Systems Integration

John Frank, Vice President
INPUT

SYSTEMS INTEGRATION MARKET
Definition for Convenience

INPUT's Definitions

Original

"The Provision of a ***Total*** Solution to a Multidisciplinary Information Systems Requirement."

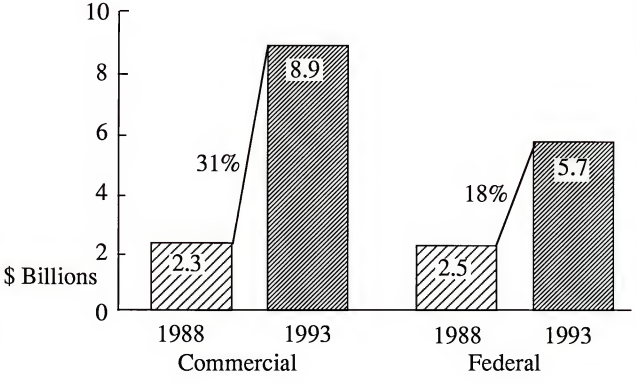
Working

"The Provision of an ***Integrated*** Solution to a Multidisciplinary Information Systems Requirement."

The Market's Definition

"Assume a **Management Role** in the Provision of an Information Technology-Based Solution to a Critical Business Requirement—Small or Large."

SYSTEMS INTEGRATION EXPENDITURES FORECAST



INPUT

JJ88-JF3-2a

FORECAST DATA BASE, 1987-1988

	Commercial	Federal
Projects Analyzed		
Completed	78	47
In Progress	88	36
"Suspects" Resolved and Not Used	102	23
Total	268	106

Revised 8/88

DISTRIBUTION OF PROJECTS BY VALUE OF INDUSTRY

Industry	No. Projects	Contract Value ($M)						
		<1	1-5	6-10	11-20	21-50	51-100	>100
		Number of Projects						
Federal	82		15	15	8	21	9	14
State and Local	21	2	7	3	1	7	1	
Transportation	2	1			1			
Utilities	4		1		2	1		
Discrete Mfg.	8	1	2	2		2	1	
Distribution	8		3		2	1		2
Insurance	6	1	1	3		1		

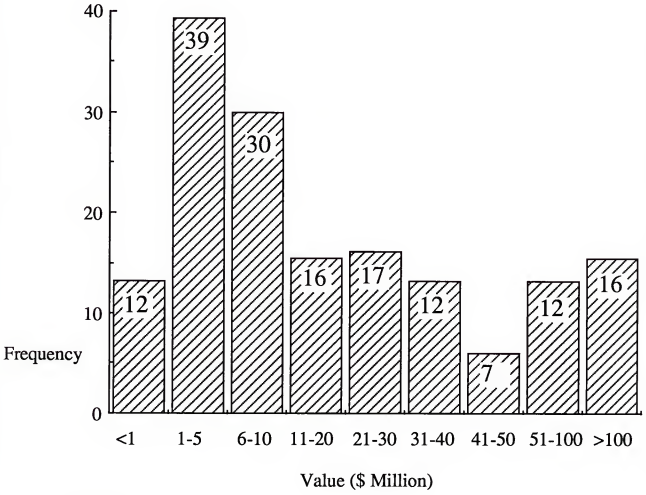
Revised 8/88

DISTRIBUTION OF PROJECTS BY VALUE OF INDUSTRY

Industry	No. Projects	Contract Value ($M)						
		<1	1-5	6-10	11-20	21-50	51-100	>100
		Number of Projects						
Banking/Finance	7	2	1	2		2		
Medical	5	4	1					
All Other	4		2	1		0	1	
Telecomm	3		1	1		1		
Process Mfg.	11	1	5	3	2			
Total Commercial	80	12	24	15	8	15	3	2
Total All Projects	162	12	39	30	16	36	12	16

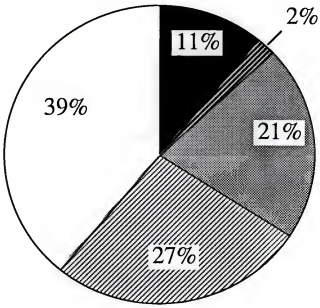
Revised 8/88

DISTRIBUTION OF PROJECTS BY VALUE



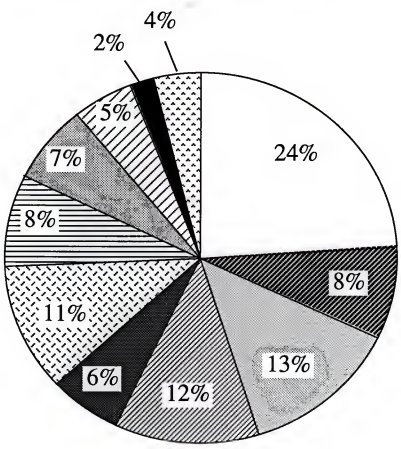
N = 161
Revised 8/88

COMMERCIAL SI APPLICATIONS



N=114
Revised 8/88

FEDERAL SYSTEMS INTEGRATION MARKET BY TYPE OF APPLICATION



- Information Analysis
- Scientific, Eng. Support
- Office Automation
- Logistics
- Artificial Intelligence
- Administration
- Management
- Graphics
- Human Resources
- Project Management
- Accounting

N=83
Revised 8/88

INPUT

SYSTEMS INTEGRATION MARKET
The Changing Environment

INPUT Premise

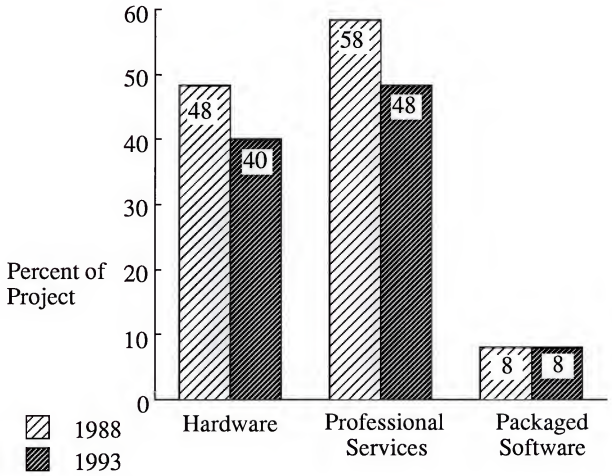
"Changing Buying Patterns

Will Dictate

Changing Selling and Service Patterns"

TRENDS IN SI PROJECT COMPOSITION

Federal & Commercial
(Based on 1988 Forecast)



SI PROJECT REPORTS (SIPR)

Number of Industry Reports:

Industry	Number	Industry	Number
Banking/Finance	4	Services	1
Wholesale Dist.	1	State & Local	16
Retail Dist.	5	Transportation	1
Insurance	5	Utilities	2
Discrete Mfg.	10	Other	4
Process Mfg.	7	Federal	25
Medical	5		

(September Release)

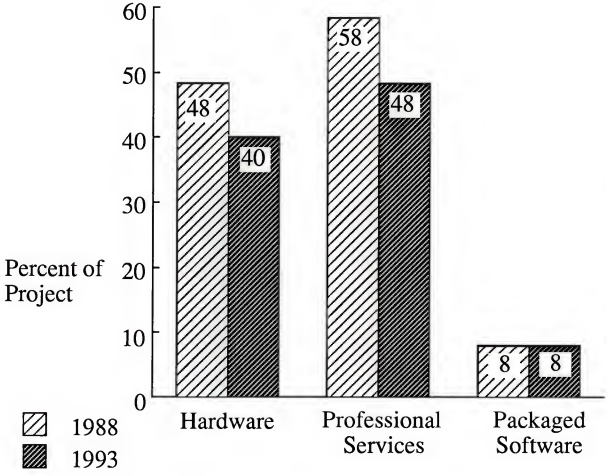
SCHEDULE OF PROJECT COMPONENTS—A MODEL

Project Component	Year 1 (Percent)	Year 2 (Percent)	Year 3 (Percent)	Year 4 (Percent)	Total Component Expenditures (Percent)
Computer Hardware		100			28
Communications Hardware			100		8
Systems Software Packages		100			2
Applications Software Packages			100		4
Consulting	60	20	20		6
Project Management Fees	40	20	20	20	6
Design/Integration	45	35	20		11
Software Development		50	50		30
Education/Training and Documentation			33	67	2
Operation and Maintenance			33	67	2
Other Expenditures				100	1
Total	13	30	34	23	100

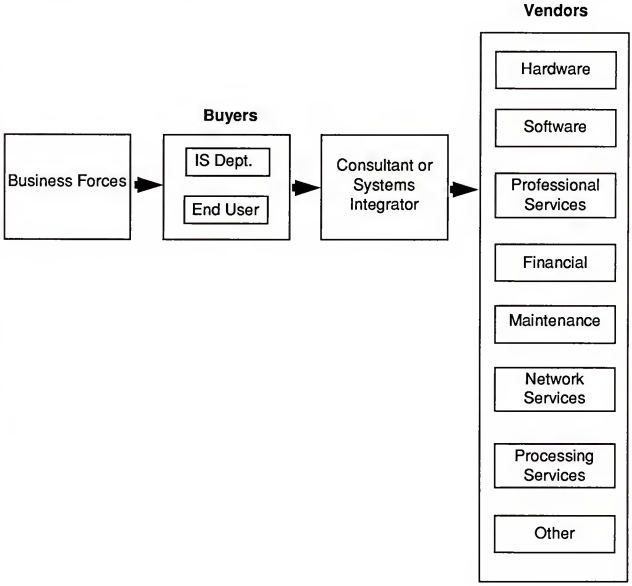
Note: These averages are based on U.S. experience.

TRENDS IN SI PROJECT COMPOSITION

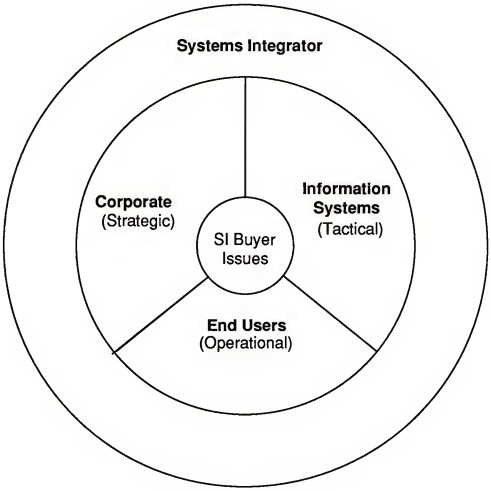
Federal & Commercial (Based on 1988 Forecast)



SYSTEMS INTEGRATION MARKET
The Changing Environment



SYSTEMS INTEGRATION—
COMMUNITIES INVOLVED



THE CHANGING ENVIRONMENT

Systems Integration—Vendor Opportunity

- Account Control
- Create a New Market
- Establish a New Distribution Channel
- Create a Business Base - a Backlog
- Sell to More Types of Buyers

SYSTEMS INTEGRATION
Vendor Classification

Category	Examples
Hardware Producers	IBM Digital UNISYS CDC
Communication/Network Suppliers	RBOCs AT&T
Professional Services	Arthur Anderson
Custom Software Developers	Systemhouse Computer Task Group
Systems Suppliers	BCS EDS MMDS
Application Software Suppliers	BIS Banking Systems, Inc.
Systems Software Suppliers	Oracle Pansophic
Turnkey Suppliers	CAP Gemini America AGS Computers
Federal Systems Integrators	EDS American Management Systems

SYSTEMS INTEGRATION
Vendor Classification

Primary SI Vendors

- Vendors Organizing to Support the Opportunity
  - IBM
  - Arthur Andersen
- Major Vendors Evolving Their Business Strategy
  - Systemhouse
  - Digital
- Established Competitors
  - BCS
  - CDC
  - UNISYS
  - EDS

Secondary SI Vendors

- Major Vendors without Clear Strategy
  - AT&T
  - RBOCS
  - Other Major Accounting Firms
- Opportunists
  - Turnkey Vendors
  - Software Companies
  - Small Custom Shops
  - Small Professional Services Companies
- Emerging Competitors
  - Oracle
  - Computer Task Group

SECONDARY SI VENDORS

Perceptions

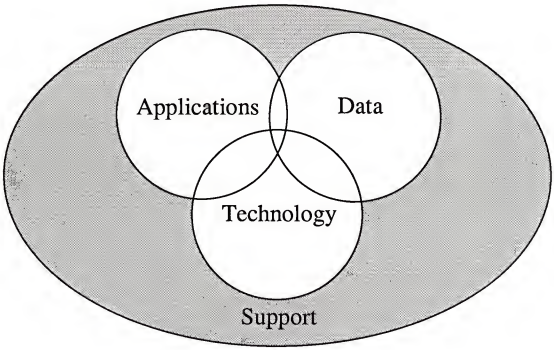
- High Level of Interest in SI - a New Market
- Generally Do Not Want to Be Prime Contractor
- SI is a Growing Part of Their Business
- Know Who Major Players Are
- Want Visibility to Major Players for Specific Capabilities

SECONDARY SI VENDORS

Limitations

- Experience BaseIs Often Limited
- No Large Project Management Experience
- Narrow Technical Skills
- Lack of Financial Resources
- If Software or Turnkey, Restricted to Own Solution

SI PROJECT CLASSIFICATIONS



SI PROJECT CLASSIFICATIONS

- Applications Level
  - Focused on Specific Business Solutions
  - Driven by Executive/User Management
  - Short-Term Payout with High Visibility

SI PROJECT CLASSIFICATIONS

- Data Level
  - Focused on Providing Data Infrastructure
  - Driven by IS or Division Management
  - Provides Platform for "Suites" of Applications

SI PROJECT CLASSIFICATIONS

- Technology Level
  - Focused on Total Delivery Capability
  - Almost Universally IS Driven
  - Provides Standard Environment/Tools

APPLICATIONS-FOCUSED SI PROJECTS

Dominant Vendor Classes :	**57%**—Professional Services **13%**—Turnkey Systems
Critical Technologies:	Project Management Methodology
	CASE Tools
	Applications Shells

APPLICATIONS-FOCUSED SI PROJECTS

Primary Alliances:	Applications Software Companies
	Systems Software Companies
Secondary Alliances:	Hardware Companies
	Telecommunications Companies

DATA-FOCUSED SI PROJECTS

Dominant Vendor Classes:	**80%**—Professional Services
Critical Technologies:	Data Analysis/Design Tools
	Conventional & Relational DB Software
Primary Alliances:	Applications Software Companies
Secondary Alliances:	Hardware Companies
	Telecommunications Companies

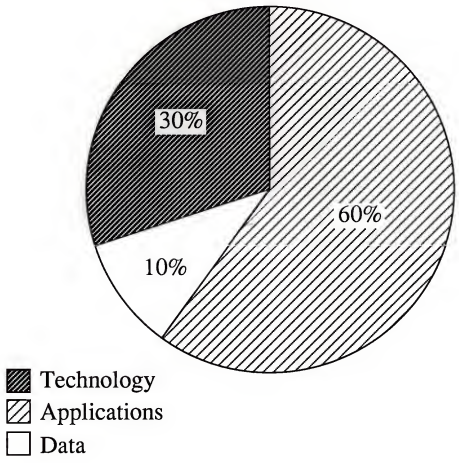
TECHNOLOGY-FOCUSED SI PROJECTS

Dominant Vendor Classes:	**27%**—Communications Providers
	27%—Systems Suppliers
	20%—Professional Services
Critical Technologies:	Network Design Tools
	Communications Software & Hardware
	Computing

TECHNOLOGY-FOCUSED SI PROJECTS

Primary Alliances:	Communications Companies
	Software Suppliers Co.
	Hardware Manufacturers
Secondary Alliances:	Professional Services Companies

DISTRIBUTION OF PROJECTS BY CLASS



BUYER ISSUES—VENDOR SELECTION

- Selection Criteria/Process
- Environmental/Organizational Impacts
- Project Management Issues
- End-User Perspectives
- Conclusions

CHANGING MIX OF AVAILABLE PROJECTS

- INPUT Forecasts over the Next Five Years
  - Decrease in Percentage of *Technology* Projects
  - Continuous Increase in *Applications* SI Projects
  - Rapid Acceleration in *Data*-Oriented Projects

CHANGING MIX OF AVAILABLE PROJECTS

- Key Factors Influencing the Mix
  - Decreasing Backlog - Hardware Integration
  - Increasing Compliance with Open Standards
  - Increased Dependencies on Relational Data Structures
  - Increasing Focus on Mission-Critical Applications Systems
  - Dominance of User Defined Requirements

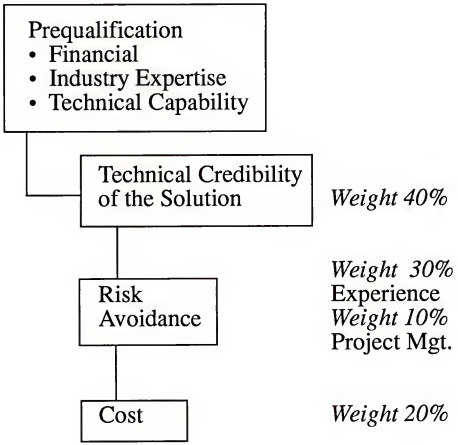
VENDOR SELECTION CRITERIA

Type	Percent of Respondents
Industry Experience	86
Application Knowledge	86
Cost/Performance	86
SI Experience	79
Project Management Skills	64

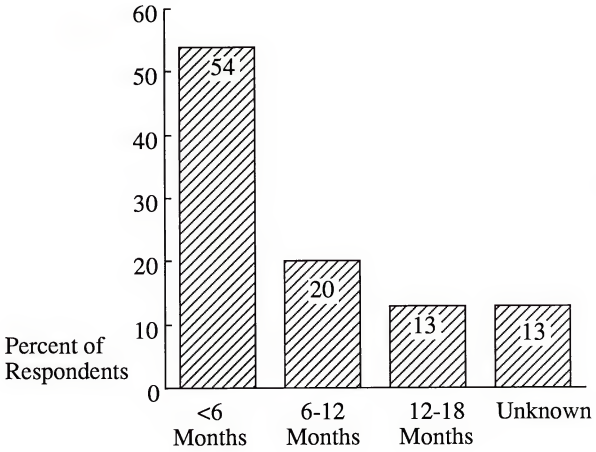
VENDOR SELECTION CRITERIA

Type	Percent of Respondents
Support Skills	64
Service Orientation	50
On-Site Visits	43
References	43
Alliances	21

VENDOR SELECTION PROCESS



DURATION OF VENDOR SELECTION PHASE



END-USER PERSPECTIVE—INVOLVEMENT

A "Single" Objective

The User Becomes the "Champion."

FUTURES

- Role of the End User
  - Controlling Strategic Information Systems Decisions
  - Doing the Majority of the Application Development
  - Managing the Processing at Tiers 2 and 3
  - Working from a Broad Base of Computing Experience

FUTURES

- Indicators of Major Change
  - Growing Use of Outsiders and Package Solutions
  - Distribution of Development as well as Processing
  - Emphasis on Standards
  - Focus on Top-Level Role and Priorities

IMPLICATIONS FOR VENDORS

Trend	Implication
Buying Trends	
User Becoming the Buyer	Emphasis on the Application
Complexity of Solution Growing	Emphasis on the Development Process
Pricing and Margins	
Competition Is High	Pressure on Margins
Favorable Margin in the Value Added	Develop the Resource Internally

IMPLICATIONS FOR VENDORS

Trend	Implication
Competitive Posturing	
Application Knowledge Critical Long Term	Major Alliances May Be Essential
Turnkey Market Weakening	May Want to Protect Key Subcontractors
Strategic Focus	
Current Growth Is in Technology-Based Projects	Not the Long-Term Opportunity
Major SI Competitors Taking Vertical Focus	Further Exposure on Profitability

RECOMMENDATIONS FOR SYSTEMS INTEGRATORS

- Maintain Project Management Continuity
- Create Strong, Vibrant Communication Links
- Make IS Participants Allies, May Be Key

RECOMMENDATIONS FOR SYSTEMS INTEGRATORS

- Keep Users Abreast of Continuing Status
- Demonstrate Progress Wherever Possible
- Encourage Suggestions and Always Respond
- Request Written Suggestions Concerning System Effectiveness

FOIL?

Systems Integration

John Frank
Vice President, Federal Programs

Dennis Wayson
Vice President, Research

Systems Integration

WORKSHOP

John Frank, Vice President,
INPUT

SYSTEMS INTEGRATION MARKET
Definition for Convenience

INPUT's Definitions

Original

"The Provision of a ***Total*** Solution to a Multi-disciplinary Information Systems Requirement."

Working

"The Provision of an ***Integrated*** Solution to a Multi-disciplinary Information Systems Requirement."

IBM's Definition

"Providing **Value Add** by Assuming Responsibility for Combining Information Products and Services into a Solution to Meet a Specific Need."

Based on a Historic All Things To IS Approach: Conversions, Migration, Applications, Data Network Projects; and the Prime or Sub for the Hardware Pieces.

The Market's Definition

"Assume a **Management Role** in the Provision of an Information Technology-Based Solution to A Critical Business Requirement—Small or Large."

JJJJ-JEF-SIW 2 (2)

SYSTEMS INTEGRATION MARKET
The Changing Environment

INPUT Premise

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WJJ-JEF-SIW 3

(3)

TRENDS IN SI PROJECT COMPOSITION

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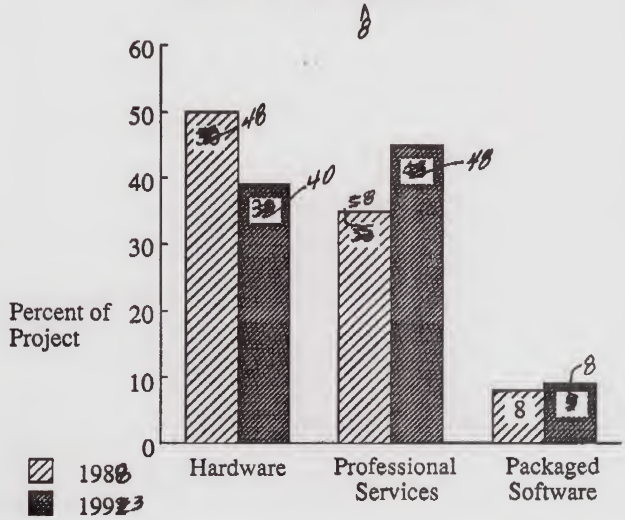
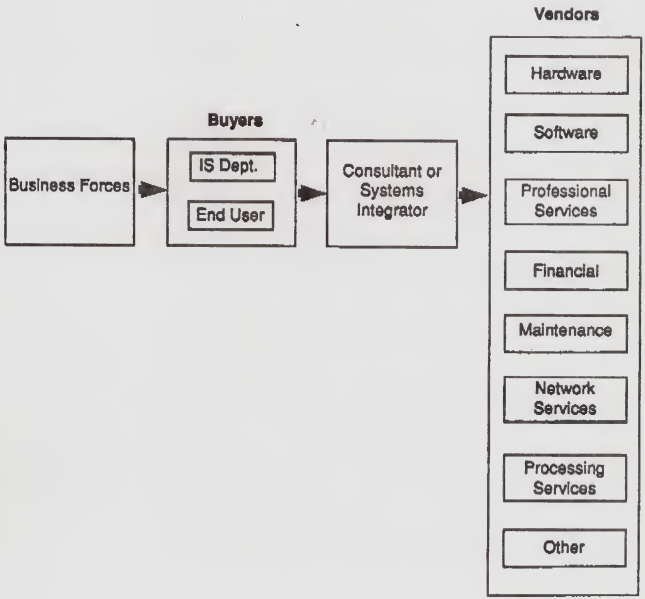


JJJ-JEF-S1W3A

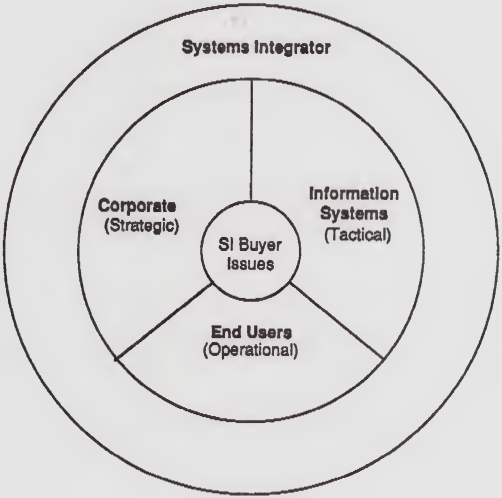
SYSTEMS INTEGRATION MARKET
The Changing Environment



JJJ-JEF-SIW 4

(5)

SYSTEMS INTEGRATION— COMMUNITIES INVOLVED



THE CHANGING ENVIRONMENT

Systems Integration—Vendor Opportunity

- Account Control
- Create a New Market
- Establish a New Distribution Channel ~~for "Core" Products and Services~~
- Create a Business Base - a Backlog
- Sell to More Types of Buyers
- ~~Generate Additional Revenue and Earnings~~

JJJJ JEFSDW5 (7)

SYSTEMS INTEGRATION
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- Major Vendors Without Clear Strategy
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  - RBOCS
  - Other Major Accounting Firms
- Opportunists
  - Turnkey Vendors
  - Software Companies
  - Small Custom Shops
  - Small Professional Services Companies
- Emerging Competitors
  - Oracle
  - Computer Task Group

JJJ J - JEF - SIW-7 (9)

SECONDARY SI VENDORS
~~Perceptions and Limitations~~

Perceptions

- High Level of Interest in SI - a New Market
- Generally Do Not Want to be Prime Contractor
- SI is a Growing Part of Their Business
- Know Who Major Players Are
- Want Visibility to Major Players for Specific Capabilities

SIW-8

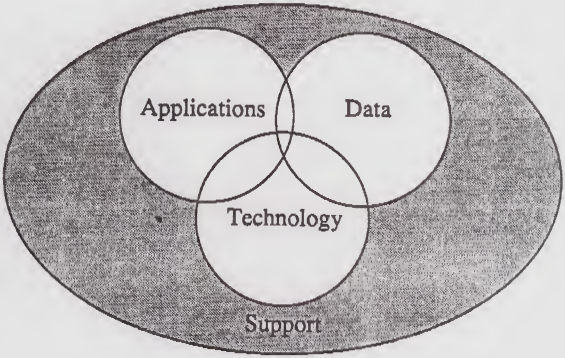
Limitations

- Experience Base is Often Limited
- No Large Project Management Experience
- Narrow Technical Skills
- Lack of Financial Resources
- If Software or Turnkey, Restricted to Own Solution

SIW-8A

JJJJ - JEF - SIW-8 & 8A (10) (11)

SI PROJECT CLASSIFICATIONS



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10

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  - Driven by IS or Division Management
  - Provides Platform for "Suites" of Applications

10A

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10B

JEF SIW 10, 10A, 10B 13, 14, 15

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Dominant Vendor Classes :	**57%**—Professional Services **13%**—Turnkey Systems
Critical Technologies:	Project Management Methodology CASE Tools Applications Shells
Primary Alliances:	Applications Software Companies Systems Software Companies
Secondary Alliances:	Hardware Companies Telecommunications Companies

JEF SIW 11 16/17

DATA-FOCUSED SI PROJECTS

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13

13A

JEF-SIW-13

19/20

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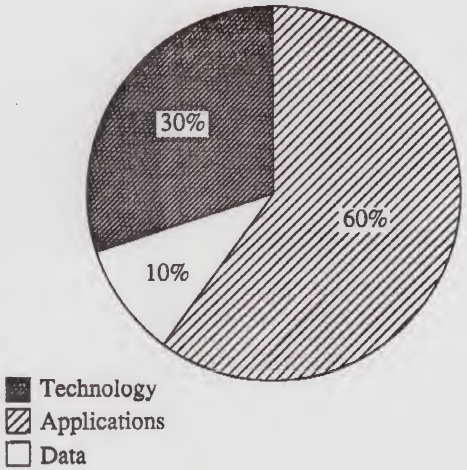

JEF-SIW 14

BUYER ISSUES—VENDOR SELECTION

- Selection Criteria/Process
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- End User Perspectives
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JEF-SAW 16

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15

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15A

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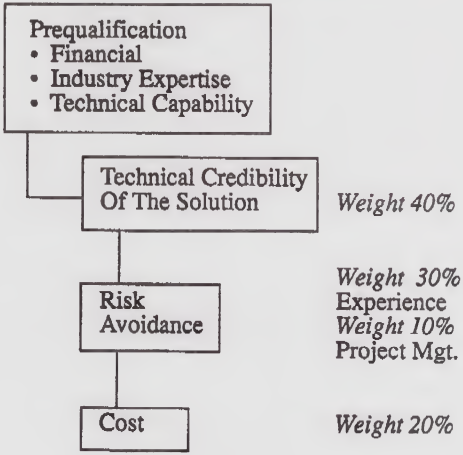
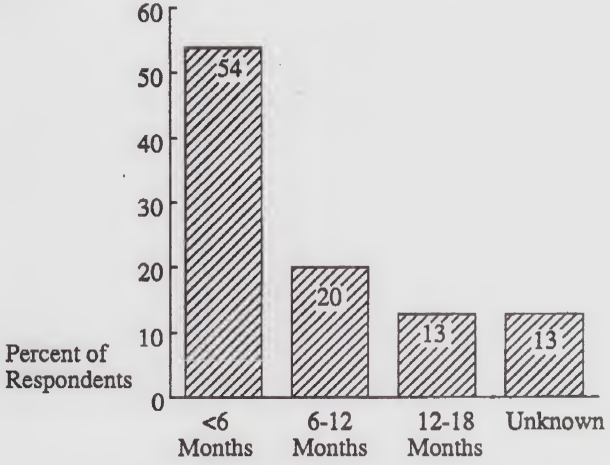


DURATION OF VENDOR SELECTION PHASE



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A "Single" Objective

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FUTURES

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22

- Indicators of Major Change
  - Growing Use of Outsiders and Package Solutions
  - Distribution of Development as well as Processing
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  - Focus on Top-Level Role and Priorities

23

IMPLICATIONS FOR VENDORS

Trend	Implication
Buying Trends	
User Becoming the Buyer	Emphasis on the Application
Complexity of Solution Growing	Emphasis on the Development Process
Pricing and Margins	
Competition is High	Pressure on Margins
Favorable Margin in the Value Added	Develop the Resource Internally
Competitive Posturing	
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RECOMMENDATIONS FOR SYSTEMS INTEGRATORS

- Maintain Continuity of Project Management
- Create Strong, Vibrant Communication links.
- Make the IS Participants, ~~allies, They May Be Key to Implementation Success~~ Allies, May be Key
- Expose the Users to the Benefits of the Proposed Technology
- ~~Employ the Users in Reviewing the Various Product Personalities.~~
- Keep the Users Abreast of the Continuing Status.
- Demonstrate Progress Wherever Possible
- Encourage Suggestions and Always Respond
- ~~After the System Is Operational,~~ Request ~~Users Submit~~ Written Suggestions Concerning System Effectiveness.

26

27

INPUT, Inc.
8298 C, Old Courthouse Road, Vienna, VA 22180 (703) 847-6870
FAX (703)847-6872

FAX TRANSMITTAL FORM

DESTINATION: INPUT

FAX NUMBER:

ATTENTION: SHEILA COLLINS

Telephone Number/Location

NUMBER OF PAGES: 1 OF 8

CONFIDENTIAL CORRESPONDENCE YES NO

VERY URGENT YES ✓ NO

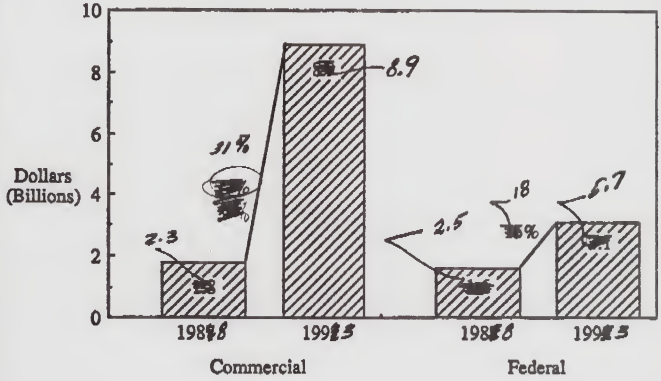
DESCRIPTION: Remaining Slides for IIIT-JEF-SI
Please make "Tech Drivers" - JEF-SI-17
and "Secondary Vendors (now #17) to JEF-SI-~~18~~ 21a
Now includes JEF-SI-14 (not provided earlier)
THIS COMPLETES FRIDAY AM SLIDESET

****

FROM: John Frank

DATE: 9/20/88

SYSTEMS INTEGRATION EXPENDITURES FORECAST



JJJJ-JEF-SIW-2A

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Total	~~260~~ 267	106

Revised
~~Updated~~ 8/88

Distribution of Projects by Value of Industry

Industry	No. Projects	Contract Value ($M)						
		<1	1-5	6-10	11-20	21-50	51-100	>100
		Number of Projects						
Federal	82		15	15	8	21	9	14
State and Local	~~19~~ 21	2	7	3	1	7	1	
Transportation	2	1			1			
Utilities	~~34~~		1		2	1		
Discrete Mfg.	~~78~~	1	2	2		2	1	
Distribution	~~38~~		~~3~~		2	1		2
Insurance	6	1	1	3		1		

Revised ~~Updated~~ 8/88

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Distribution of Projects by Value of Industry

Industry	No. Projects	Contract Value ($M)						
		<1	1-5	6-10	11-20	21-50	51-100	>100
		Number of Projects						
Banking/ Finance	~~57~~	~~2~~	1	2		2		
Medical	~~15~~	~~4~~	1					
All Other	4		2	1		~~0~~	1	
Telecomm	3		1	1		1		
Process Mfg.	~~11~~	1	5	3	~~2~~			
Total Commercial	80	~~5~~ 12	~~24~~ 24	15	~~5~~ 8	~~15~~ 15	3	2
Total All Projects	~~153~~ 162	~~5~~ 12	~~39~~ 39	30	~~15~~ 16	~~36~~ 36	~~10~~ 12	16

Revised 8/88

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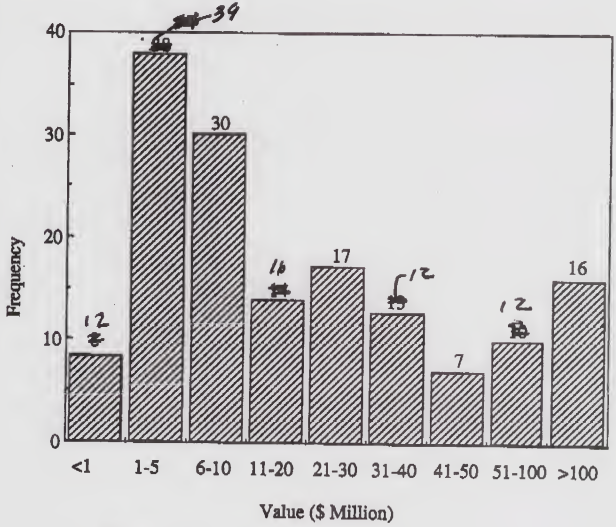
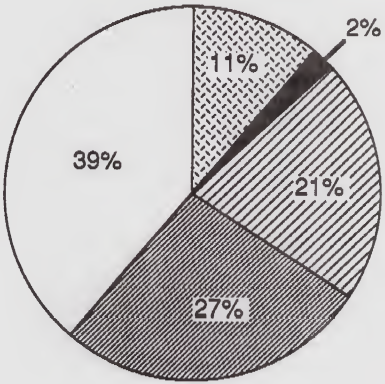
DISTRIBUTION OF PROJECTS BY VALUE



N = 162
Revised 7/88
8/88

Commercial SI Applications



- Finance/Administration
- Office Systems
- Operations
- Network
- Industry-Specific

N=114
Revised 8/88

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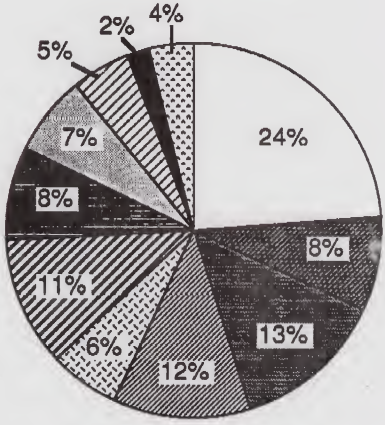
Federal Systems Integration Market
By Type of Application



- Information Analysis
- Scientific, Eng. Support
- Office Automation
- Logistics
- Artificial Intelligence
- Administration
- Management
- Graphics
- Human Resources
- Project Management
- Accounting

N=83
Revised 9/88

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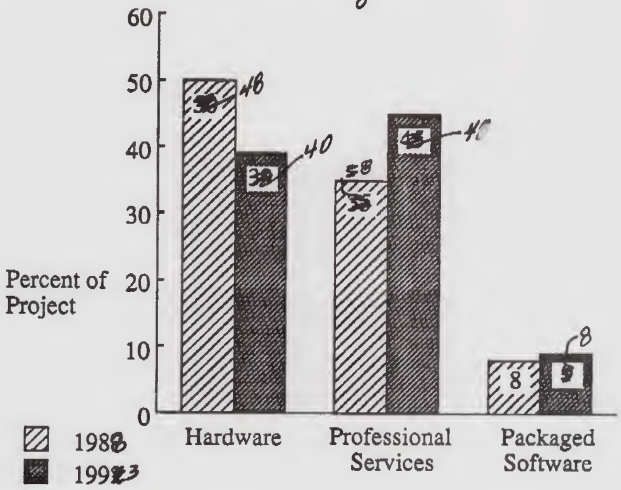
TRENDS IN SI PROJECT COMPOSITION

Federal & Commercial (Based on 198[illegible] Forecast)



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SI Project Reports (SIPR)

Number of Industry Reports:

Industry	Number	Industry	Number
Banking/Finance	4	State & Local	~~16~~
Wholesale Dist.	1		
Retail Distribution	~~8~~ 5	Transportation	1
Insurance	~~3~~ 5	Utilities	~~8~~ 2
Discrete Mfg.	~~8~~ 10	Other	~~2~~ 4
Process Mfg.	~~4~~ 7	Federal	~~13~~ 25
Medical	~~4~~ 5		
Services	1		

(~~July~~ Release)
September Release

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44

EXHIBIT IV-4

SCHEDULE OF PROJECT COMPONENTS—A MODEL

PROJECT COMPONENT	Year 1 (Percent)	Year 2 (Percent)	Year 3 (Percent)	Year 4 (Percent)	Total Component Expenditures (Percent)
Computer Hardware		100			28
Communications Hardware			100		8
Systems Software Packages		100			2
Applications Software Packages			100		4
Consulting	60	20	20		6
Project Management Fees	40	20	20	20	6
Design/Integration	45	35	20		11
Software Development		50	50		30
Education/Training and Documentation			33	67	2
Operation and Maintenance			33	67	2
Other Expenditures				100	1
Total	18	30	34	23	100

Note: These averages are based on U.S. experience.

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