetration of C/S systems in office applications is only 25% in this sector.



**D****Conclusions and Recommendations**

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Application software vendors and suppliers of turnkey systems, among the first to move their offerings to a client/server architecture, will enjoy a competitive advantage in at least one-third of the opportunities in this sector.

The length of the procurement process presents challenges and opportunities for vendors. On the one hand, it allows ample time to identify opportunities, to influence project specifications and develop alliances with other vendors. On the other hand, the process is costly, demanding careful selection of opportunities.

Many vendors have invested significant amounts of time and money in developing a prospect, only to have the legislative body postpone the project or cancel it altogether. Given current budget pressures, vendors should be careful to select projects which either show rapid pay-back to the agency, or have a high political priority. Projects that pass one or both of these tests have a much higher likelihood of proceeding all the way through the procurement cycle.

Systems integrators, interested in entering the state and local government market, are advised to develop alliances with the smaller, specialized firms already in the market. Combining the larger firm's financial strength and skills on very large projects, with the smaller firm's experience and market knowledge, will make a formidable competitive entry on very large projects.

Training and support is a consistent theme in interviews with the user. IS management, and increasingly vendors, must plan to adequately train and support users. Vendors interested in this sector should explore user training and support service offerings that build relationships while providing cost-effective training and support.





## Applications Analysis

This chapter analyzes state and local government applications in detail. It contrasts C/S applications with non-C/S applications.

- Section A discusses leading trends in state and local government that affect the implementation of C/S systems.
- Section B discusses leading IS issues as reported by respondents.
- Section C discusses C/S applications. It estimates the percentage of new systems that will be implemented using a C/S architecture and describes opportunities for C/S applications.
- Section D discusses target platforms, i.e., mainframe, minicomputer or LAN.
- Section E shows how the systems environment is changing.
- Section F examines the differences in client/server plans at the city, county and state levels.

### A

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#### State and Local Government Applications Trends

The following key trends will shape state and local government IT development and implementation in the next few years:

- Budget pressures will continue to be a major concern for users and vendors. For vendors, the situation is not dissimilar to that in the private sector where many companies have delayed funding new projects due to lack of capital. The result has been an increasing focus on shorter and less-costly projects that have a demonstrable short-term pay back.





- The need for short-term pay back can be a critical factor. Projects that provide a clearly identifiable, early return may frequently receive funding where other, longer-term projects may not. Vendors are forming partnerships with government entities to develop new cost-saving applications they will be able to sell elsewhere.
- Though the growth of LANs and client/server systems is expected to continue, large mainframe systems will still be needed to support the large databases at the state level, in particular.
- Connectivity and interoperability continues to be a major issue in state and local government. Such projects are intended to improve efficiency of government workers by reducing or eliminating redundant information and effort.
- Public access to information and the ability to disseminate services electronically, continues to grow rapidly in state and local governments. The system developed by Andersen Consulting for Merced County, California represents a trend in state and local government that is becoming more widespread. The Merced system provides direct interaction with the public through on-line terminals to request information and request and receive benefits.

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**B**

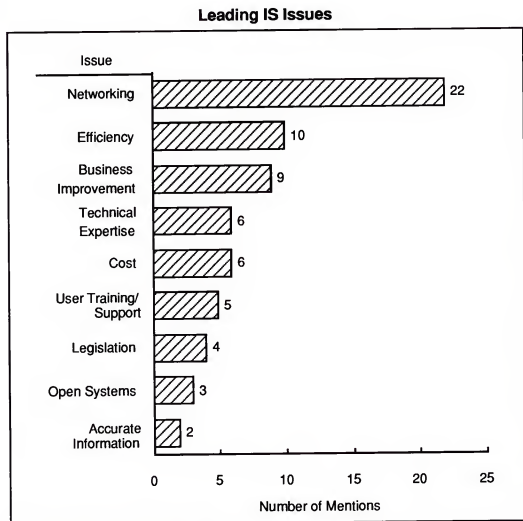
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**Leading IS Issues And User Concerns****1. Ranking of Leading IS Issues**

When asked to identify the major issues relevant to IS in the next two years, 101 respondents gave free-form answers that were coded by INPUT. Some respondents gave multiple answers and others gave none, resulting in 113 responses. Responses given more than once are tabulated in Exhibit III-1.



EXHIBIT III-1



113 Responses from 101 Organizations

## 2. Discussion Of Issues

Key issues shown in Exhibit III-1 are discussed in detail below.

- *Networking*—Issues surrounding local- and wide-area networks and connectivity with other government agencies dominate the IS agenda in state and local government.
- *Efficiency*—Governments are having to do more with less, and many user and IS executives alike see IS as the only way they can provide more services to the public for less money.



- *Business improvement*—Systems that allow the public to access government information, directly from a terminal without talking to a clerk, received numerous mentions.
- *User training and support*—Both user and IS executives recognize that investment in new technology will be wasted unless government workers are trained in its use. Five organizations feel this is the single most important issue in the implementation of planned systems. Users are looking to vendors to supply the required user training and support.
- *Cost of new systems, budgets*—Budgets are tight, and are likely to remain so in the foreseeable future. Projects with uncertain paybacks are slow to receive funding.
- *Migration to open systems*—Three respondents cited migration to open systems as the major issue in their plans for new applications.
- *Technical expertise*—The lack of technical expertise within the organization was viewed by some as a major issue. These users are looking to vendors to provide that expertise before, during and after implementation of new applications.
- *Legislative mandate*—Priorities for applications are often set by new requirements dictated by the legislature. Two of the respondents mentioned the new “motor voter” bill, enabling people to register to vote when applying for a driver’s license, or notifying the DMV of a change in address. It is significant that nobody had planned to implement such applications 12 months earlier, and that tight budgets may have forced delays on other projects long in the planning.
- *Improved accuracy of information*—Improving the accuracy of information is a major issue in voter registration systems, as well as health and welfare applications. These new applications were aimed at eliminating redundant ID numbers for claimants and sharing data between systems in separate agencies.

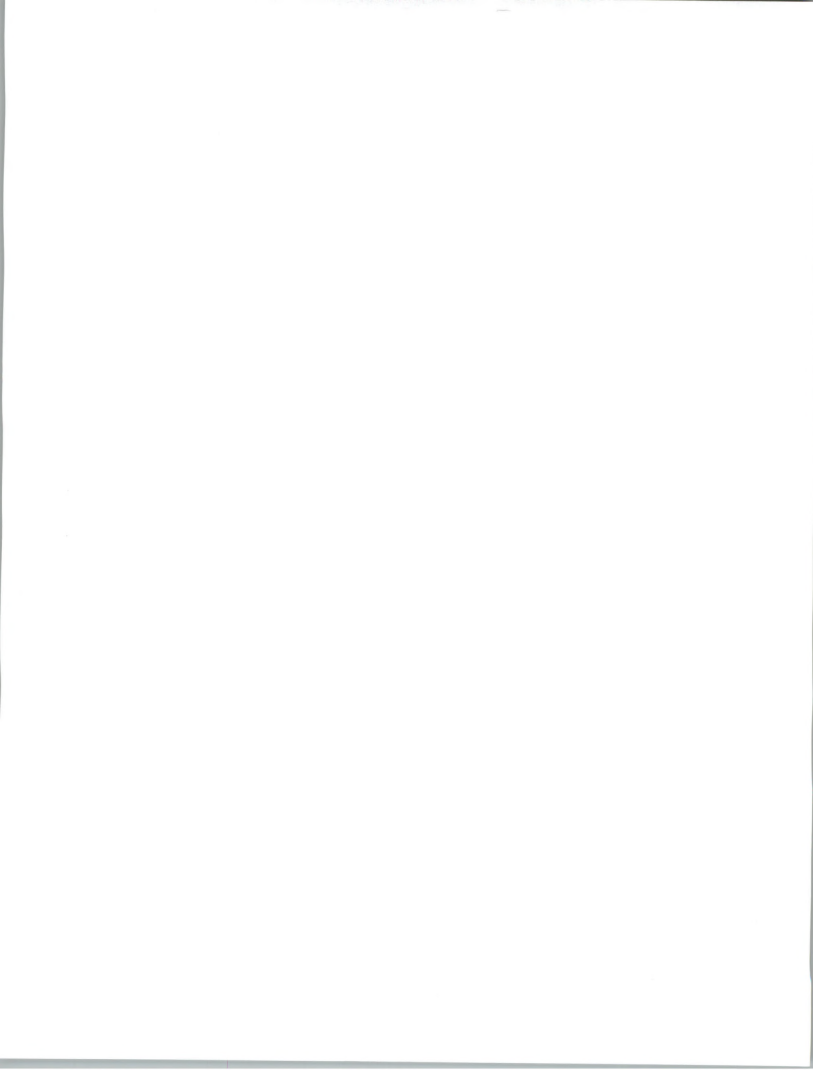


**C****Client/Server Applications**

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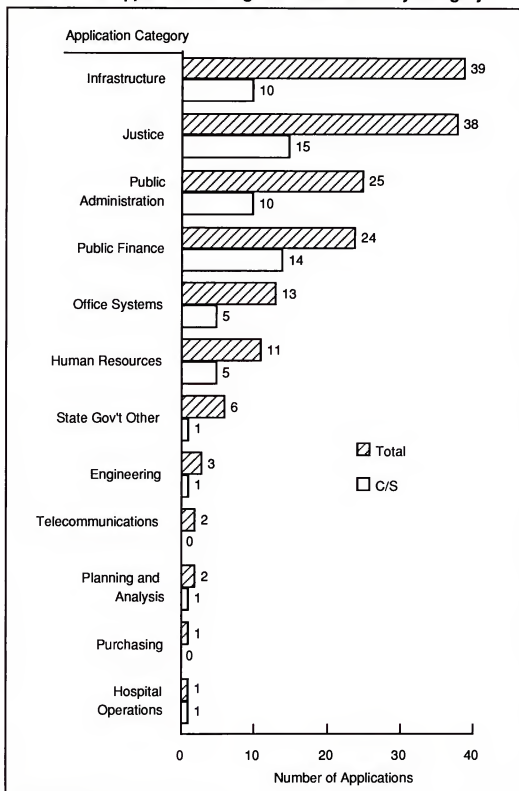
**1. Client/Server Penetration by Application Category**

C/S systems will achieve a 25% penetration rate in state and local governments over the next few years. Respondents were asked if they were using, or planning to use, client/server systems. Exhibit III-2 shows the number of applications surveyed in each of the applications categories given in Exhibit I-2. It also shows the number of those for which the respondent indicated the C/S will be a major strategy.





## EXHIBIT III-2

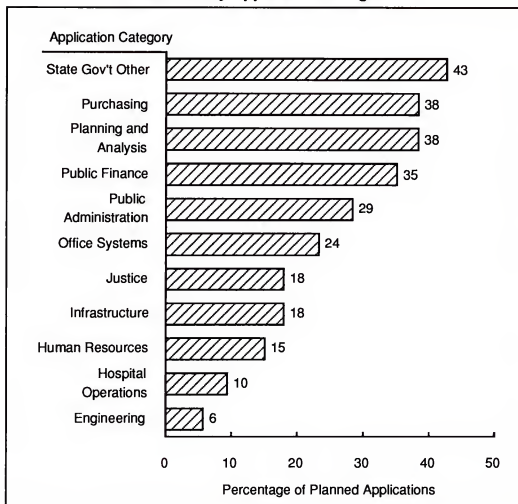
**Planned Application Changes and Use of C/S by Category**

165 Applications; 107 Respondents



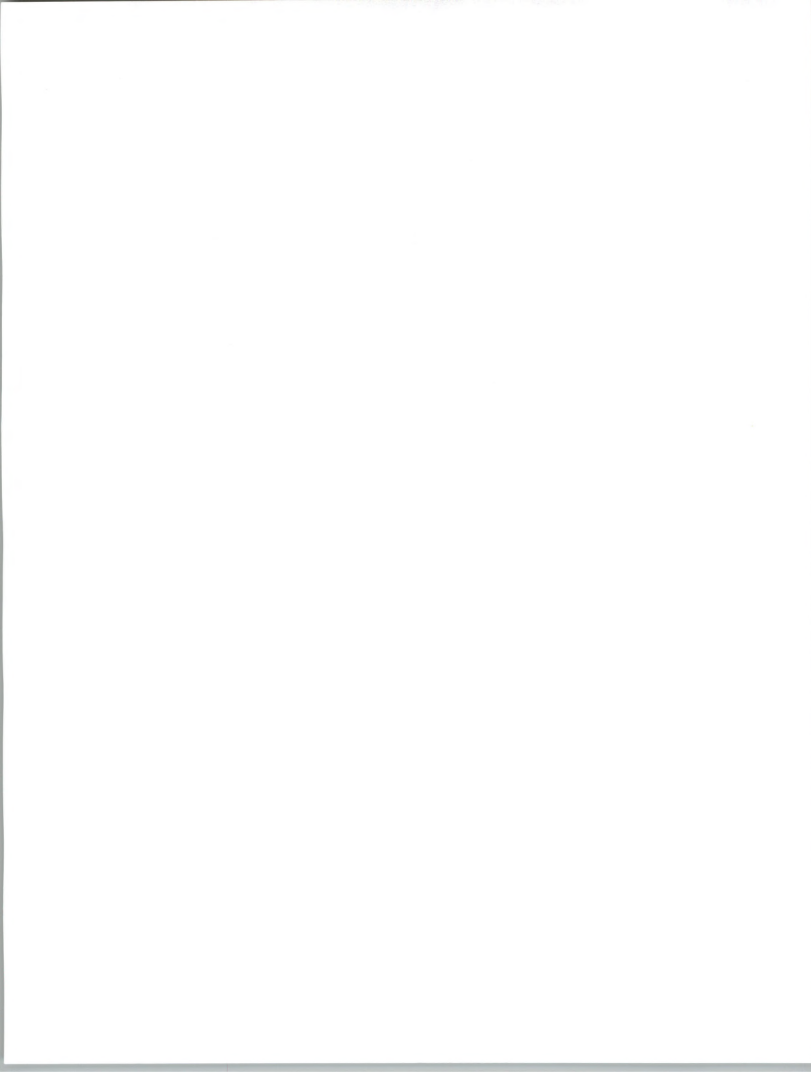
Exhibit III-3 takes the same data as Exhibit III-2 and expresses C/S penetration as a percentage of systems installed for each application category. The application categories are then ranked according to the percentage of systems migrating to C/S architecture.

EXHIBIT III-3

**Use of C/S by Application Categories**

Each category in the chart is explained in detail, suggesting opportunities for system vendors.

State and local governments plan to invest heavily in updating and upgrading their *infrastructure*, often characterized by antiquated systems. However, budget pressures make it difficult to replace applications, so investment is being directed at extending the life of those systems and networking existing



systems, rather than replace them with new applications based on client/server architecture.

*Justice systems* are among the leading new applications planned, but only 18% will be client/server. This is because there are few client/server systems in that market presently available from vendors. Few users have the time or the funds to develop these applications. Vendors who can demonstrate the advantages of a client/server approach should be well positioned.

*Financial systems* in state and local government, represent one of the hottest application areas for vendors of client/server systems. This application area ranks fourth in terms of frequency of planned applications, and 35% of the systems will use C/S.

*Office systems*, in particular electronic mail systems, are strong candidates for client/server implementation. Typically, office systems rank high in many other vertical markets surveyed by INPUT. However the penetration of C/S systems (25%) is lower than the corresponding 73% penetration in the health services market where client/server systems are more prevalent.

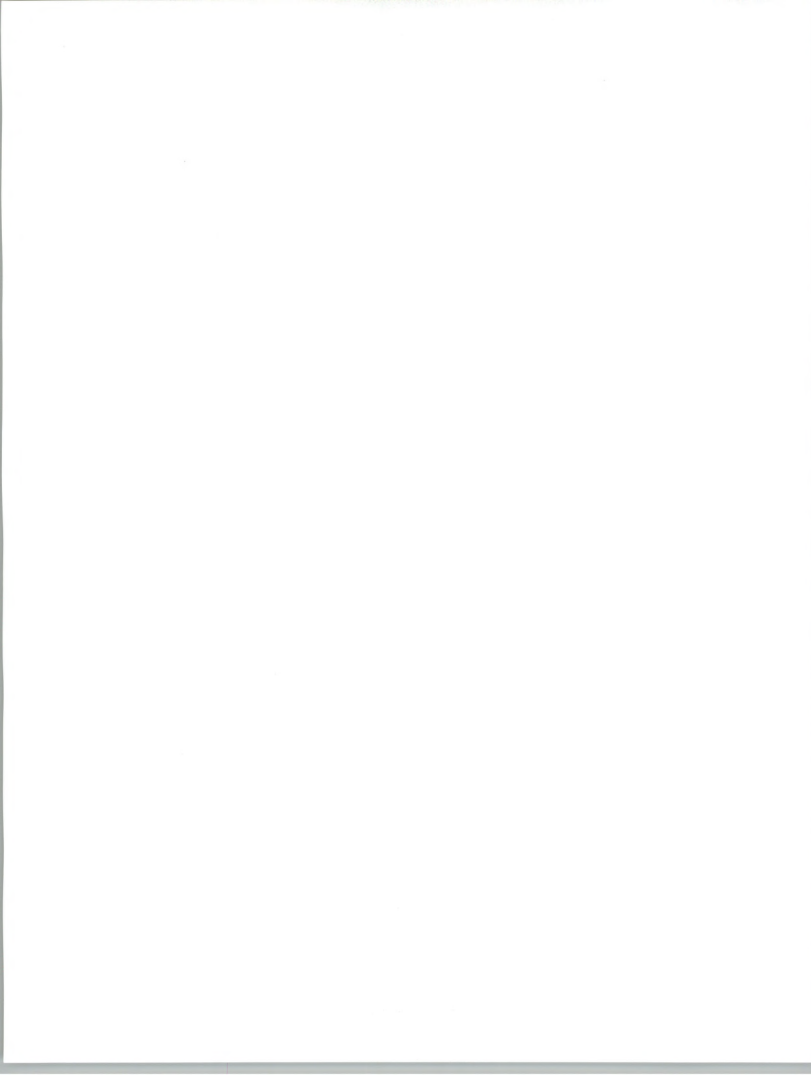
Exhibit III-4 gives a detailed breakdown of the data collected. It shows for each category the number of applications surveyed in the category, the strategy, the main platforms and major resources used.



## EXHIBIT III-4

## Application Categories

Application Category	No. of Applica- tions	Strategy		Platform			Resources						Pack- aged Soft- ware	Utiliz- ing EDI	Out- srcd
		Client /Srvr	Down sizing	CS/ LAN	Mini cmpr	Main- frame	Cent. IS	Dept. IS	User Staff	Syst. Integ.	Other Out- side Svcs.				
All Applications															
Engineering	3	1	0	1	0	0	0	0	2	0	2	2	2	0	
Hospital Operations	1	1	1	1	0	1	0	0	1	0	1	1	1	0	
Human Resources	11	5	4	4	2	7	2	4	5	2	4	10	4	3	
Infrastructure	39	10	12	15	6	20	7	14	19	11	13	22	18	5	
Justice	38	15	17	17	10	10	15	15	32	5	26	23	15	5	
Office Systems	13	5	3	3	2	7	6	4	6	4	4	7	5	3	
Public Administration	25	10	4	10	2	10	3	7	14	11	13	14	7	7	
Public Finance	24	14	2	14	3	17	13	7	19	5	3	8	15	1	
Planning and Analysis	2	1	0	1	0	0	0	0	1	1	2	2	0	0	
Purchasing	1	0	0	1	0	0	0	0	0	0	0	1	0	0	
State and Local Other	5	3	1	2	0	4	3	3	4	1	0	2	2	1	
State Gov't Other	6	1	0	1	0	5	2	3	4	5	3	4	4	1	
Telecommunications	2	0	0	0	0	2	0	2	2	0	0	2	2	0	
Total—All Applications	170	66	44	70	25	83	51	59	109	45	71	98	75	26	
Client/Server Applications															
Engineering	1	1	0	0	0	0	0	0	0	0	1	1	0	0	
Hospital Operations	1	1	1	1	0	1	0	0	1	0	1	1	1	0	
Human Resources	5	5	1	3	1	2	2	2	2	2	4	5	3	1	
Infrastructure	10	10	3	6	0	7	3	3	6	6	2	5	4	2	
Justice	15	15	13	9	1	5	5	5	12	2	9	7	7	0	
Office Systems	5	5	2	1	0	2	3	0	3	2	1	4	2	2	
Public Administration	10	10	2	6	0	5	1	2	9	6	6	8	3	5	
Public Finance	14	14	1	11	1	10	9	2	14	1	3	5	12	0	
Planning and Analysis	1	1	0	0	0	0	0	0	1	0	1	1	0	0	
Purchasing															
State and Local Other	3	3	1	2	0	3	2	3	3	0	0	2	2	0	
State Gov't Other	1	1	0	1	0	1	0	0	0	1	0	0	1	1	
Telecommunications															
Total—C/S Applications	66	66	24	40	3	36	25	17	51	20	28	39	35	11	
Comparison of C/S Applications with Other Applications															
Percentage for all applications (%)	%	39	26	41	15	49	30	35	64	26	42	58	44	15	
Percentage for C/S applications (%)	%	100	36	61	5	55	38	26	77	30	42	59	53	17	





An explanation of the column headings follows:

- “Number of Applications” is the total number of applications for each of the application categories.
- The “Strategy” heading contains two subheadings, “Client/Server” and “Downsizing.” The “Client/Server” count, by category, indicates the number of applications within the category being implemented using a C/S architecture. The count under the heading “Downsizing” represents the number of client/server applications, out of the total, being implemented as part of a general downsizing strategy.
- The “Platform” heading indicates the number of times one of the three major platform classes was mentioned as the key implementation platform.
- The “Resources” heading covers six sources of potential resources that will be employed as part of the implementation process. As was the case with the question regarding platform, more than one response per application was permitted.
- Finally, for each application, respondents were asked to indicate whether the application would use EDI or be outsourced. The last two columns give a tabulation of those responses.

An explanation of the rows follows:

- The first set of rows represents the leading application categories.
- The “TOTAL—All applications” row adds up the rows describing the application categories.
- The above rows are repeated for applications where the respondent indicated there was a major strategy to move to C/S systems.
- The next to the last row takes the “TOTAL—All applications” and divides each column total by the number of applications to get a percentage. The final row calculates a similar percentage for C/S applications so they may be compared with the population as a whole.



## 2. Observations on the Sample Mix

In analyzing the C/S applications in the above table, organizations planning client/server applications are more likely to be downsizing and employing user staff as a resource:

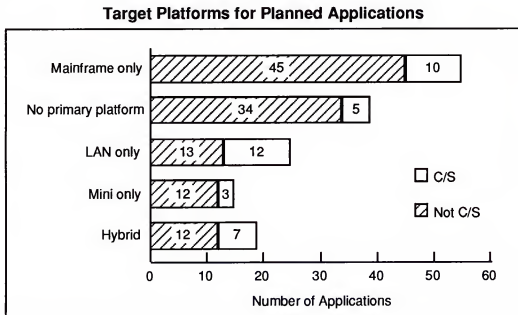
- Thirty-six percent (36%) of those surveyed who were downsizing planned to implement a client/server application, versus 19% of those who were not.
- Seventy-seven percent (77%) of those planning client/server applications reported they intended to employ user staff as a resource, versus 56% of those who did not.

## D

### Target Platforms

Exhibit III-5 shows the target platforms for the 170 applications in the sample where platform information was available. Users were asked to identify their primary application platform for applications undergoing major changes.

EXHIBIT III-5

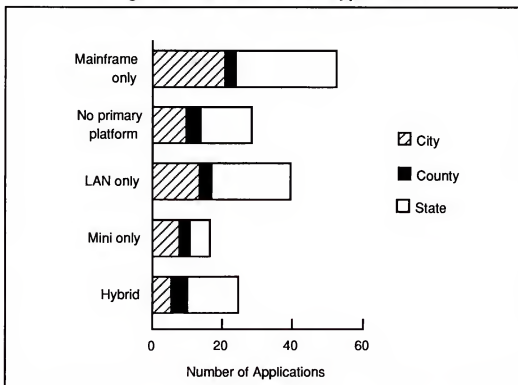


Overall, there is still a strong reliance on mainframes, with 49% of applications using a mainframe either alone or with other components.



## EXHIBIT III-6

Target Platforms for Planned Applications



## E

## Anticipated Changes in the Systems Environment

Respondents provided information on specific changes in their systems environment over the next two years. Responses fell into three categories.

**1. Upgrades**

Sixty-two percent (62%) anticipate that they will be upgrading their systems over the next two years. Of those who want to upgrade, slightly more than 38% are moving to client/server systems.

**2. Increased Standardization**

Movement toward increasing standardization in platforms and operating environments was predicted by 44% of the respondents. This is much lower than in some other industries.



### 3. Migration to C/S

A relatively low proportion of state and local government respondents (32%) are adopting C/S migration strategies, compared with 33% to 38% in other industries.

### 4. Downsizing

Twenty-six percent (26%) of applications are being downsized. This is comparable to other industries.

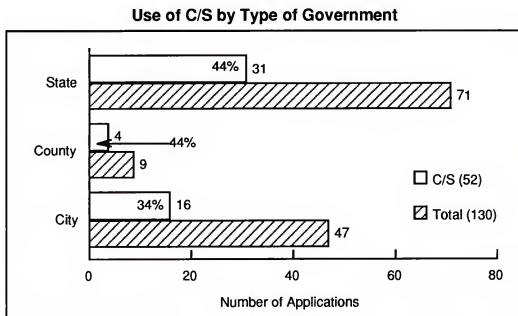
## F

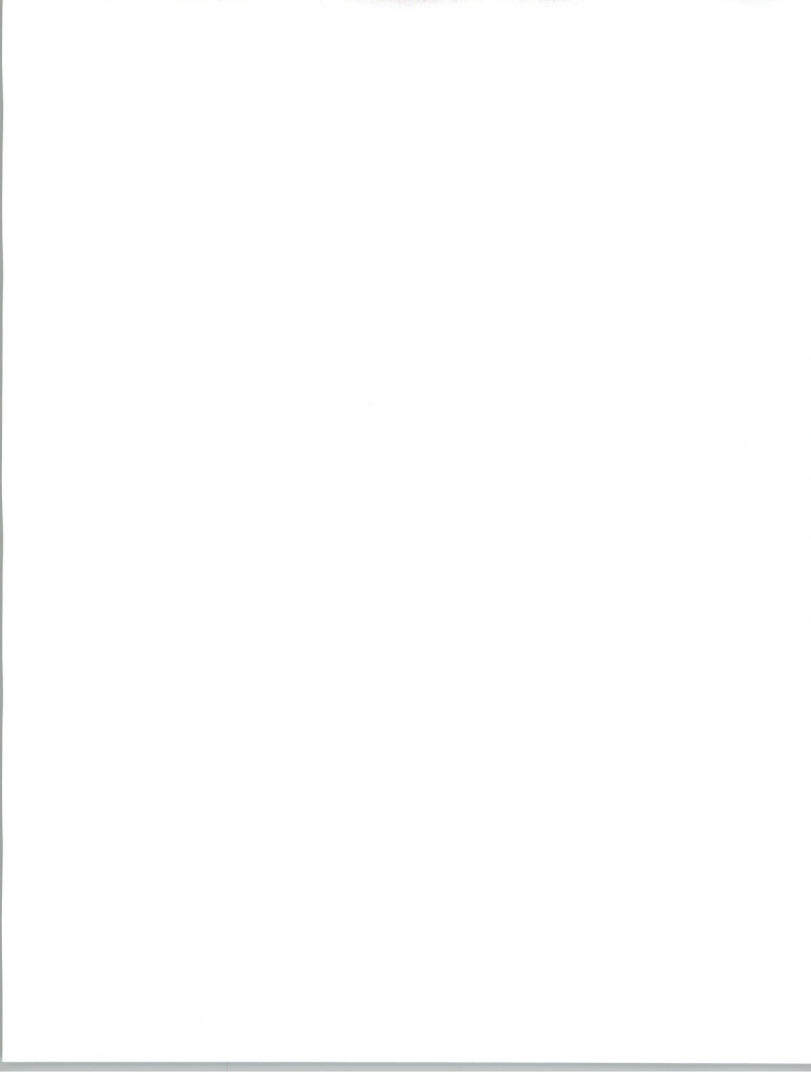
### Client/Server Implementation By Type Of Government

Of the 130 organizations interviewed, 40% indicated that they were moving toward a C/S strategy.

Exhibit III-7 below shows that cites are slightly behind counties and states in plans for C/S applications.

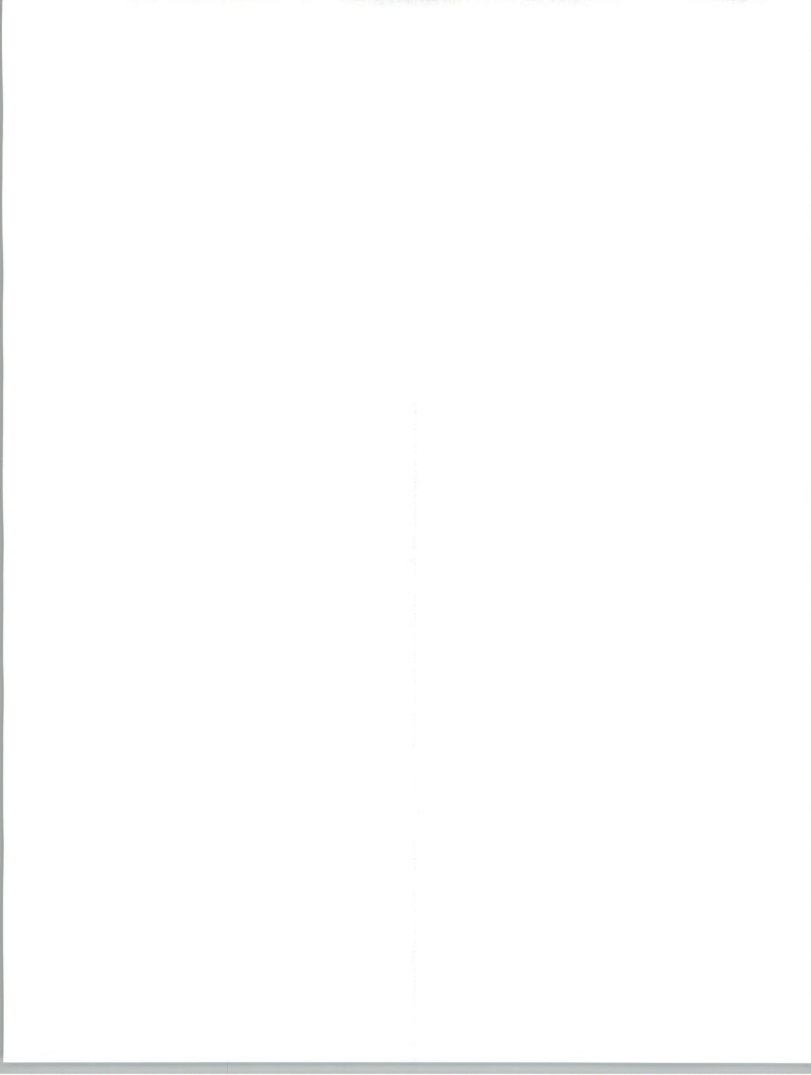
EXHIBIT III-7







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## Management And Budgets

This chapter discusses applications management and budgeting. The chapter is organized as follows:

- Section A provides an analysis of the role user management and IS departments play in project management of applications.
- Section B analyzes resources that will be used to implement applications—the emphasis being on development rather than overall project management.
- Section C analyzes expenditure plans; that is, estimated budget sizes for investment in new systems.
- Section D analyzes budget growth rates; that is, the amount respondents expect their budgets to grow annually over the next two years.
- Section E identifies key opportunities by application category, spending growth rate and size of budget.

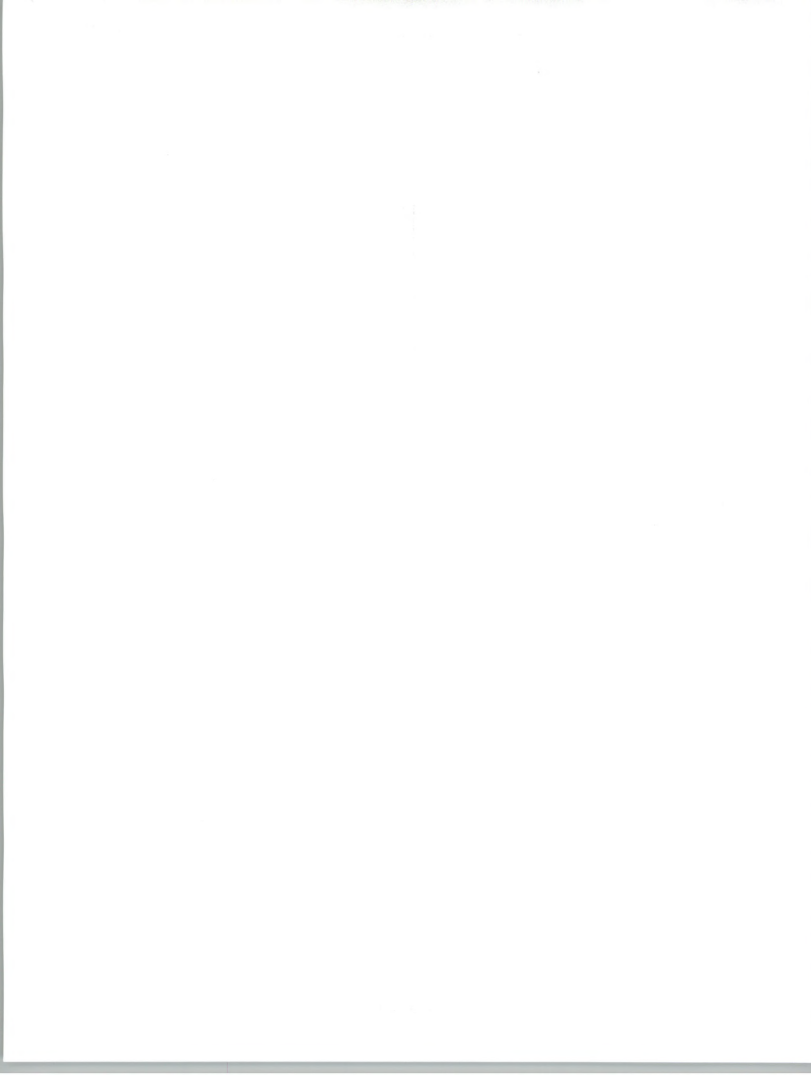
### A

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#### Project Management

INPUT asked respondents to identify who was managing each planned application project.

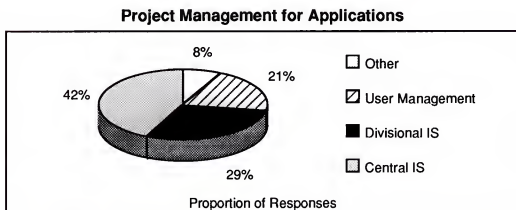
- Twenty-one percent (21%) of the respondents' applications will be managed by user management. This is significantly lower than the 40% found in banking and finance.
- Central IS will manage 42% of the projects. Divisional IS will manage another 29%, placing the IS groups firmly in charge of implementation in state and local government.



- Eight percent (8%) of the respondents said that other parties would manage new projects, most of whom referred to a committee of users and IS personnel.

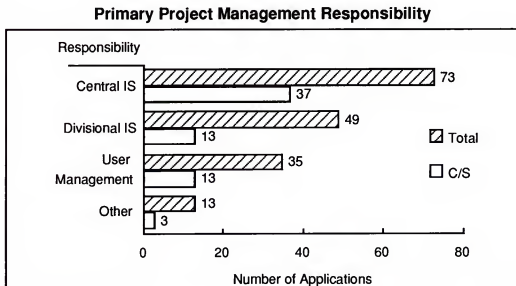
Of 170 applications, 66 of them are moving, or have already migrated, to client/server solutions. Exhibit IV-1 graphically shows the project management responsibilities, as a percentage, for all applications. Exhibit IV-2 shows the number of applications managed by each organization for the entire application set and just client/server applications.

EXHIBIT IV-1



170 Respondents

EXHIBIT IV-2



170 Applications



EXHIBIT IV-3

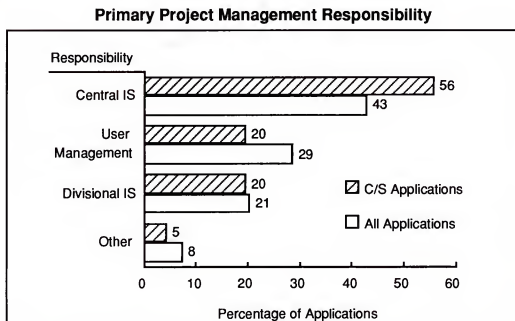
**B****Implementation Strategy****1. Sources of Development Resources**

Exhibit IV-4 shows the resources required to implement the 170 applications. While project management comes from either the central or departmental IS groups, most of the implementation resources will come from the users themselves.

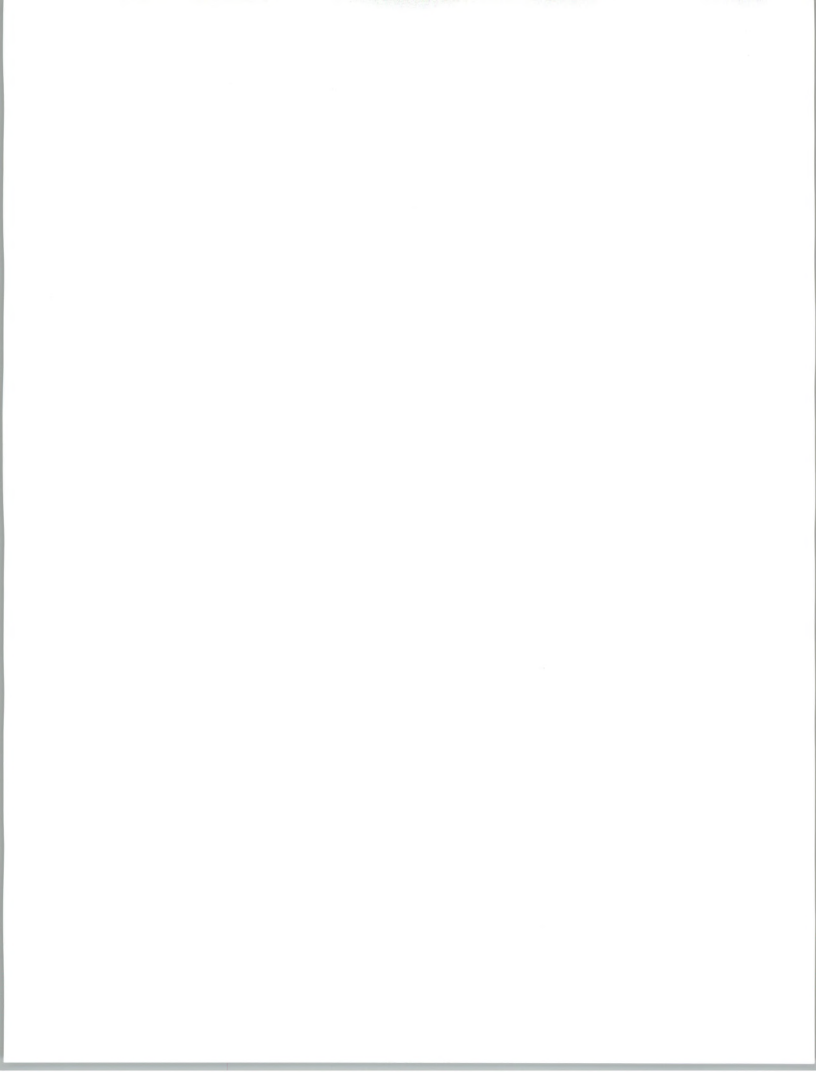
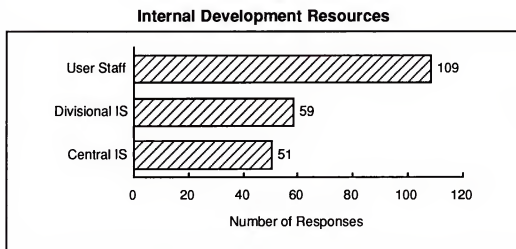




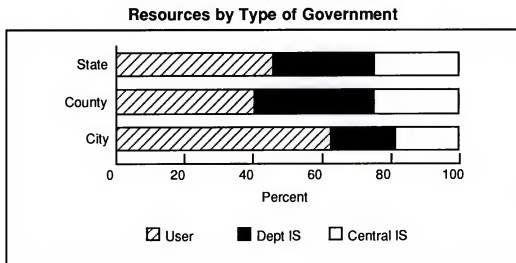
EXHIBIT IV-4

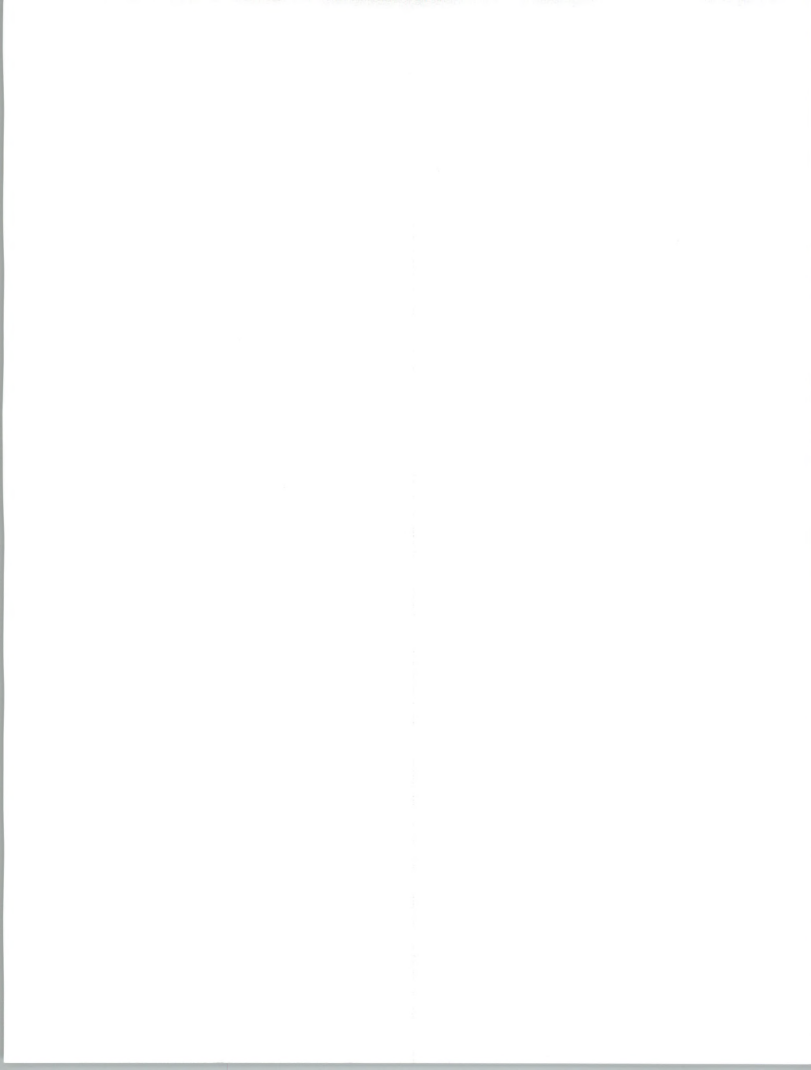


For almost 64% of the projects' user line or staff, management will assume direct implementation responsibility. This is close to double the corresponding average for the manufacturing industry sectors.

As shown in Exhibit IV-5, user personnel in cities will implement new applications to a far greater extent than their counterparts in counties or states. This is likely due to the fact that cities have smaller IS staffs.

EXHIBIT IV-5

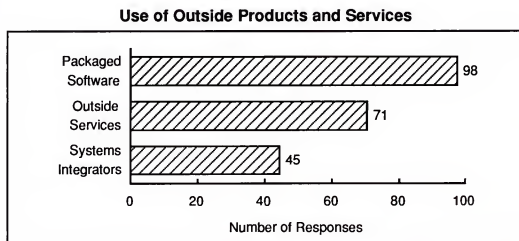




## 2. Use of Software Products and External Resources

As shown in Exhibit IV-6, more than 58% of the implementations planned for the next two years will use software packages.

EXHIBIT IV-6

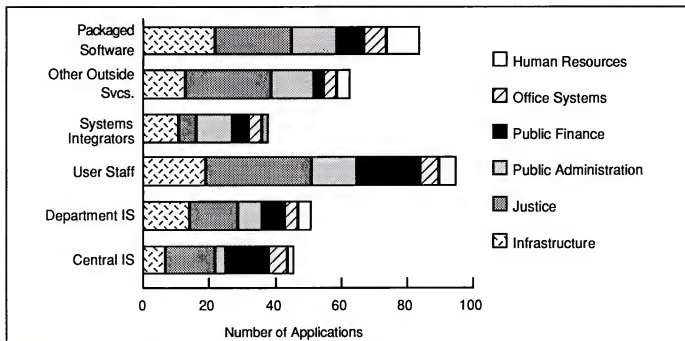


## 3. Resource Use By Application Category

Exhibit IV-7 takes the major application groupings in the state and local government market and identifies resources used to implement them.



EXHIBIT IV-7

**Resource Use by Application Category**

As can be seen, the number of times a particular resource was mentioned for each major application grouping is tabulated. The height of each column measures the number of mentions of a resource, and clearly central IS is the most frequently used.

Software packages are most frequently used for human resources and spreadsheet applications. Most client/server office systems and public administration systems also use packaged software.

**C****Expenditure Plans**

Exhibit IV-8 shows the anticipated amount each respondent expects to spend on applications changes in 1994. The spending amounts are plotted against the number of mentions. The shading differentiates between respondents that mentioned C/S as a key strategy and those who did not, marked non-C/S. As can be seen, more than 50% of the systems at the top end of the range are expected to be client/server.

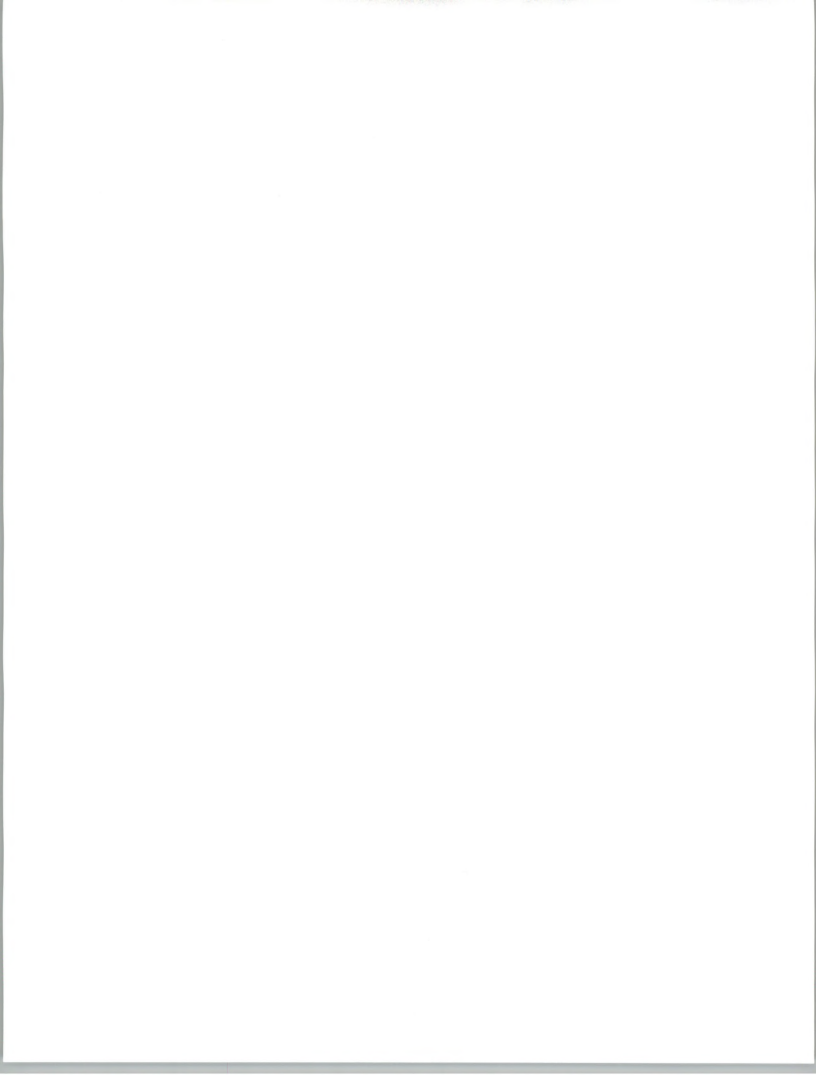
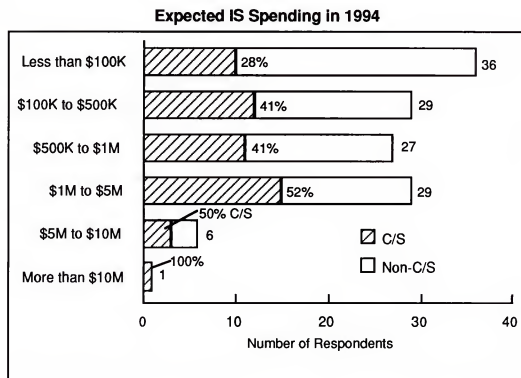
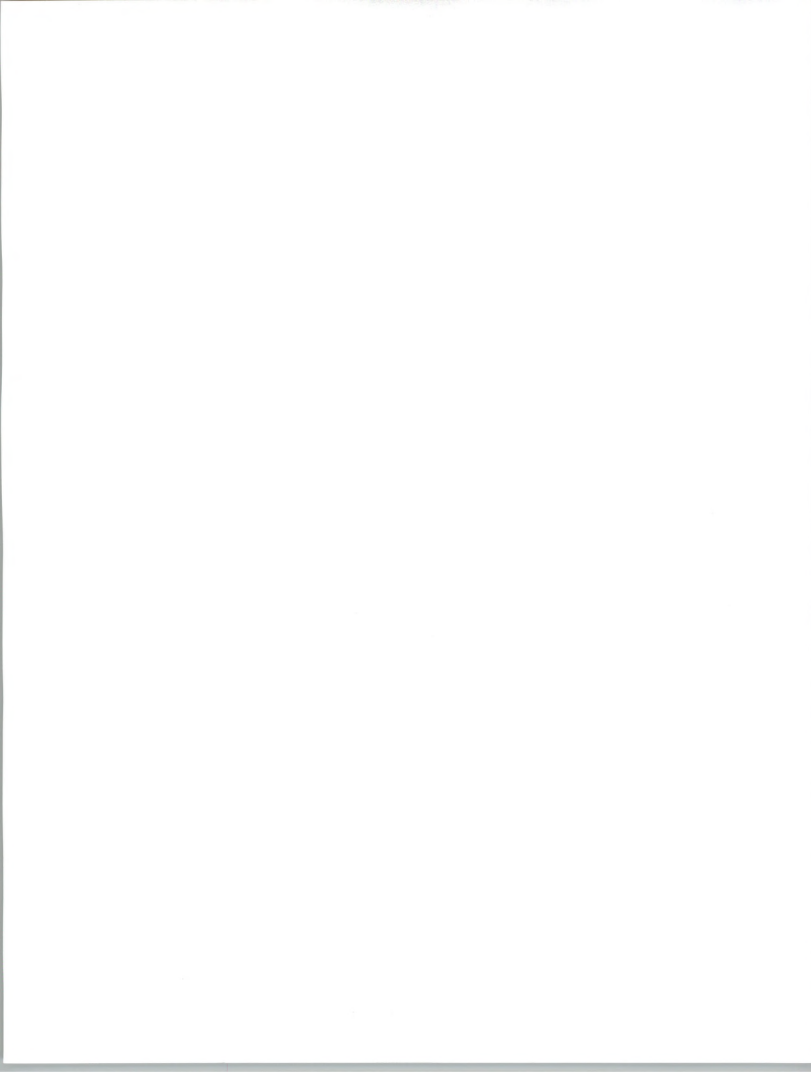


EXHIBIT IV-8



Budgets for new projects in state and local government are small when compared with other industries. Twenty-eight percent (28%) of the state and local government organizations surveyed expect to spend \$1 million or more. The corresponding proportion in the insurance industry and the manufacturing sectors are 60% and 43% respectively.

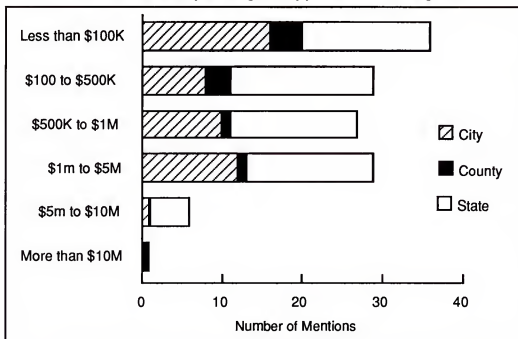
Exhibit IV-9 also shows expected IS spending, but differentiates by type of government.





## EXHIBIT IV-9

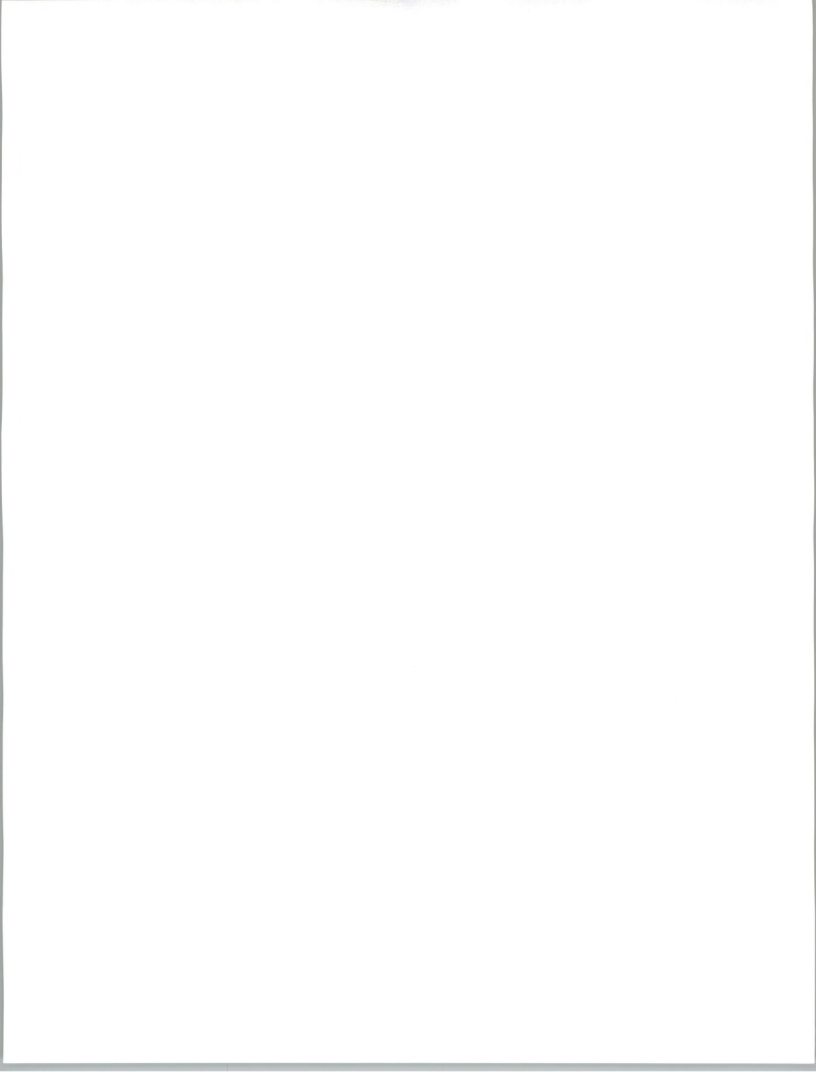
1994 Planned Spending on Applications Changes



## D

## Budget Growth Rate

Respondents were asked to identify how much their IS budget would grow annually over the next few years. They were asked for the expected growth in their IS budget, excluding hardware, for applications only. Spending rates for applications improvements and IS overall (this includes personnel costs, equipment upgrades and support) are above industry norms. On average, total IS and applications development spending are expected to grow at an annual rate of 28% versus 5% to 9% in other industries.

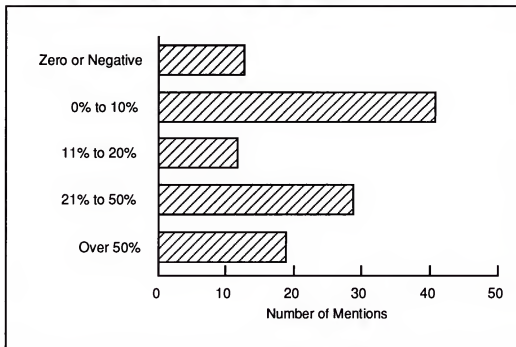


This high rate of growth is reasonable in view of the smaller projects planned in state and local government.

Exhibit IV-10 shows the distribution of application budget growth rates.

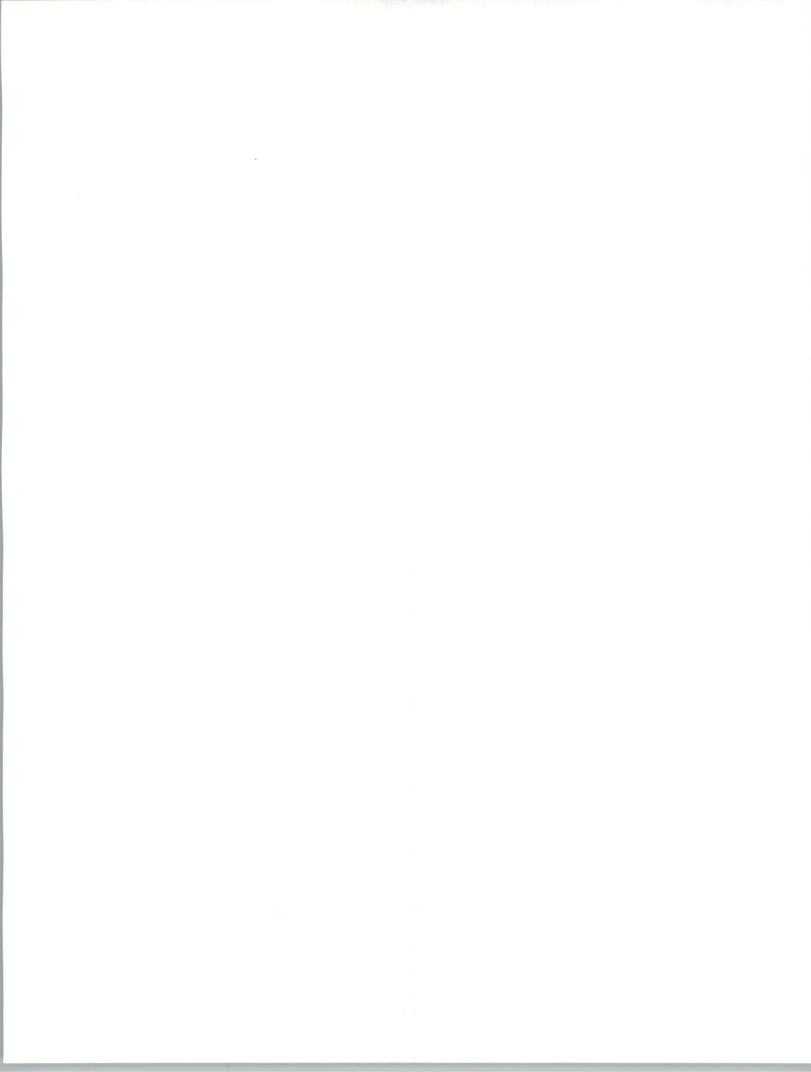
EXHIBIT IV-10

**Annual Spending Growth Rates for Applications Development**

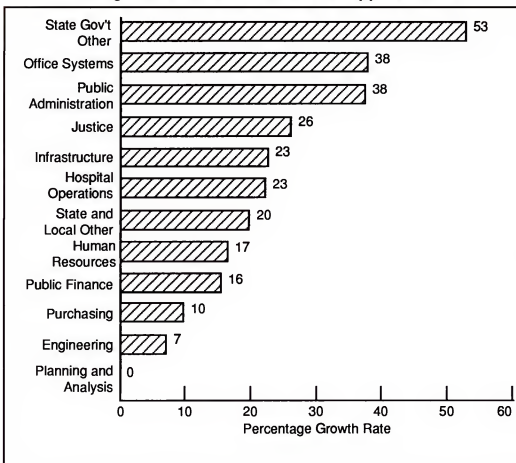


*Total Responses: 114*

Examining the data in more detail, the applications being implemented where the budgets are growing the fastest are shown in Exhibit IV-11.



## EXHIBIT IV-11

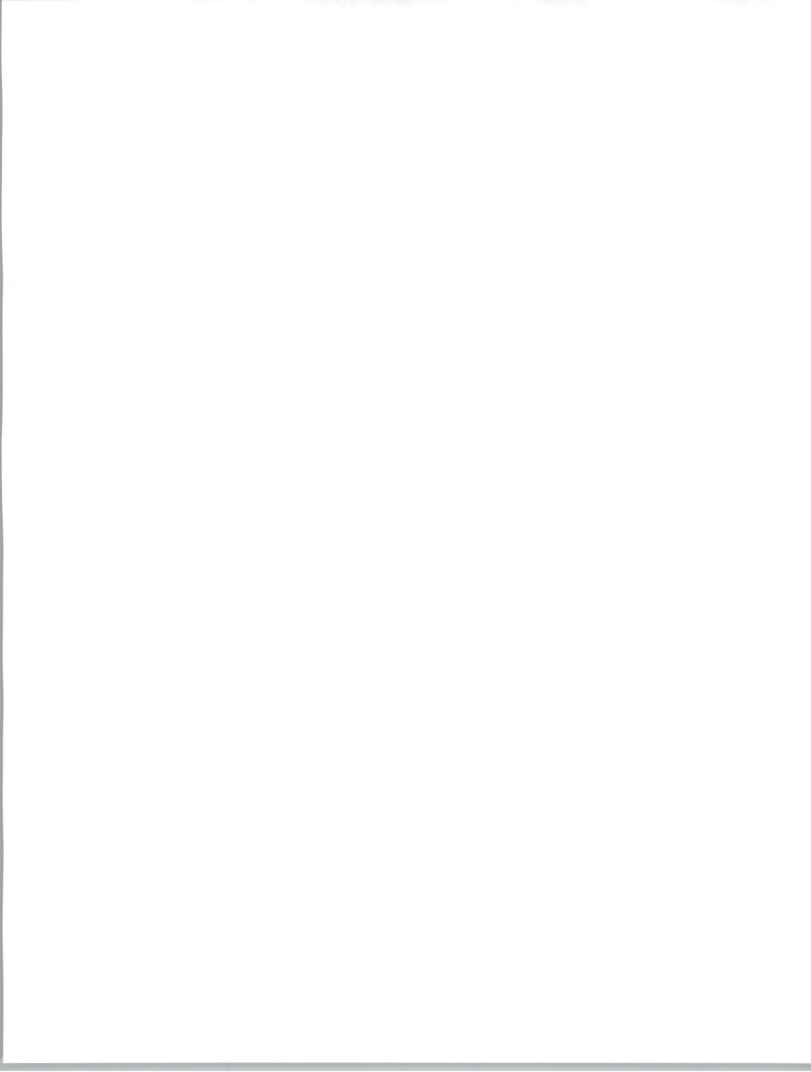
**Budget Growth Rates for Selected Applications**

All the applications included in "State Government Other" are related to health care systems: Medicaid tracking, Medicaid management information systems and family health systems.

**E****Key Opportunities**

Respondents were asked to give a range for the amount invested in applications, excluding hardware. From these figures, approximate average investments were calculated by taking the lower limit of the budget range. For example, if the budget were \$500 thousand to \$1 million, then \$500 thousand was chosen.

For each respondent, a key application was selected. For this application, the opportunity was ranked as high growth if the average growth rate was more than 30%, medium growth if it was



from 15% to 30% and slow growth if it was less than 15%. Opportunities were identified as large if the budget average was \$1 million or more, and small if the budget average was under that figure. This resulted in Exhibit IV-12 for the application categories.

EXHIBIT IV-12

### Key Opportunities in State and Local Government

	High Growth More than 30%	Medium Growth 15%-30%	Low Growth Less than 15%
<b>Large Budget \$1 million and more</b>	Office Systems Public Admin. State Gov't Other	Hospital Operations Human Resources Infrastructure Justice Public Finance	Engineering
<b>Small Budget Less than \$1 million</b>	Office Systems Public Admin.	Human Resources Infrastructure Justice Public Finance	Engineering Planning/Analysis Purchasing State/Local Other

Note that small as well as large projects are planned for the following applications categories: office systems, public administration, human resources, infrastructure, justice, public finance and engineering.

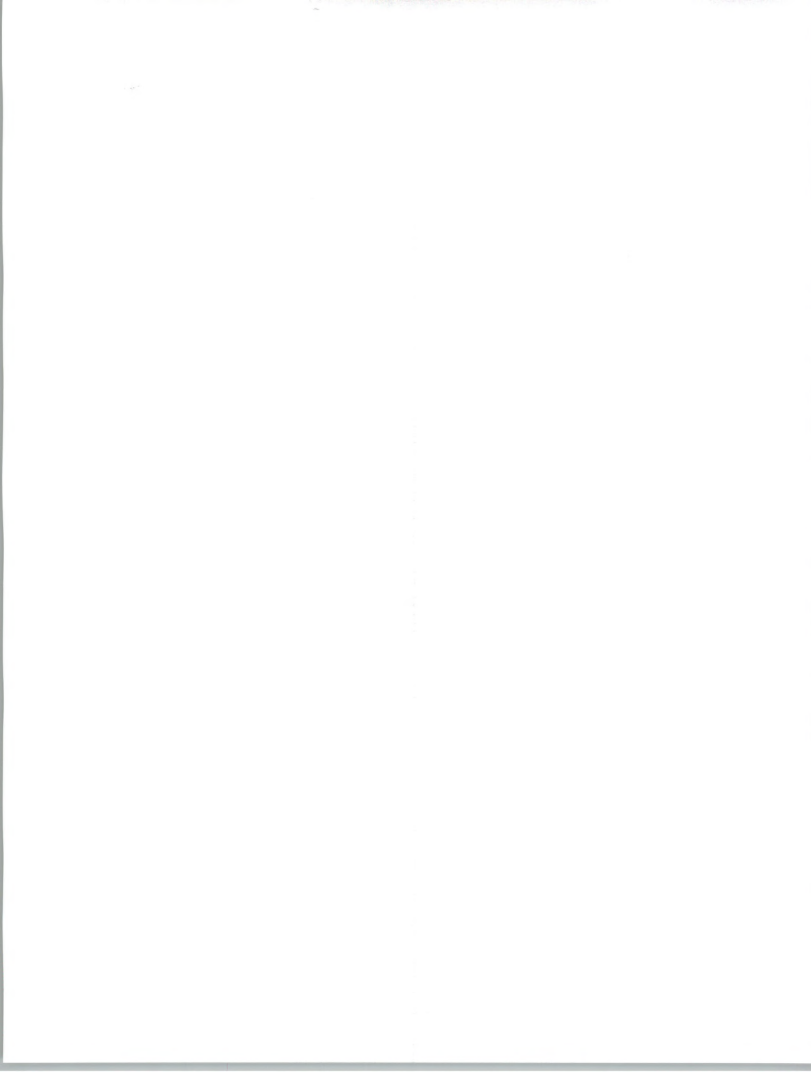
The survey suggests the greatest opportunities are in the following applications:

- Office systems, especially electronic filing systems
- Public administration, including property tax systems, withholding tax systems and electronic funds transfer applications
- Other state government applications, especially health care systems, and Medicaid information systems





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## State And Local Government Application Case Studies

This chapter presents case studies based on interviews with three state and local government organizations that have recently implemented client/server applications.

INPUT interviewed professionals at the following organizations:

- Department of Social Services, Montgomery County, Maryland
- Department of Fish & Game, State of Alaska
- Department of Health and Social Services, State of Delaware

### A

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#### Department of Social Services, Montgomery County, Maryland

##### 1. Application Description

*Child Welfare Case Management System*—tracks child welfare cases from initial report through to final disposition.

##### 2. Reasons for Implementation

Each month, Montgomery County's Department of Social Services receives more than 200 reports of suspected child abuse or neglect from teachers, doctors or neighbors. Social workers screen these reports and refer about 75% to case workers for further investigation.

The case workers had a paperwork nightmare. They were constantly taking information from the mainframe and Manila folders to prepare court cases. The goal was to build a system to manage information from the point of initial screening through to investigation, assessment and treatment.

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### 3. Vendors Selected and Alternatives Considered

#### *System platforms*

Server: IBM PS/2 model 95

Clients: IBM PS/2 model 56

Network: Novell NetWare

Software: Microsoft Windows, SQLBase Server, SQLWindows

#### *Applications Software*

Developed in-house by Information Systems Department

#### *Systems Integrators*

None

#### *Other Support Organizations, e.g., Processing Services*

A professional services firm supplied one part-time person to the development project.

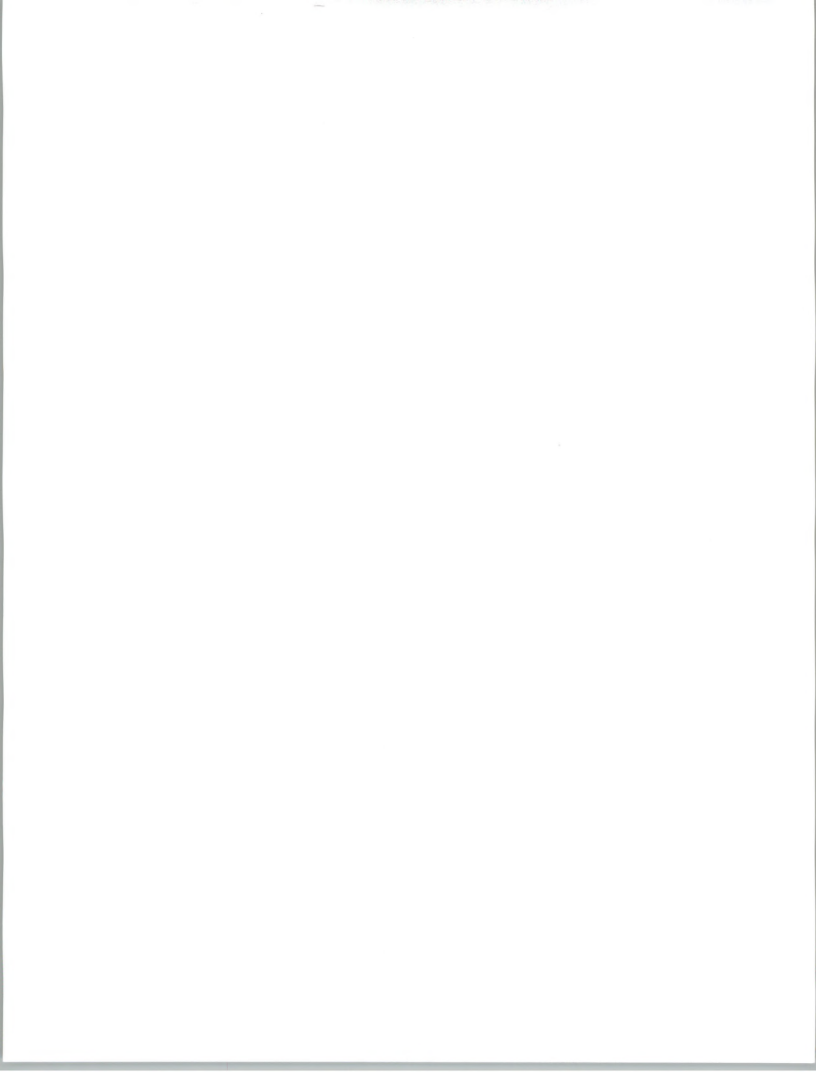
#### *Alternative Architectures Considered*

Initially, the IS Department planned to implement the application on an IBM mainframe with DB2. IBM offered significant support to develop the application, with the intention of offering it to other welfare agencies throughout the country.

As part of the design effort, the development team built a prototype so users could see the screens before the system was built. From the prototype, it became apparent users would not have the flexibility to jump from one screen to another when taking information over the telephone. The users and IS decided that the application demanded a graphical user interface to facilitate navigating through the system efficiently. Development was restarted with a client/server architecture.

#### *User Benefits*

The users have all the information related to a case in a single place. They are able to cut and paste information into word processing documents.



### *Administrative Benefits*

Case workers are able to handle an increasing workload more quickly and efficiently.

### *Program Development Benefits*

The experience gained on the project underscored the differences in design philosophy between client/server and host-based applications. In the end, the original mainframe design had to be replaced entirely with a new design for the client/server environment.

## **4. System Costs**

Ignoring the false start on the mainframe version, the first version, based largely on the original mainframe design, was ready in three months. It became apparent, however, that this design was inefficient in the client/server environment. The application was then rewritten to maximize performance in this environment. This second effort required six months. The team consisted of one full-time IS employee and one part-time contractor for the total nine-month period.

## **5. Summary**

All social workers now use the new system, and would not think of picking up a pencil and paper unless the system was unavailable for some reason.

# **B**

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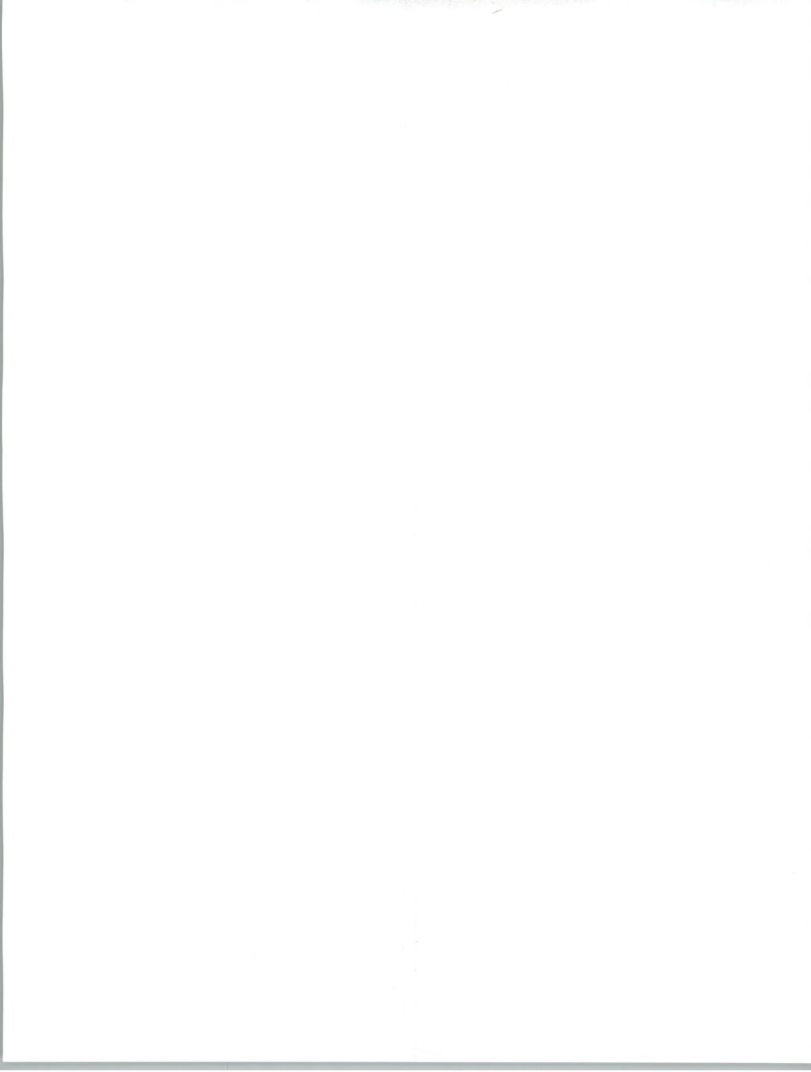
## **Department of Fish & Game, State of Alaska**

### **1. Application Description**

*Information Tracking Systems*—Assists managers in the Commercial Fisheries Division to track fish processing, expenditures and personnel.

### **2. Reasons for Implementation**

The Commercial Fisheries Division has 200 users who previously used an IBM 3090 for fishery processor tracking, expenditure control and personnel. The mainframe system, however, was difficult to adapt to changing requirements. If, for example, a user wanted to add a new field to a table in order to monitor a





particular species of fish, that person would have to make a formal request to a database administrator, then wait for the change to be made before any new information could be entered. Sometimes, the user found the requested change did not meet requirements, so another request was submitted.

Users analyzing data in the mainframe database often had to print the data—one screen at a time, manually sort through dozens of pages to select data, then rekey it into a spreadsheet program on a PC.

The division decided to move to a client/server environment to give users more control over their data to make applications more easily adaptable to changing requirements, improve operational efficiency and reduce costs.

### **3. Vendors Selected and Alternatives Considered**

#### *System platforms*

Host: IBM 3090, DB2

Server: 33 MHz 486

Clients: 386, 486 computers

Network: Novell NetWare

Software: Microsoft Windows, SQLBase Server, SQLWindows

#### *Applications Software*

Developed in-house by the division's computer services staff

#### *Systems Integrators*

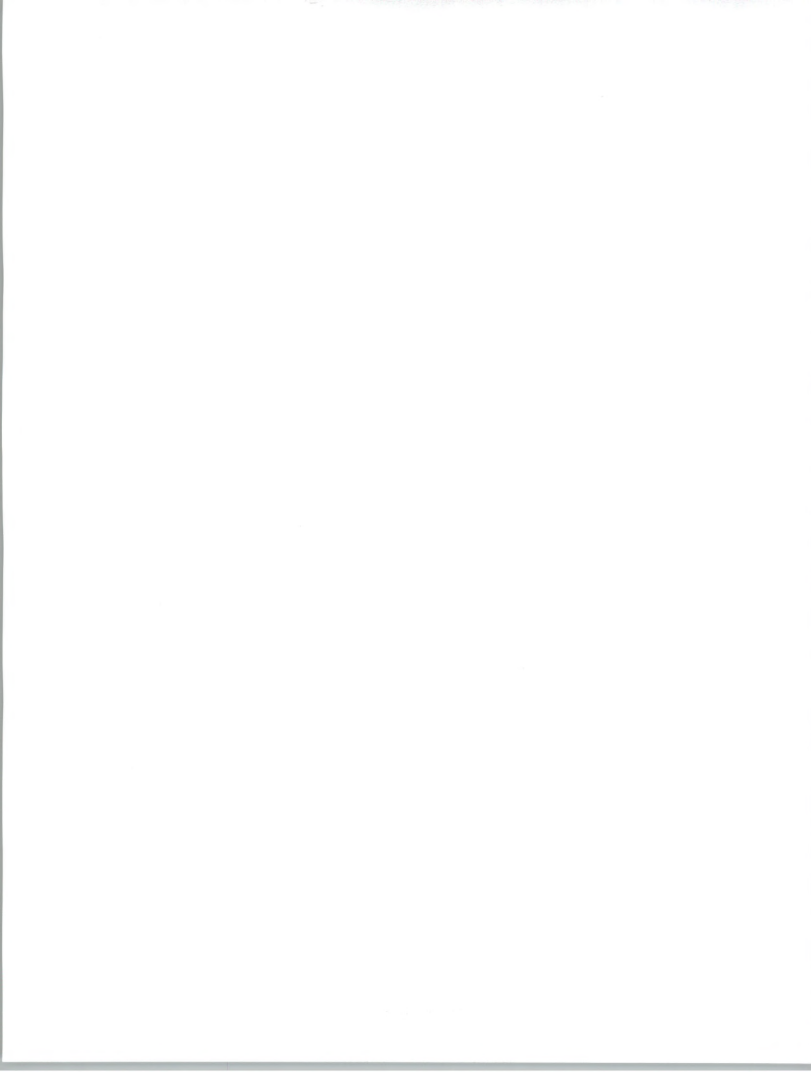
None

#### *Other Support Organizations, e.g., Processing Services*

None

#### *Alternative Architectures Considered*

Client/server was the only architecture considered as an alternative to the existing mainframe applications. Various vendors were considered for database and applications development tools, including Oracle, Gupta and Sybase. Software price was a major consideration in selecting a vendor.



### *User Benefits*

Users now can add data elements to the database without outside help. In addition, they can easily export data to other applications for further processing. Errors in accounting data, sent to the state's mainframe for processing, have been virtually eliminated, thereby saving clerical time in correcting input batches rejected by the mainframe.

### *Administrative benefits*

Users are in control of their own data and applications. The rules, procedures and support staff associated with a centralized computing facility, serving different departments, have been reduced significantly or eliminated altogether.

## **4. System Costs**

Project costs have not been computed. The applications development cost, when measured in terms of person-months, was about the same as the development of host-based applications. The cost of commercially available client/server software was a fraction of the cost of corresponding software for the mainframe.

## **5. Summary**

Users are very happy with the new client/server applications. The expenditure control and personnel applications have been adopted by other divisions within the Department of Fish and Game, and are being considered by other departments in the state government.

# **C**

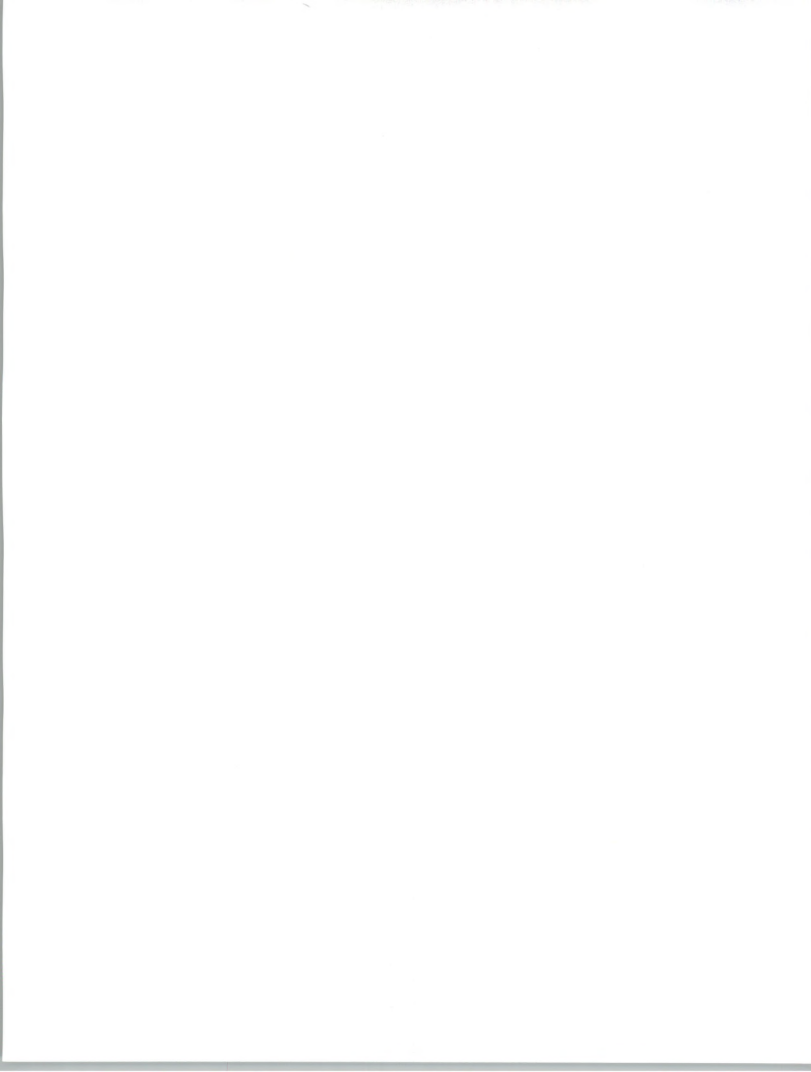
## **Health and Social Services, State Of Delaware**

### **1. Application Description**

*Long-Term Care Management System*—assists case workers to administer long-term home health care for the elderly.

### **2. Reasons for Implementation**

The Department of Health and Social Services (DHSS) serves elderly clients who live alone, want to stay out of nursing homes, but require some assistance to maintain their independence in the community. When clients request service from DHSS, their



names are entered into the Long-Term Care Management System (LTCM) which refers cases to the appropriate workers, depending on skills, location and current caseload. The LTCM system maintains a file on each client's assessment, problems and a history of services, and prepares all the necessary reports.

Prior to implementing the system, all information was recorded in paper files. As the caseload grew, retrieval of records became increasingly difficult and reports became less reliable.

### **3. Vendors Selected and Alternatives Considered**

#### *System platforms*

Host: IBM 3084, DB2

Server: 33 MHz Gateway 2000

Clients: 20 and 25 MHz 386 PCs

#### *Applications Software*

Developed in-house by DHSS staff

#### *Systems Integrators*

None

#### *Other Support Organizations, e.g., Processing Services*

None

#### *Alternative Architectures Considered*

Despite the fact that most of the DHSS programmers on the project had a mainframe background, they decided they could develop the application faster in a client/server environment than on the mainframe. Furthermore, they believed that Windows offered a better user interface for the case workers.

#### *User Benefits*

The application features DDE links to Excel and MS Word, greatly facilitating reporting and letter writing.

#### *Administrative Benefits*

Case workers can handle a growing case load. Management reports on caseloads and services are produced easily and



virtually error-free. Caseloads are more evenly balanced between workers.

#### *Program Development Benefits*

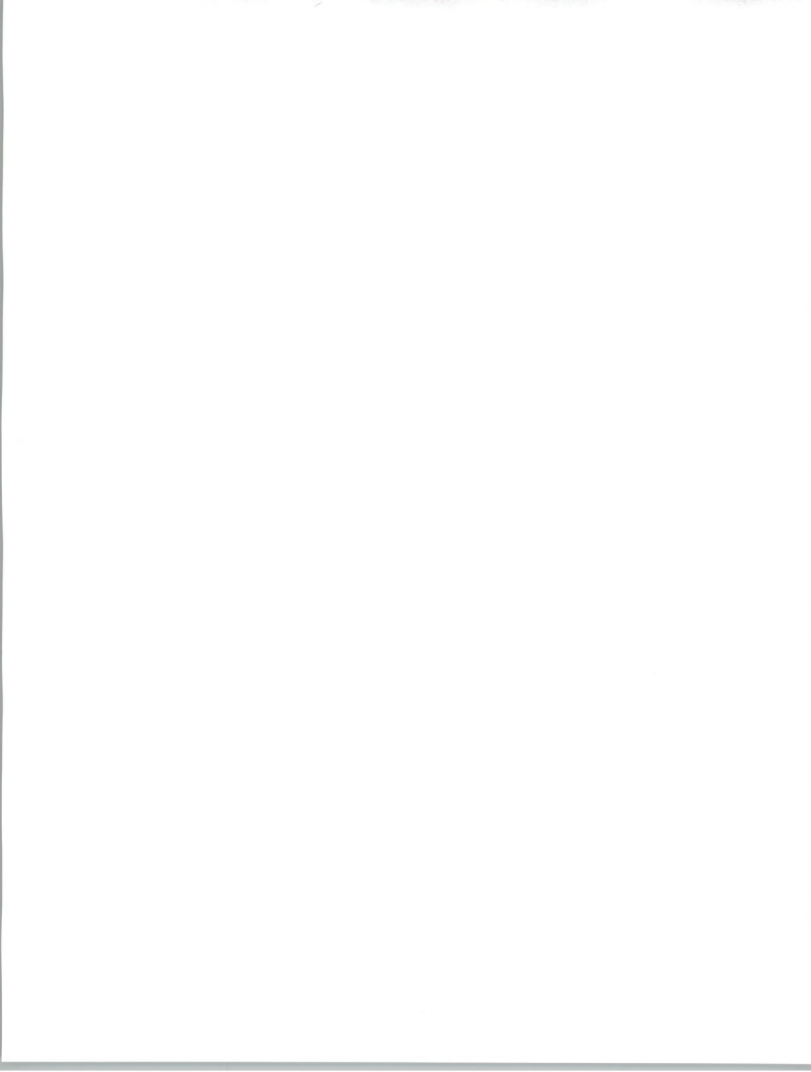
The application was completed in about four months, roughly half the time it would have taken on the mainframe.

#### **4. System Costs**

Project costs have not been computed, but are estimated to be a fraction of the cost of developing and maintaining the application on the IBM 3084.

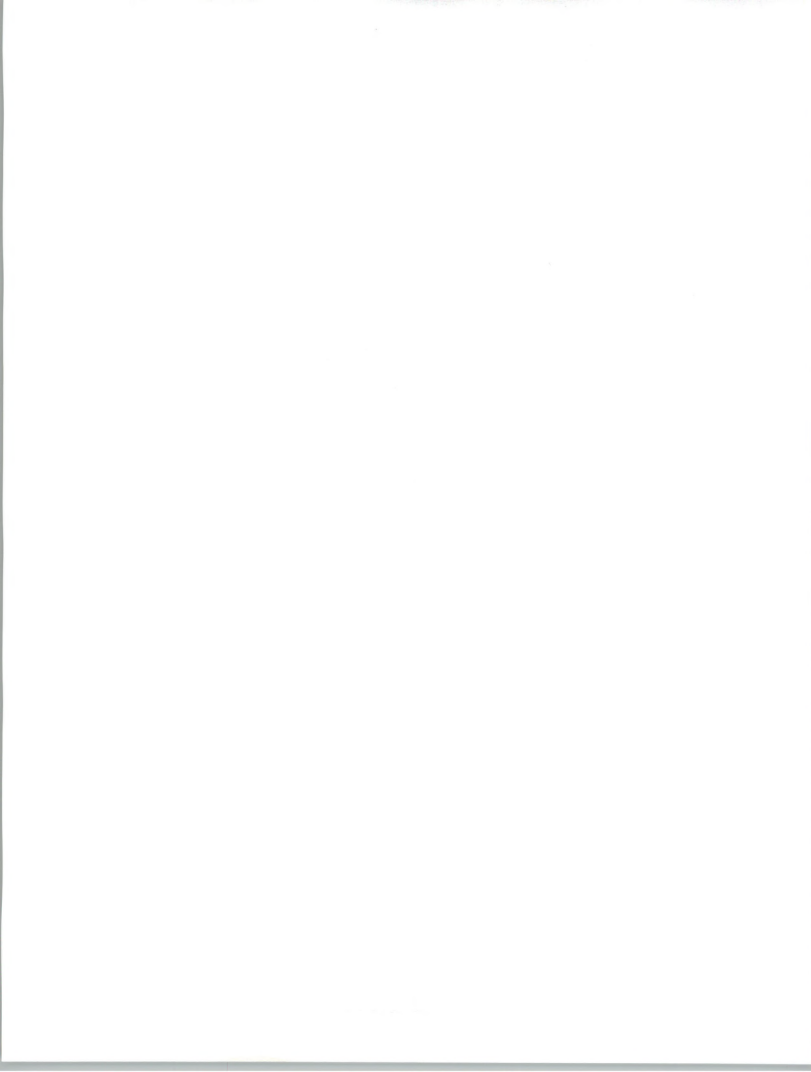
#### **5. Summary**

This was the first application developed at DHSS using a client/server architecture and is considered to be a huge success from the developers and users point of view. A new client/server admissions, discharge and transfer system for the state hospital is in development.





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## Vendor Analysis

### A

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#### Survey Results

As part of the survey, respondents were asked to identify key vendors. These vendors were then given a satisfaction rating on a scale of 1 to 5, 1 being dissatisfied and 5 being very satisfied. In addition, the proportion of customers who mentioned C/S as a key strategy was estimated. Given that the sample sizes are very small, these results should be used to aid understanding rather than as absolute measures. A tabulation of the major vendors is given below, with some respondents citing more than one vendor. In all, there were 259 vendor mentions, many with only a single mention. Several regional, small vendors were mentioned, but only the vendors mentioned more than four times are analyzed in Exhibit VI-1.

The first column names the vendor followed by the number of mentions, then the average rating, percentage of customers mentioning C/S as a strategy and comments raised by respondents.



## EXHIBIT VI-1

## Vendor Survey Results

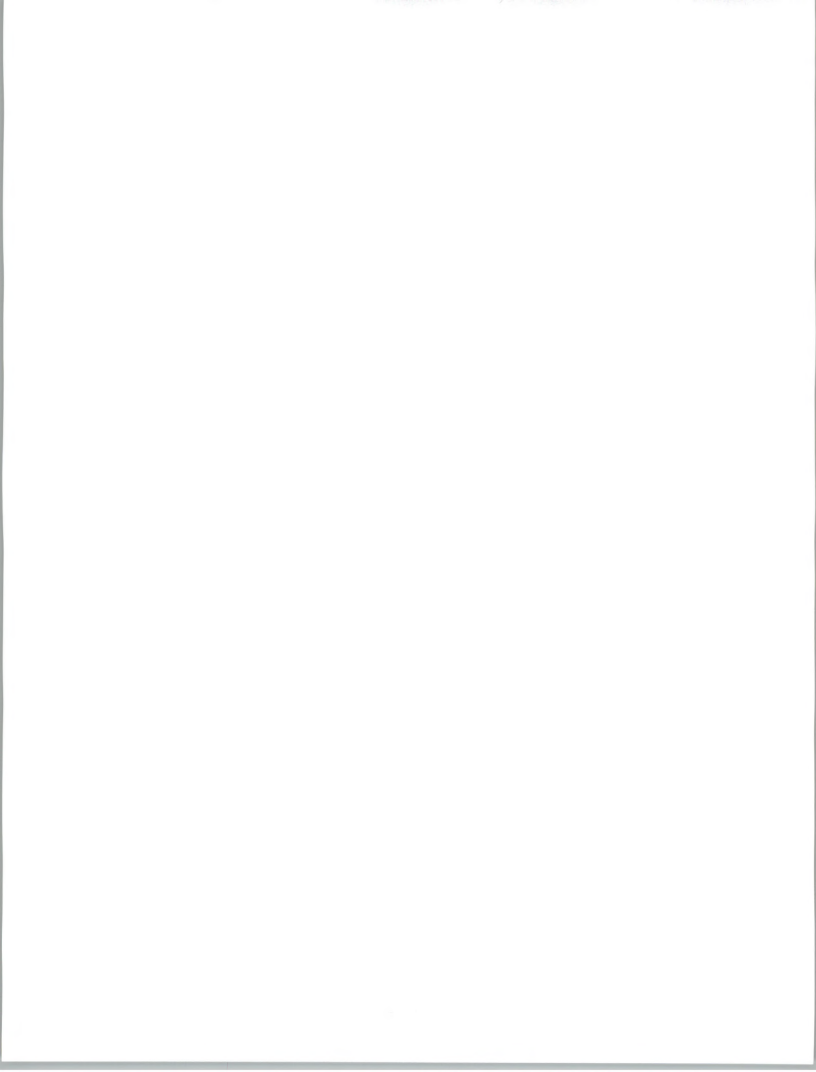
Vendor	No. of Mentions	Avg. Rating	% Migrating to C/S	Comments
Amdahl	4	4.50	25	Reliable; good quality and price
Apple Computer	5	4.80	0	Users' choice; reliable, very satisfied
Compaq	6	3.67	67	Less expensive; very reliable
Data General	5	4.20	0	Very good support; specialize in election systems
Digital	8	4.38	13	Good support; reliable service; solid and inexpensive
Dell	6	4.00	50	Cost efficient; excellent warranty
Hewlett-Packard	10	4.40	20	Quality, reliable; high market share [in corrections departments]
IBM	70	3.93	27	Reliable; good support; state policy; service declining
Memorex-Telex	5	3.40	40	Reliable service; always available; poor performance-poor value
NCR	5	2.80	80	Not satisfied
Novell	4	2.00	0	
Small Systems Management	5	2.60	80	
Unisys	13	3.46	46	Very helpful; field engineering good; happy with end results; quality weak; out-of-date
Wang	10	3.50	60	Only minor problems; quality hardware-personnel
WordPerfect	7	4.57	43	User friendly; good support

The average satisfaction rating for all vendor mentions was 3.83. Users were very critical about service—negative comments about service were usually accompanied with a low-satisfaction rating



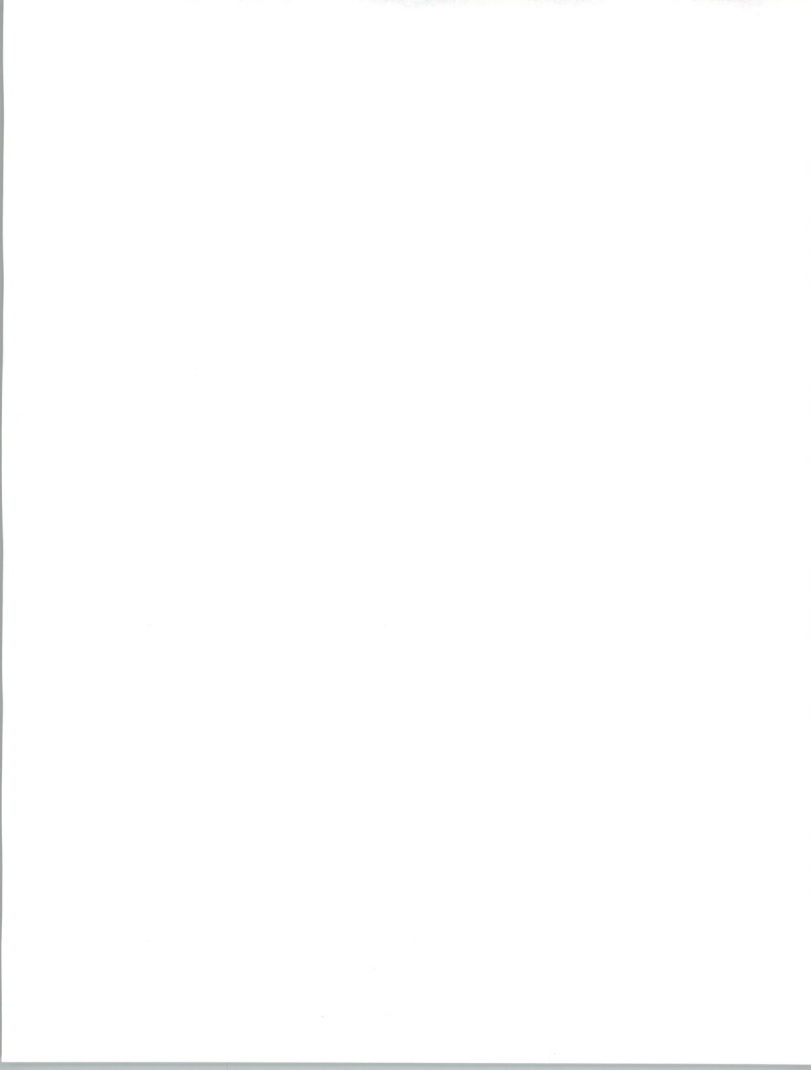
(1 or 2). However, it was not unusual to comment that a product required improvement, yet still give the vendor a high satisfaction rating (4 or 5).

Reliability of products and service was a consistent theme by respondents. Comments concerning reliability, or lack thereof, were recorded more frequently than any other single topic.





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## Applications Details

This appendix provides definitions of all the applications identified in this study. The applications are grouped according to categories.

In state and local government, in particular, applications are integrated to reflect business processes. Hence, ordering and inventory systems, traditionally two separate areas for a large retail chain, are combined. Therefore, the definitions in practice are somewhat overlapping. The terminology used here is taken largely from respondents' questionnaire responses.

In the future, more applications will be integrated and it will be more appropriate to consider the entire work flow of an application—made from modules.

Exhibit A-1 includes all applications unique to INPUT's definition of the state and local government industry sector.



## EXHIBIT A-1

## State and Local Government Industry Application Types

Application Category/Type	Description/Examples
<b>State and Local Government Applications</b>	
<b>Engineering</b>	
• Drafting System	Computer-aided drafting
• Mapping System	Geographic information systems
<b>Hospital Operations</b>	
• Clinic Management	Out-patient records management system
<b>Justice</b>	
• Dispatch	Computer-aided dispatch system for emergency response
• Crime Analysis	Crime analysis systems and reporting
• Police Records	Police records management systems
• Courts	Court scheduling and case tracking
• Probation	Probation management systems
<b>Public Administration</b>	
• Library	Library management systems, applications to track books
• Welfare	Systems to assist case workers track and manage cases
• Permits and licenses	Animal control and registration systems, building permits, business licenses
<b>Public Finance</b>	
• Fund Accounting	Accounting system
• Tax Collection	Tax billing and collection systems, Automatic funds transfer for tax remittance
• Tax Management	Appraisal systems, tax planning and management systems
<b>Purchasing</b>	
• Purchasing	Requisition and purchase order management
• Encumbrance Control	Tracking of purchase commitments from initial requisition through to final payment
<b>State and Local Other</b>	
• Elections	Systems for processing election returns
• Voter Registration	Voter registration systems
<b>State Gov't Other</b>	
• Medicaid	Claims processing for medical care

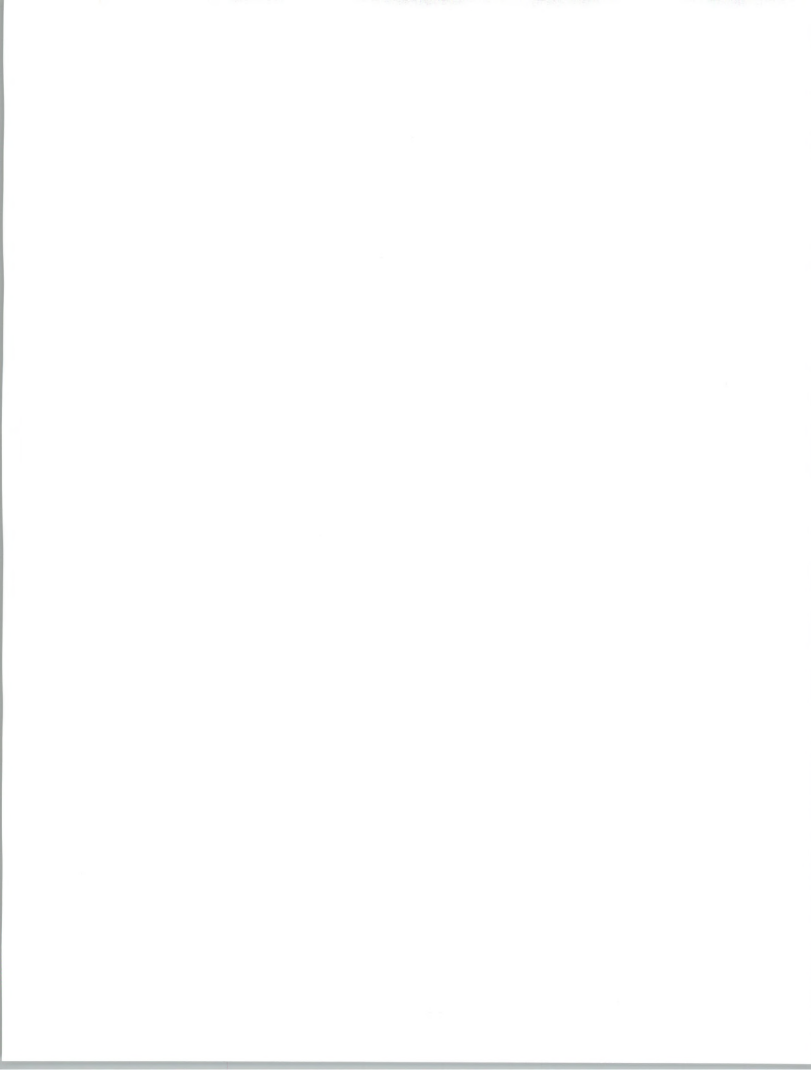
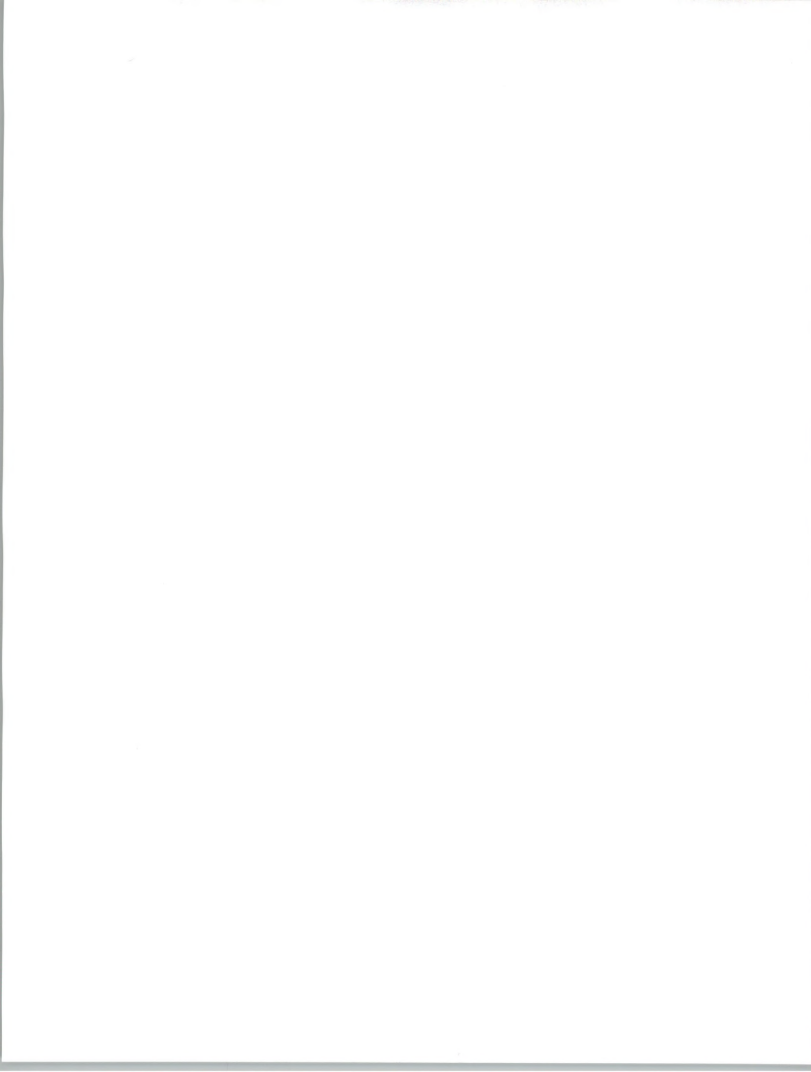


Exhibit A-2 contains definitions of applications identified in this study that INPUT defines as cross-industry.

## EXHIBIT A-2

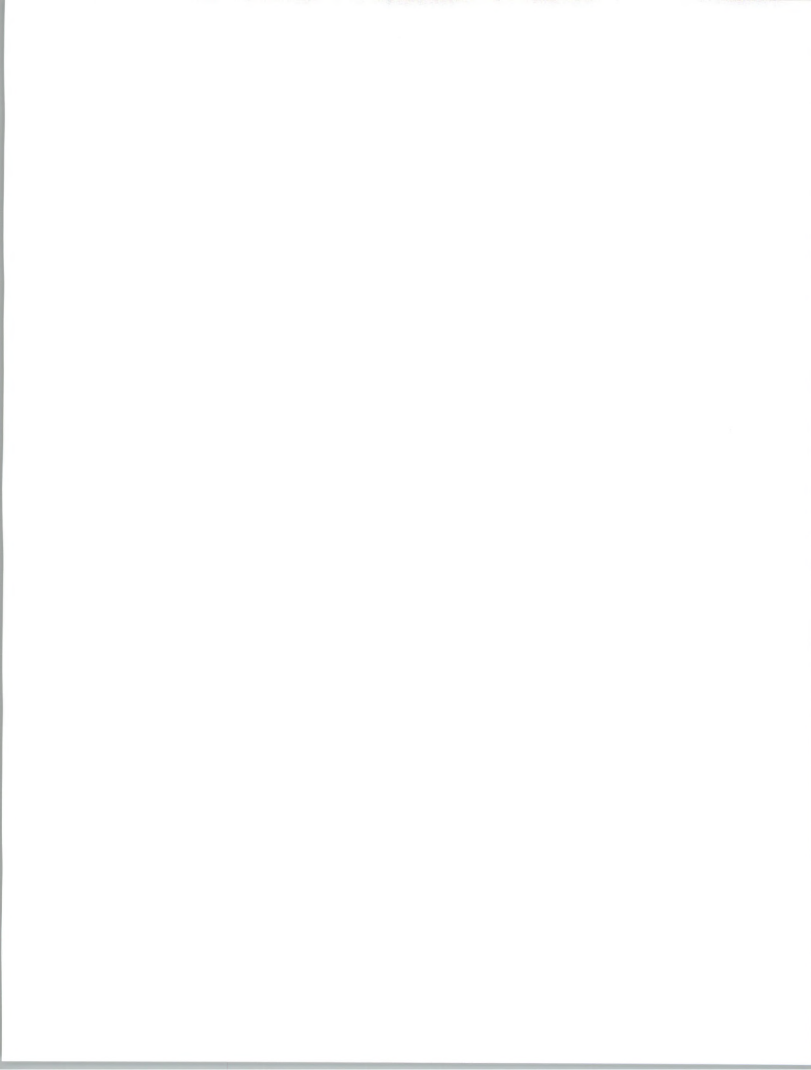
## Cross-Industry Application Types by Category

Application Category/Type	Description/Examples
<b>General Infrastructure</b>	
• Database Conversion—General	Migration to a new database architecture
• Database Conversion—Relational/Distributed	Migration to a relational or distributed (or both) architecture
• Data Conversion	Projects to convert the data from one database environment to another
• Hardware Upgrades	Projects to upgrade or migrate to new hardware
• Imaging Systems	Installation of infrastructure to support imaging applications
• Operating System Upgrades	Operating system upgrades
• Platform Migration—C/S	Projects to upgrade or migrate to new client/server hardware
• Platform Migration—General	Projects to upgrade or migrate to new general purpose hardware or networks
<b>Human Resources</b>	
• Human Resources information system	Human resources information system, HRIS
• Payroll	Payroll processing
<b>Office Systems</b>	
• Electronic mail and messaging systems	Electronic mail systems
• Word Processing Systems	Installation of applications that use word processing
<b>Planning and Analysis</b>	<b>For this report the spreadsheet applications were combined with office systems</b>
• Financial Modeling	Systems to support financial business modeling and analysis
• Spreadsheets/Databases	Applications that use desktop spreadsheets and databases
<b>Telecommunications</b>	
Voice mail	Voice mail systems
<b>Other</b>	
Computer-aided drafting	Drafting system





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## Questionnaire

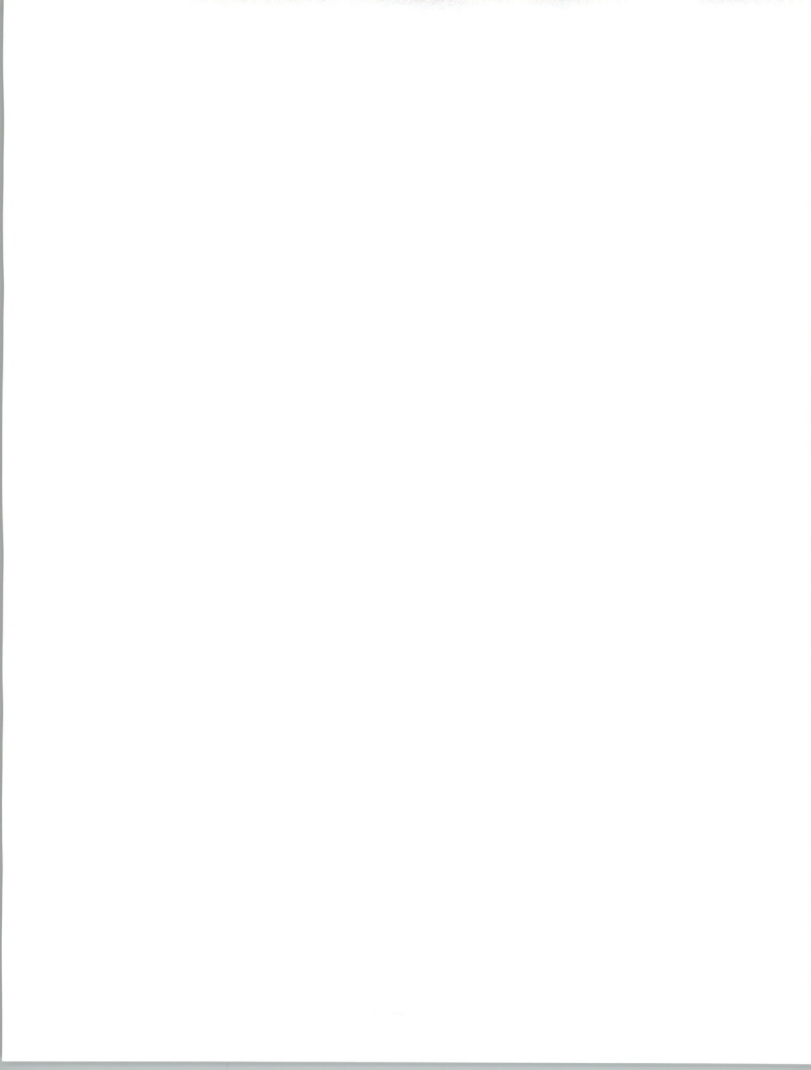
Questionnaire Used For Case Studies In Chapter 5.

### CONFIDENTIAL

#### Questionnaire

#### Client/Server Case Studies—State and Local Government

1. Organization name: \_\_\_\_\_  
Contact name: \_\_\_\_\_
2. Application Description:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. What were the critical issues behind the implementation of this application?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



4. Which vendors were considered?

a) System platforms:

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b) Applications software:

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c) System integrators:

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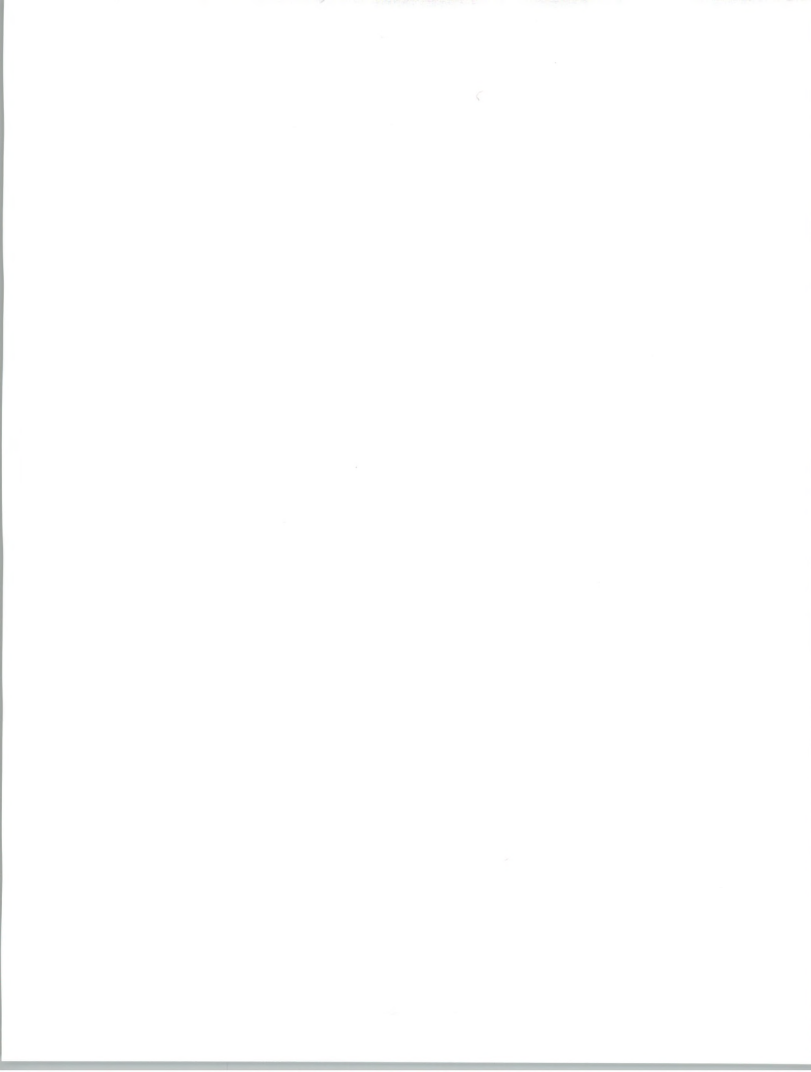
d) Other support organizations, e.g, processing services:

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5. Which alternative architecture's were considered?

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6. What problems or surprises were encountered?

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7. What have been the systems benefits?

a) User benefits:

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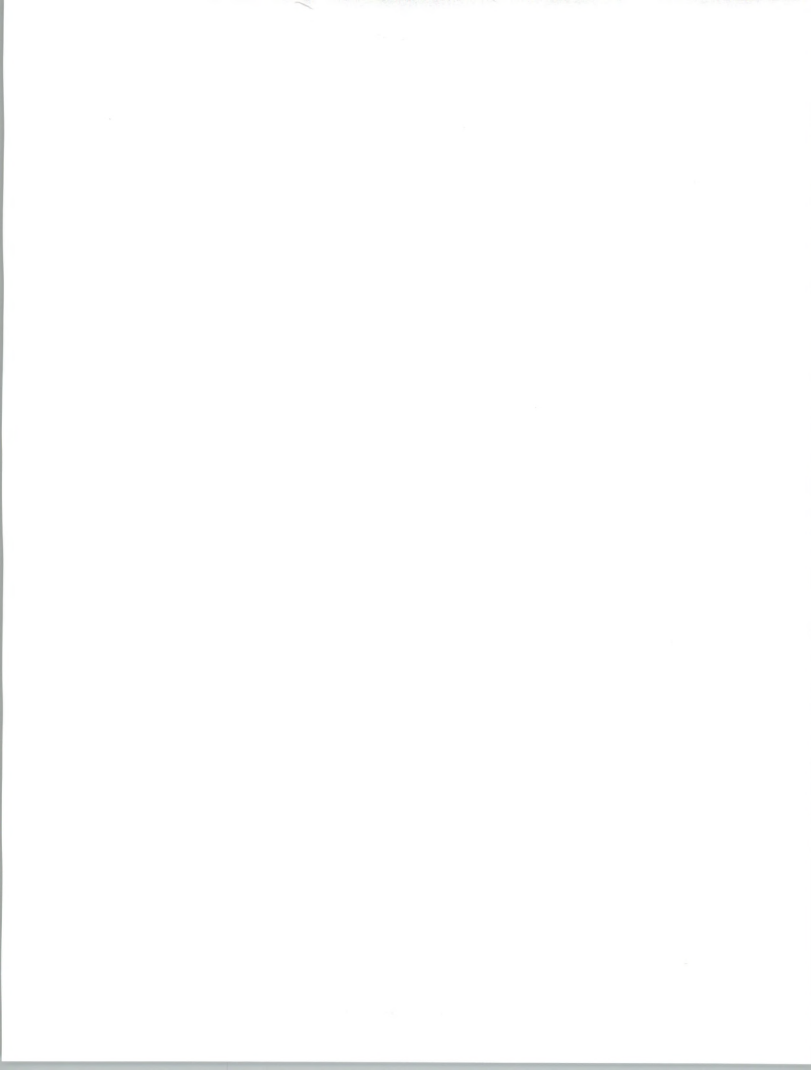
b) Administrative benefits:

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## c) Program development benefits:

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7. How much did it cost to implement? How did that compare to initial expectations?

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8. Is there anything else that you would like to add about implementing client/server applications?

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## Vendors

This section gives the names and addresses of vendors mentioned in the report.

EXHIBIT C-1

**Vendor Addresses**

Vendor	Address
Amdahl Corporation	1250 East Arques Ave Sunnyvale, CA 94088 Telephone: 408-746-6000
Apple Computer, Inc.	20525 Mariani Avenue Cupertino, CA 95014 Tel: (408) 996-1010
Compaq Computer Corp.	20555 SH 249 MO 040514 Houston, TX 77070 Tel: (713) 370-0670 Fax: (713) 374-1740
Data General Corp.	4400 Computer Drive Westborough, MA 01580 Tel: (508) 848-5000
Digital Equipment Corporation	146 Main Street Maynard, MA 01754 Tel: (508) 493-5111 Fax: (508) 493-8780
Dell Computer Corp.	9505 Arboretum Blvd. Austin, TX 78759 Tel: (512) 338-4400 Fax: (512) 728-3653

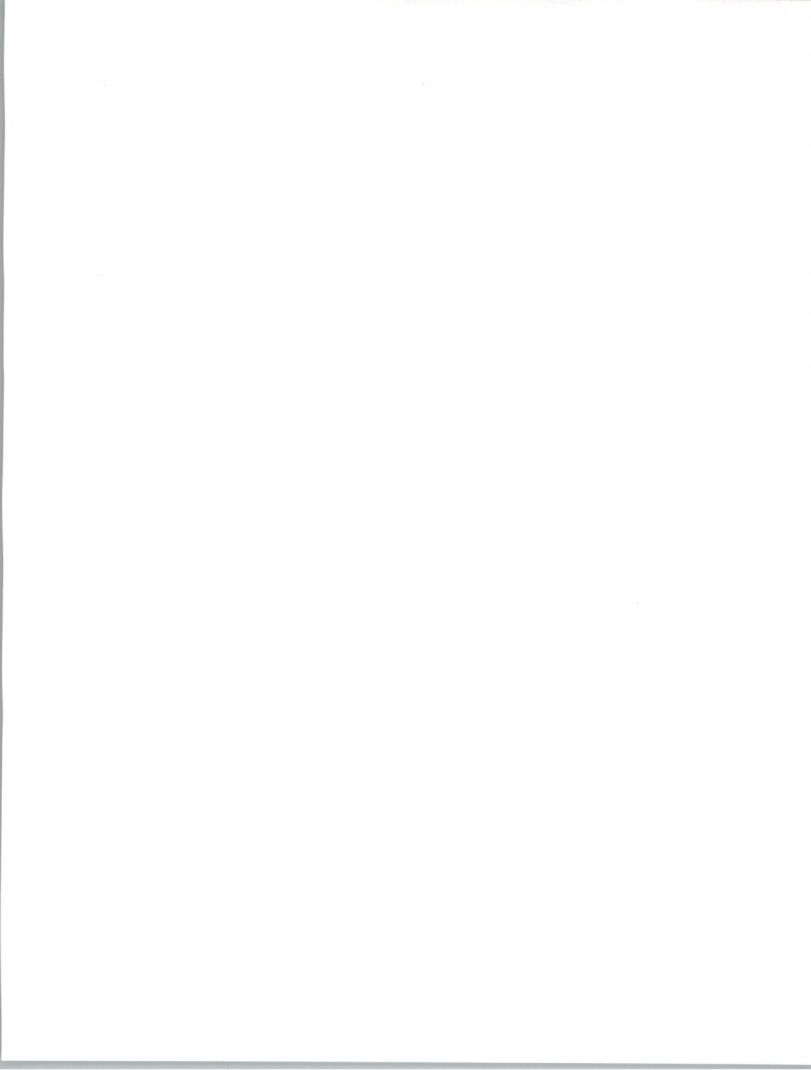


EXHIBIT C-1 (Cont.)

Vendor	Address
Hewlett-Packard Co.	3000 Hanover Street Palo Alto, CA 94304 Tel: (415) 857-1501 Fax: (415) 857-5518
IBM	Old Orchard Road Armonk, NY 10504 Tel: (914) 766-1900 Fax: (914) 765-6021
Memorex-Telex Corp.	545 E. John Carpenter Frwy., LB6 Irving, TX 75062 Telephone: 214-444-3500
NCR Corp.	1700 S. Patterson Boulevard Dayton, OH 45479 Tel: (513) 445-5000 Fax: (513) 445-4184
Novell Inc.	122 E 1700 S Provo, UT 84606 Telephone: 801-429-7000
Small Systems Management	
Unisys Corp.	PO Box 500 Blue Bell, PA 19422 Telephone: 215-986-4011
Wang Laboratories, Inc.	1 Industrial Ave Lowell, MA 01851 Telephone: 508-459-5000
WordPerfect	1555 N Technology Way Orem, UT 84057 Telephone: 801-226-5555



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- Research-based reports on trends, etc. (Over 100 in-depth reports a year)
- Frequent bulletins on events, issues, etc.
- 5-year market forecasts
- Competitive analysis
- Access to experienced consultants
- Immediate answers to questions
- On-site presentations
- Annual conference

### **DATABASES**

- **Software and Services Market Forecasts**
- **Software and Services Vendors**
- **U.S. Federal Government**
  - Procurement Plans (PAR)
  - Forecasts
  - Awards (FAIT)
- **Commercial Application (LEADS)**

### **CUSTOM PROJECTS**

For Vendors—analyze:

- **Market strategies and tactics**
- **Product/service opportunities**
- **Customer satisfaction levels**
- **Competitive positioning**
- **Acquisition targets**

For Buyers—evaluate:

- **Specific vendor capabilities**
- **Outsourcing options**
- **Systems plans**
- **Peer position**

### **OTHER SERVICES**

Acquisition/partnership searches

### **INPUT WORLDWIDE**

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