

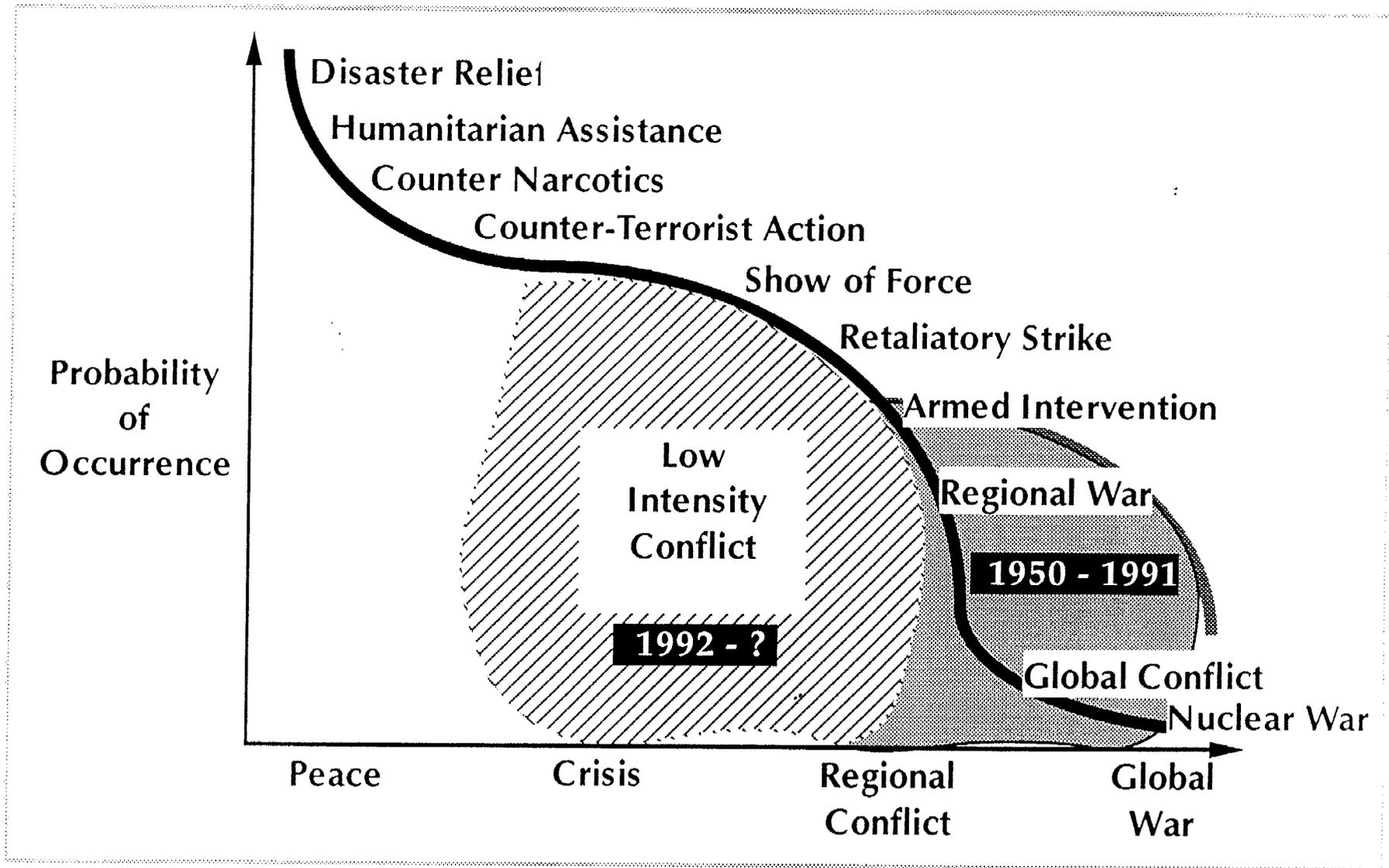
Office of the Director of Defense Information

Cutting Costs and Increasing Defense Effectiveness through Information Management

National Security & National Competitiveness
McLean, Virginia, December 1, 1992

Paul A. Strassmann

Projected Defense Operations (1992 and beyond)



Doctrine and Requirements for Command and Control Systems



**Command and Control
Functional Analysis &
Consolidation Review**

Chairman, Joint Chiefs of Staff

October 1991'

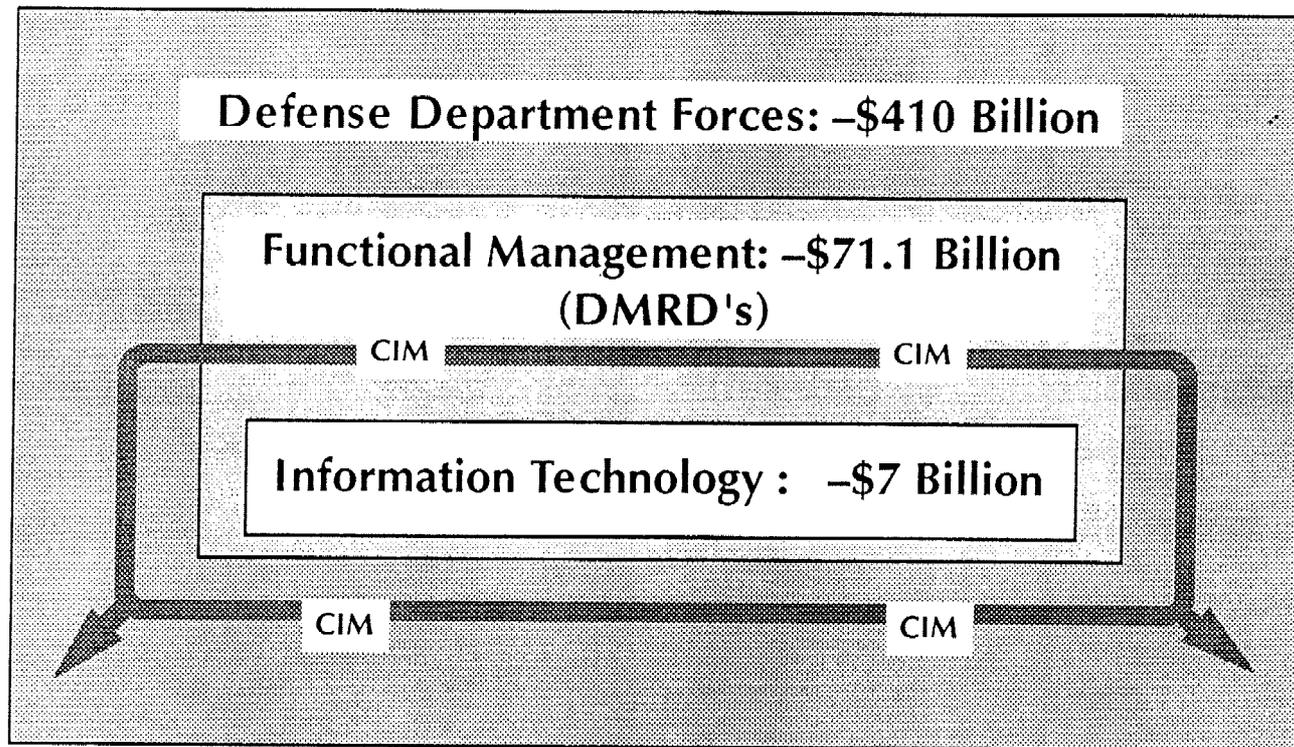
From National Military Strategy Document, CM-1309-92, Section II

- The new strategy shifts its focus from deterring Soviet aggression to a more flexible, regionally oriented strategy capable of countering a wide range of potential threats.
- For regional contingencies, conventional Command, Control, Communications, Computers and Intelligence (C4I) capabilities must support the rapid deployment of Joint.
- A C4I infrastructure must be globally available and capable of surging to accommodate contingencies.
- Resources should be interoperable and relocatable from one area to another.

Long-Term CIM Objective: Small Forces Command & Control

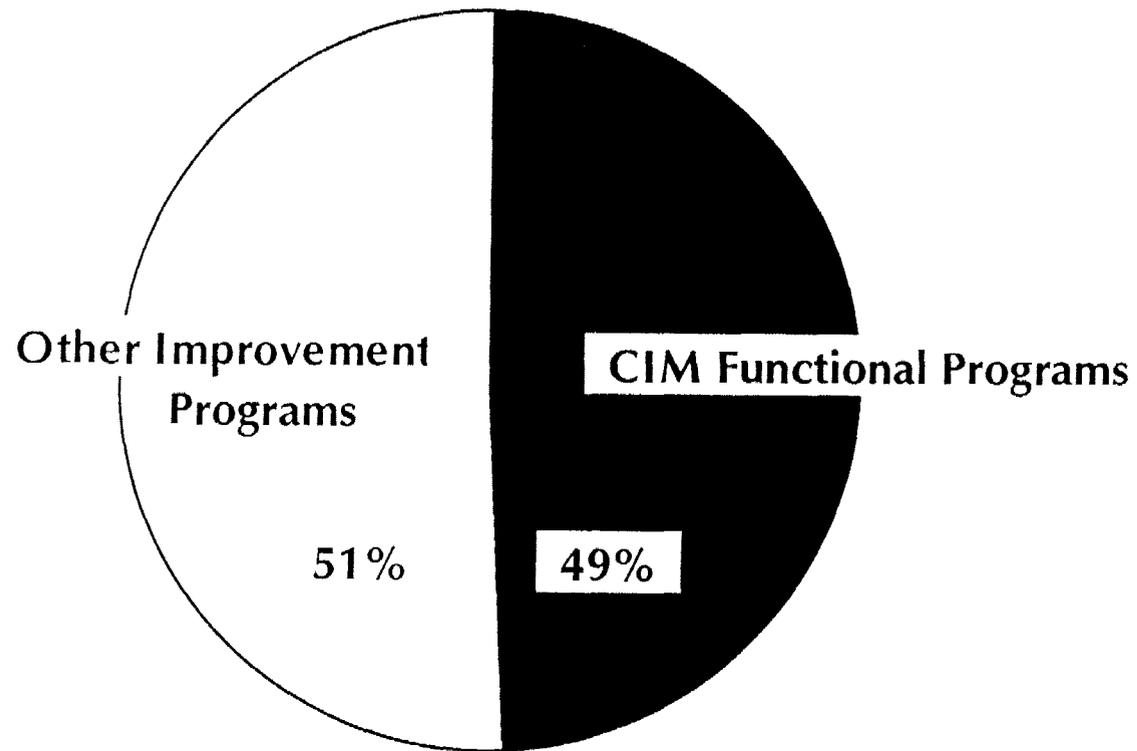
- The needs of small, mobile, rapidly deployed and locally managed forces shall be the priority C4I requirement.
- The C4I capabilities of the small forces shall be the same as currently possessed by large commands.

The Context For Today's Discussion: Tasks for 1990-97



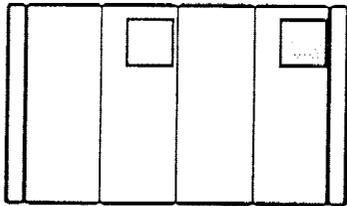
CIM = Corporate Information Management in the Department of Defense

Estimated Contribution of CIM to Functional Programs



Total DMRD Cost Reductions = \$71.1B

Current Defense Information Infrastructure - Data Processing



1,000+ Data Processing Installations

- Average age over 11 years;
- Labor-intensive. Insufficient automation;
- Inadequate protection against deliberate attack;
- Do not share workloads and cannot act as back-up.



38 Major Central Design Organizations

- Excessive maintenance; long development cycles;
- Labor-intensive and non-standard development;
- Software maturity levels less than 1.



650,000+ Workstations and Terminals

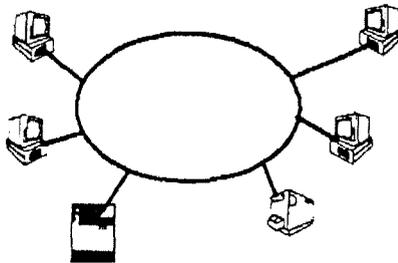
- Growth chaotic and costly;
- A security exposure; lack of interoperability;
- Improvised applications, incompatible data-bases;
- High training and support costs.

Current Defense Information Infrastructure - Communications



102 Long Distance Networks

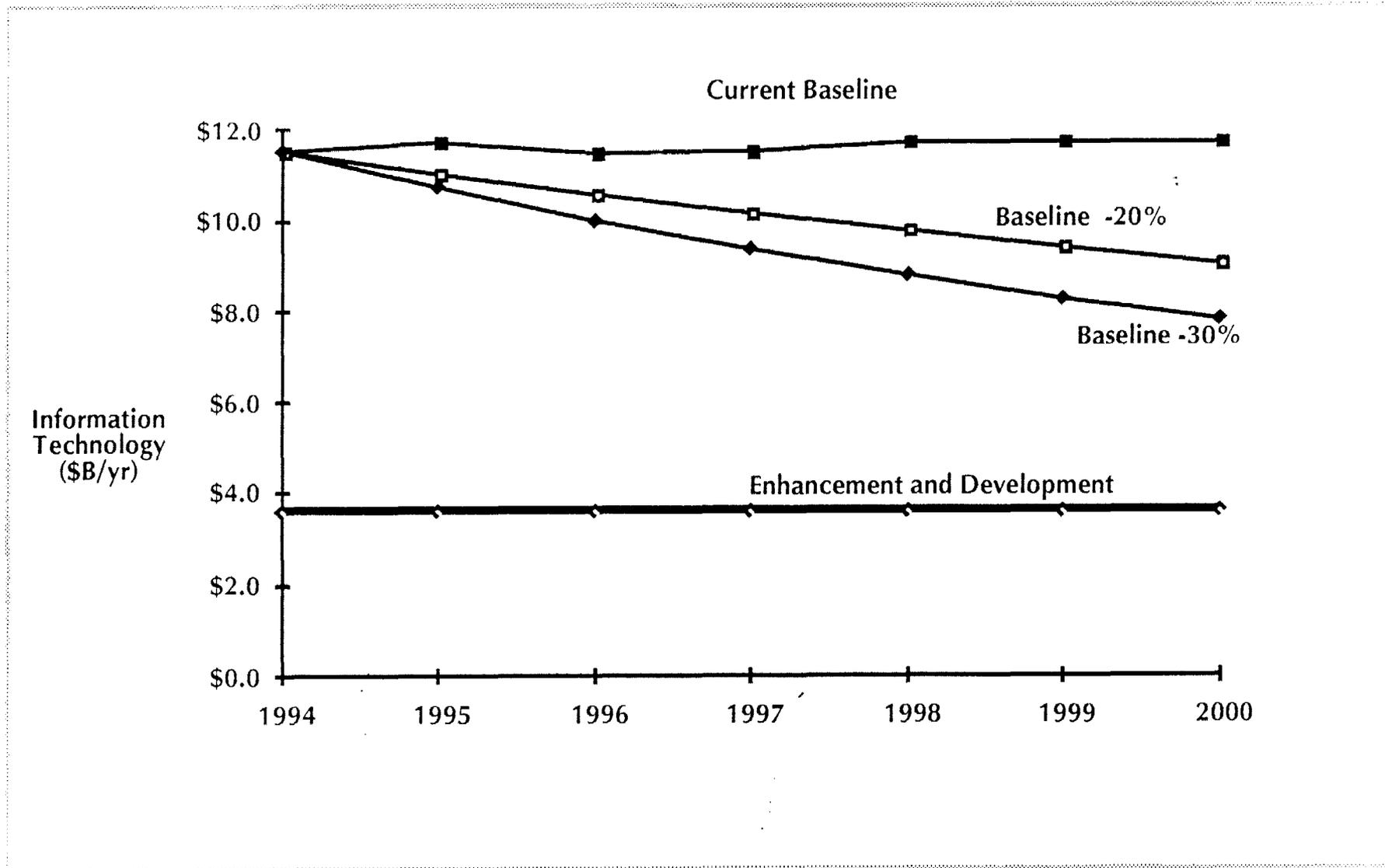
- Constructed to support traffic for specific organizations or applications.
- Costly lack of interoperability.
- Labor intensive.
- Poor capacity utilization.



10,000+ Local Area Networks

- Supports local preferences only.
- Not interoperable.
- High support and maintenance costs.
- Major security exposures.

Balancing Investment and Operating Cost Reduction



Proposed Data Center Consolidations - 1991-1997 (\$ Millions)

<u>Component</u>	<u>Base Line*</u>	<u>Savings*</u>	<u>Gain</u>	<u>% Productivity / Annum</u>
Army	266	\$79	30	+14%
Navy	981	218	22	+11.5%
Air Force	313	119	38	+16%
DLA	<u>374</u>	<u>91</u>	<u>24</u>	<u>+12%</u>
Totals	\$1,934	\$507	26	+12.5%

* Going Rate in 1997

Xerox Data Center Pricing Trends

	<u>86</u>	<u>87</u>	<u>88</u>	<u>89</u>	<u>90</u>	<u>91</u>	<u>92</u>
Volume Growth	-	+23%	+29%	+29%	+36%	+50%	+31%
Staff	268	255	254	242	232	236	232
Price Cut	-	-18%	-31%	-31%	-16%	-20%	-28%
1986 Relative Cost	\$1.00	82¢	57¢	39¢	33¢	26¢	19¢

Compound Annual Productivity Growth: +25%

SOURCE: Director, Technology Services and Strategy, Xerox Corporation, 10/21/92

Data Center Consolidation Case - Gains Realized in Two Years

<u>Cost Element</u>	<u>Karastan</u>	<u>Bigelow</u>	<u>Consolidated</u>	<u>% Gain</u>
MIPS	2	10	12	0%
Disk Capacity	4GB	20GB	15GB	-40%
IT Staff	16	34	19	-62%
IT Budget	\$2.0M	\$3.4M	\$3.5M	-35%

SOURCE: Computer Economics, Inc. - DP Budget Bulletin, November 1992, p.4

GTE Two Year Consolidation Program

Consolidated 16 Data Centers into 4 Megacenters:

- 25% reductions in personnel
- 51% reduction in CPU \$/Billable Unit in 1990
- Zero disruptions during consolidations

Software Standardization & Software Support Consolidation:

- 43% reduction in personnel
- No missing payrolls or billing

SOURCE: GTE Executive Presentation to DoD. Extensive details are available.

Texas Instruments Five Year Consolidation Program

- Consolidation of 36 Data Centers into 4 Megacenters:
 - 50% reduction in price per work unit.
 - Systems availability increased from 98.6% to 99.7%.
 - Transaction processing response time from 1.8 to 0.9 seconds.
 - On-time computer delivery increased from 97.6% to 99.1%.

SOURCE: V.P. Information Systems, Texas Instruments, November 1992

Contractor Performance on DEERS Transaction Services

<u>Transactions</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
Champus Inquiries [\$441,000]*	\$0.0334	\$0.0302	\$0.0199	\$0.0144
Productivity Gain/Year	-	+9.5%	+34.3%	+27.6%
Eligibility Inquiries [\$553,000]*	\$0.0261	\$0.0228	\$0.0209	\$0.0188
Productivity Gain/Year	-	+12.8%	+8.2%	+10.2%
On-Line Updates [\$226,000]*	\$0.0416	\$0.0333	\$0.0263	\$0.0215
Productivity Gain/Year	-	+20.0%	+21.0%	+18.3%
Batch Updates [\$338,000]*	\$0.0759	\$0.0588	\$0.0424	\$0.0316
Productivity Gain/Year	-	+22.6%	+27.8%	+25.4%
Batch Tape Updates [\$260,000]*	\$0.0547	\$0.0452	\$0.0312	\$0.0258
Productivity Gain/Year	-	+17.4%	+31.1%	+17.3%

Dollar weighted annual productivity gain: +18.8%

SOURCE: Office of the ASD Health Affairs, August 1992; * 1991 expenditures for transactions

Data Center Rate* Reductions from DITSO "Utility"

	<u>FY 92 Rates</u>	<u>FY 94 Rates</u>	<u>% Reduction</u>
IBM CPU Hour	210.47	144.60	-31.3%
Input/Output	0.209	0.111	-44.7%
Tape Mounts	4.0247	2.5361	-37.0%
Disk Storage	0.00146	0.00122	-16.7%
Tape Storage	0.1482	0.0611	-58.8%
Printed Page	0.0402	0.0286	-28.9%
Microfiche	0.3565	0.338	-4.9%
Cards Punched	0.0414	0.0509	+23.0%
Support Services	38.46	26.91	-30.0%

Estimated weighted average productivity gains: 18%

* \$ per unit of output. Depreciation included in all rates.

Benchmarking IPC Personnel Costs by Operating Function

<u>IPC Function</u>	<u>DoD Sample</u>	<u>Industry Average*</u>	<u>Industry Best*</u>	<u>Potential Average Savings/yr</u>	<u>Potential Best Savings/yr</u>
Print & Distribution	0.368	0.174	0.03	\$121,159	\$211,878
Tape Operations	0.286	0.237	0.077	\$30,716	\$130,893
Console Operations	0.245	0.128	0.058	\$73,378	\$117,268
Administration	0.18	0.09	0.022	\$56,313	\$98,549
Customer Service	0.169	0.071	0.018	\$61,433	\$94,709
Schedulers	0.125	0.046	0.016	\$49,488	\$68,731
13 Other Functions				<u>\$124,572</u>	<u>\$400,850</u>
	Total Savings (\$000)			\$517,059	\$1,122,878
	% Labor Savings Potential			30.2%	65.5%
Required Annual Productivity Gains (1993-1999)				+14	+21%

*SOURCE: Peat, Marwick & Mitchell Consulting study, Summer 1992 [Personnel employed per MIPS]. Est. personnel costs: \$1.8 B

Cost per Unit of Work for Small and Large Data Centers

<u>Cost Category</u>	<u>Small DPI (<75 MIPS)</u>	<u>Large DPI (>160 MIPS)</u>	<u>% Advantage</u>
Computer Hardware	42.6	37.5	+12%
Software	13.6	5.7	+58%
Operations Personnel	21.1	11.6	+45%
Disaster Recovery	2.3	0.7	+70%
Technical Support	19.2	8.8	+54%
Finance & Administration	6.3	3.6	+43%
Facilities	<u>14.3</u>	<u>8.0</u>	<u>+44%</u>
Total Cost Per Unit (\$'s)	119.4	75.9	+36%

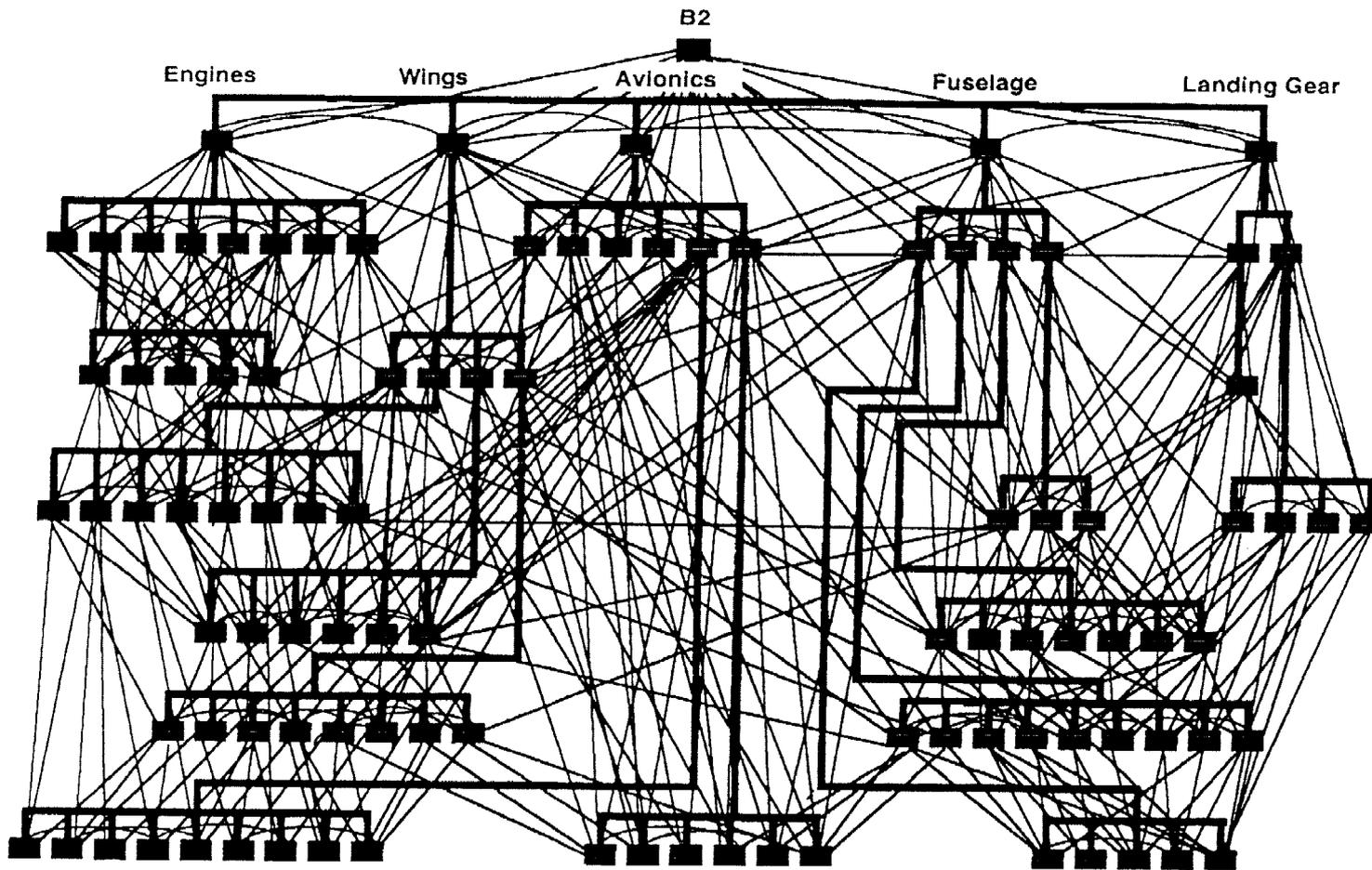
SOURCE: Consolidating Multiple Data Centers, I/S Analyzer, November 1990, Vol 28, No.11

Benchmarking Five Superior* DoD IPC's vs. Industry's Best

	<u>DOD</u>	<u>Industry</u>
Prime Shift Utilization -%	41%	73%
Non-Prime Shift Utilization - %	19%	51%
Overall Capacity Utilization - %	27%	55%
Staff per Used MIPS	4.4	0.8
Print Staff per 10,000 pages	0.18	0.02
Tape Staff per 10,000 mounts	3.09	0.58
Schedulers per 10,000 jobs	1.33	0.07
Cost per Used MIPS	391,500	165,091
Production Failures - %	2.5%	0.4%

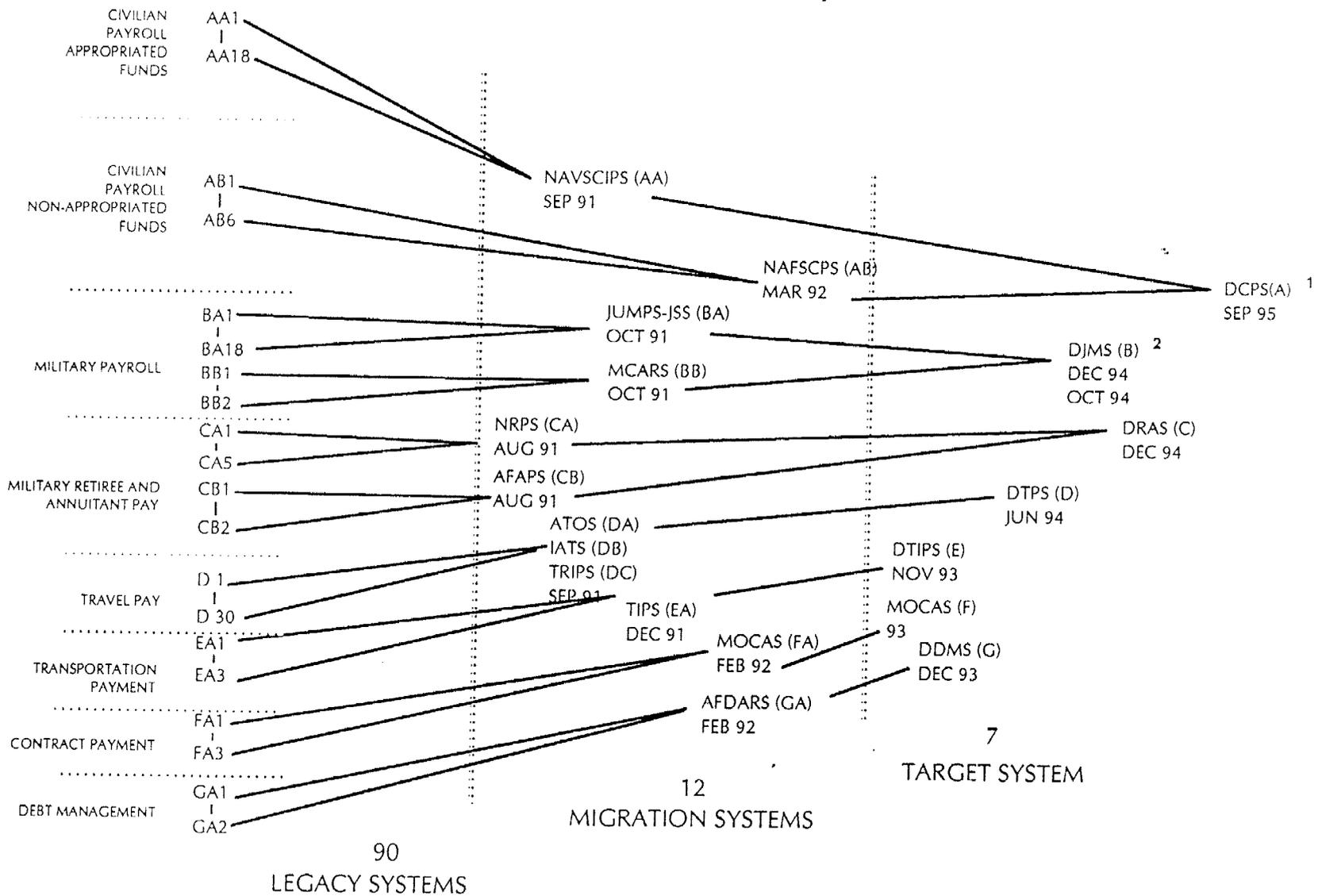
* Warner Robins AFB (59 MIPS), MC Quantico (78 MIPS), DISA/Columbus (116 MIPS), DISA/Indianapolis (84 MIPS), Army St. Louis (133)

Information Processing Without Integrated Data Bases

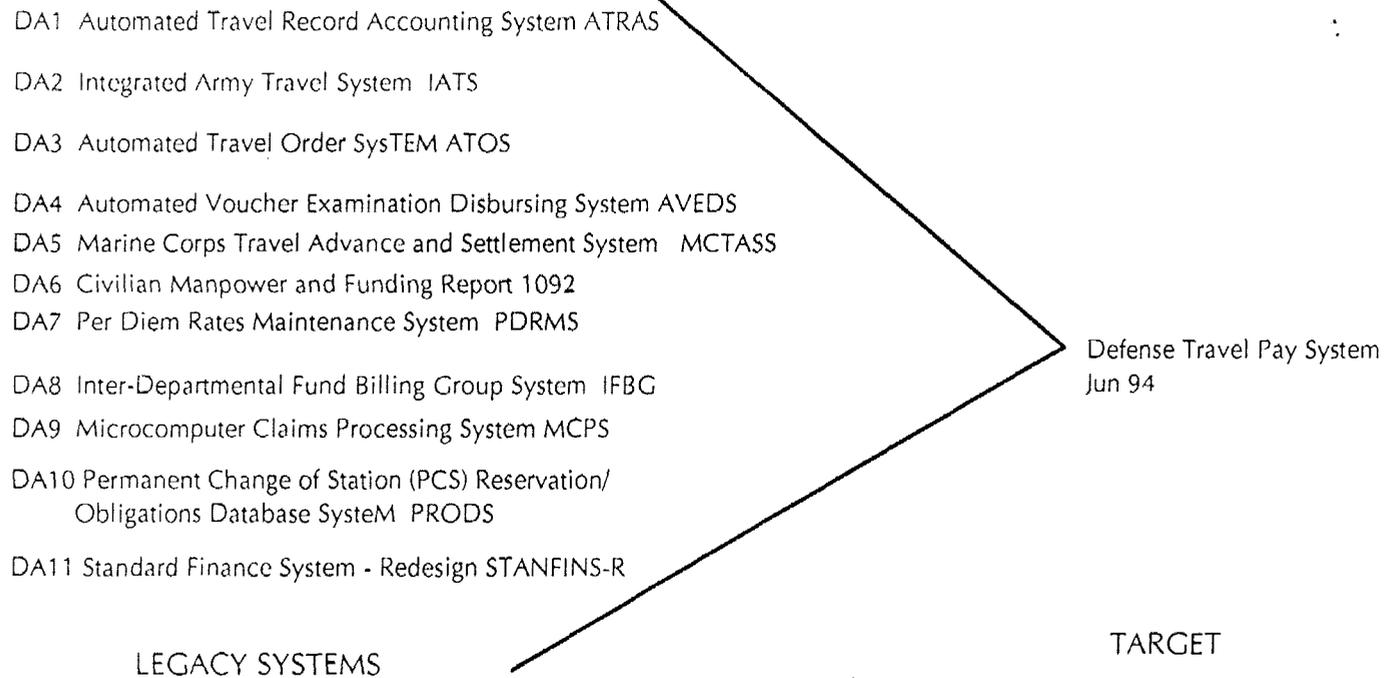


SOURCE: D.S.Appleton, Building a Business Case for CITIS, CALS Journal, Spring 1992, p.39

Financial Function - Systems Summary



Travel Pay Systems



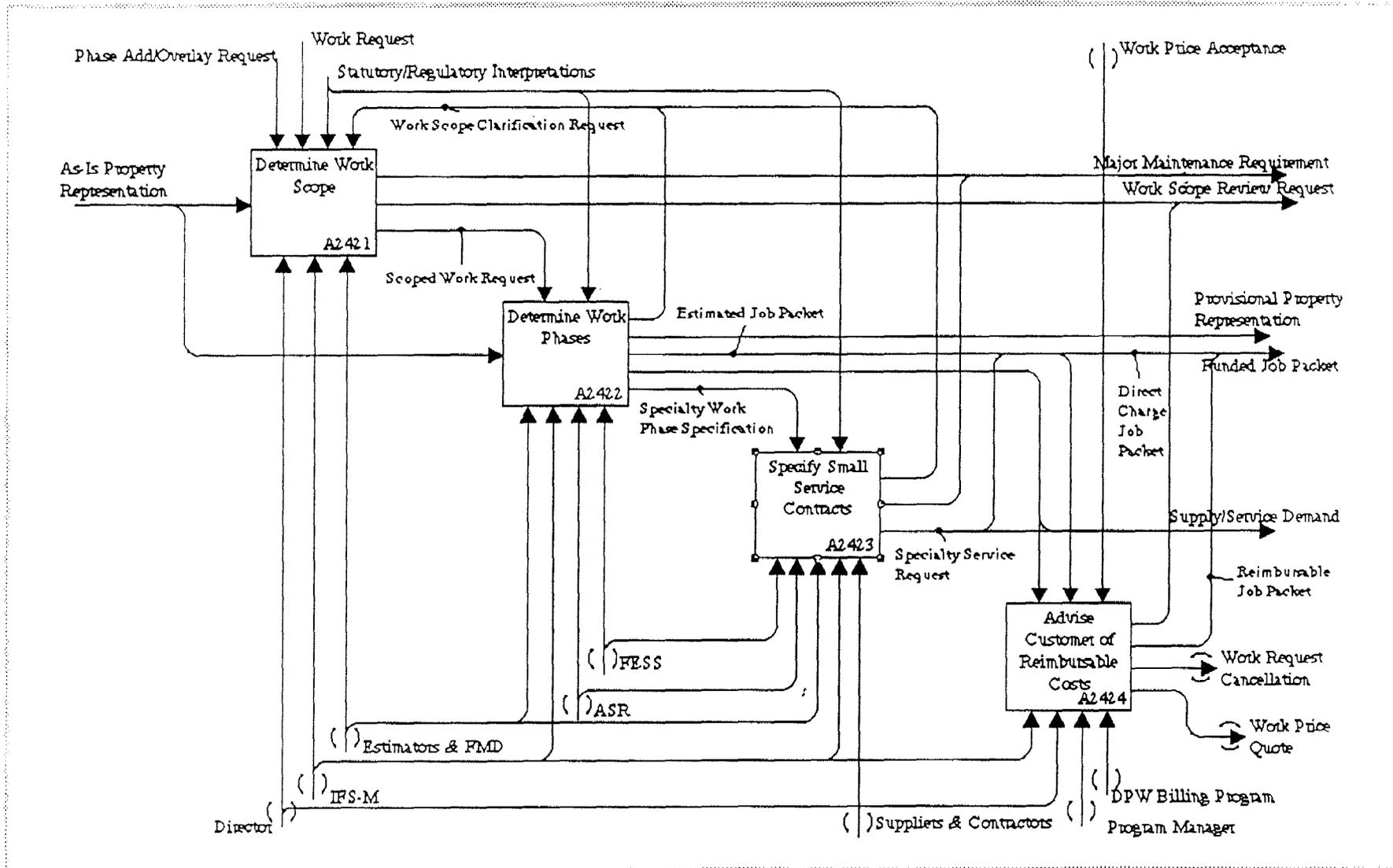
The CIM Business Re-engineering Process Model

- Step #1: Business Process Modeling "As-Is"
- Step #2: Business Process Modeling "To-Be"
- Step #3: Value-Added Analysis
- Step #4: Functional Economic Analysis

Business Process Improvement Program

- Over 100 Business Process Improvement projects
- Example follows:
 - Undertaken by Army Directorate of Engineering & Housing.
 - Applied CIM Business Improvement Methodology
 - Designed to Streamline Engineering & Housing Maintenance.
 - Contributed to \$300 Million Savings, already reflected in budget.
 - Conducted at Fort Sill, OK 6 January - 15 April 1992.

Level 4 Business Process Model - Develop Detail Estimate



Fort Sill 1991 Business Process Unit Costs

<u>Business Process</u>	<u>Volume</u>	<u>Unit Cost</u>
Prepare a Service Order	51,000	\$2.40/order
Approve/Disapprove Work Order Request	4,100	\$58 /request
Develop Work Order Estimate	860	\$336 /estimate
Support In-house Work Order Activities	2,400	\$197 /order
Specify Supply/Service Request	31,000	\$11.50/request
Receive Depot/Purchase Delivery	66,000	\$14.10/receipt
Issue Supply Item	167,000	\$7.30/issue
Issue Work Order Supply Items/order	15 items	\$109 /order
Process In-house Work Order	1,900	\$364 /order
Process In-house Work Order with Estimate	500	\$700 /order
Process Contracted Job Order	240	\$788 /order
Provide Construction Order Engineering	250	\$7490 /order
Provide Construction Order Contracting	120	\$2860 /contract

Non-Value Added Activity Analysis

<u>Activity/Process</u>	<u>Reference</u>	<u>Module</u>	<u>Actual Cost</u>	<u>Unit Cost</u>
*Validate Property Reqmnts	A2415	A	\$128,890.44	\$16.74
Submit Requirements	A2411	A	\$79,868.17	\$10.37
Determine Special Interests	A2412	A	\$42,813.33	\$5.56
Prioritize Requirements	A2414	A	\$10,439.42	\$1.36
*Classify Accounts	A2416	A	<u>\$659.18</u>	<u>\$0.09</u>
Total Cost			\$262,670.55	\$34.11
Total Non-Value Added Cost Content			<u>\$129,549.62</u>	<u>\$16.83</u>
Total Potential Cost			\$133,120.93	\$17.28

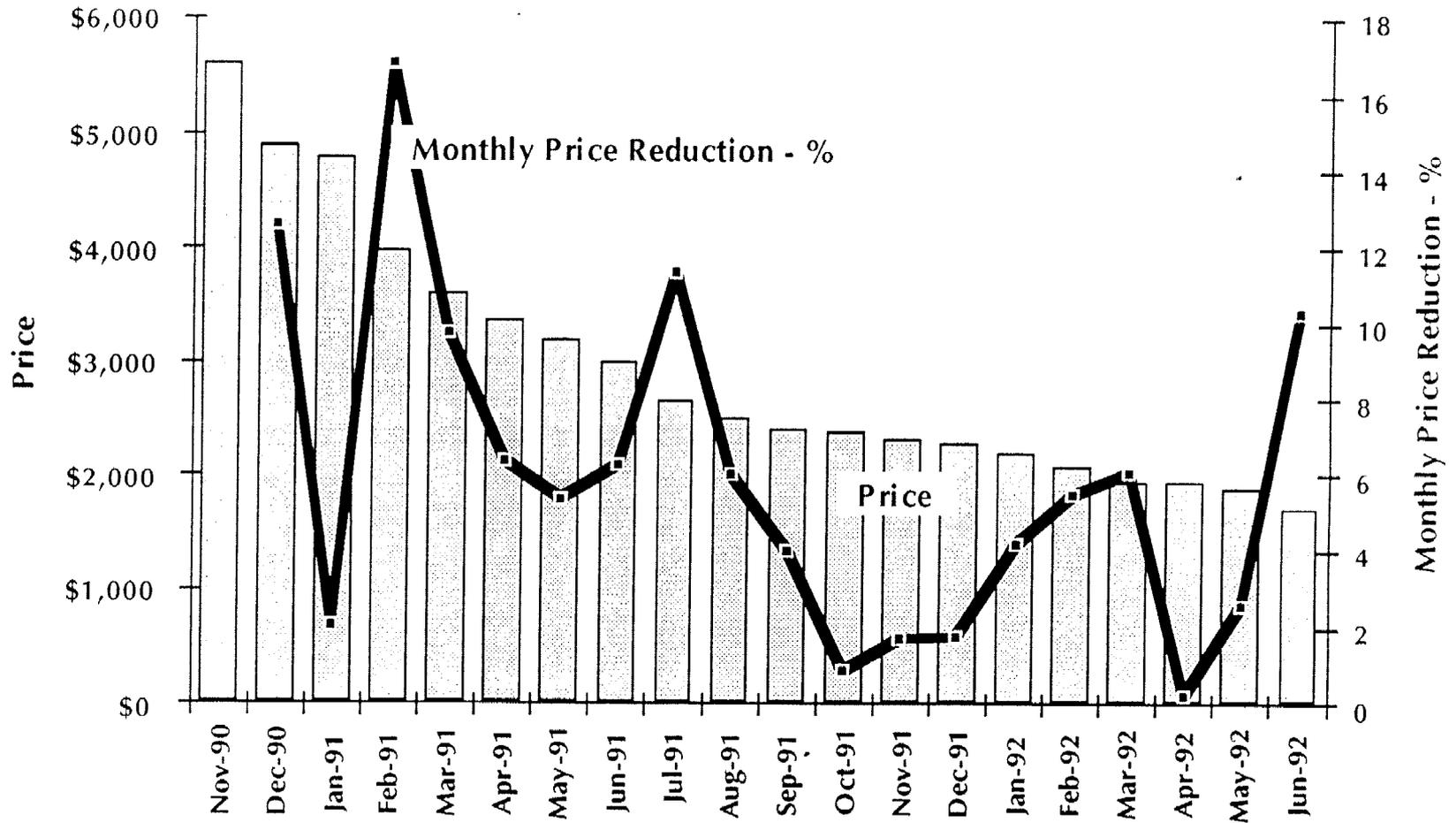
* Activities classified as not adding Value-added

Note: Estimated Production Qty: 7,700

1991 Candidates for Examination as Non-Value Added Activities

<u>Activity Description</u>	<u>Refer #</u>
Status Work Progress	A2455
Monitor Contract Performance	A123322
Validate Property Maintenance & Repair Requirements	A2415
Write Contract Modifications	A123323
Fund Supplies and Services Demand	A122
Inspect Cleanliness of Quarters	A331
Dispose of Reusable Items	A1265
Expedite Delivery	A1235
Mitigate Hazardous Material Spills	A442
Prepare for Mobilization & Disasters	A46
Approve Worth of Constr Projects	A213
Provide Relocation Assistance	A326
Request TRADOC Demolition Approval	A252
Track Local Property Rentals	A322
Stage Work Materials	A2442
Perform Thermographic Surveys	A341
Close Work/Service Orders	A2456
Identify Non-Utilized Buildings	A251
Coordinate Post-Award Meetings	A123321
Classify Accounts for MR	A2416
Determine Need For Detailed Estimates	A2413
Expedite Work Material	A2443
Release Work Material	A2444
Inspect for Completion/Beneficial Occupancy	A235
Conserve Historic Buildings	A4313

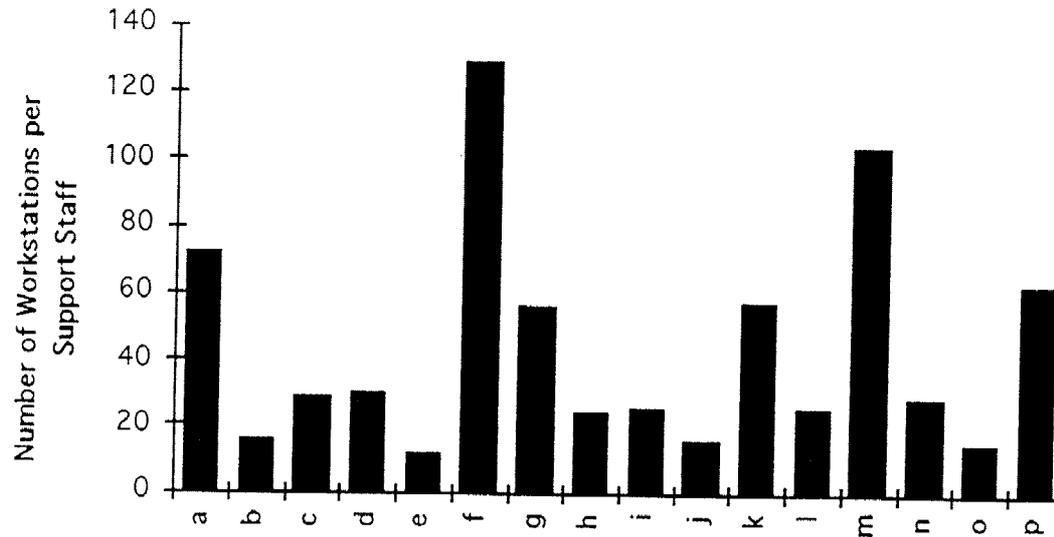
Prices and Price Changes of 486/33 Microcomputers



Average Monthly Price Reduction: 6%

Source: MicroTechnology Service, International Data Corporation

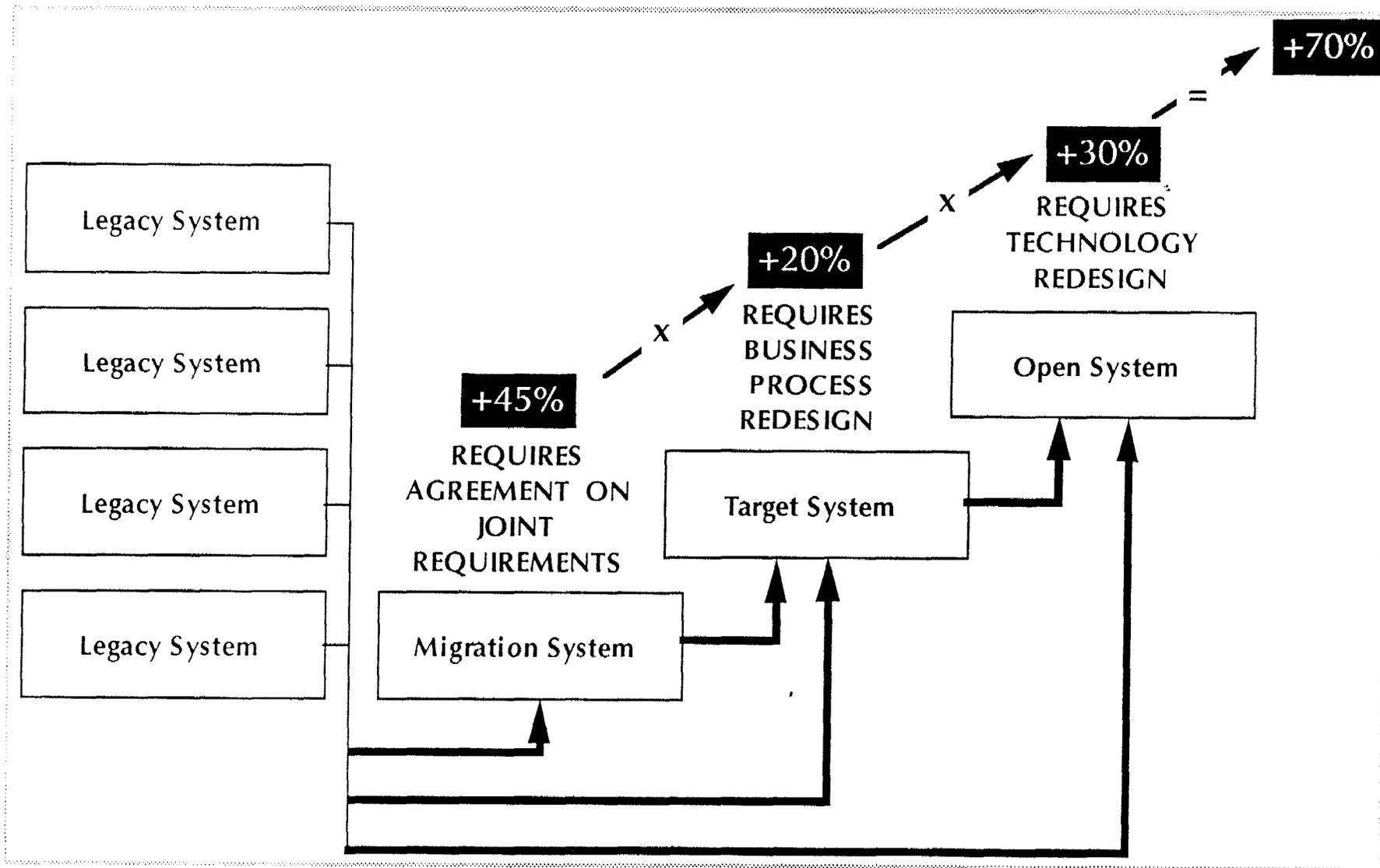
Pentagon Support Costs for Microcomputers on a LAN



Average number of microcomputers supported per support person: 29
Average annual support cost/microcomputer = \$4,571

Industry's best number of microcomputers supported per support person: 1,000
Industry's best estimated average annual cost/microcomputer = \$300

1993-1999 Productivity Gain Estimates for CIM Applications



The DoD Budget Process

