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\* D I G I T A L \*  
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INTEROFFICE MEMO

TO: Distribution

DATE: April 15, 1986  
FROM: Anker Berg-Sonne  
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SUBJECT: \$2M+ Slides

Enclosed are the main (and backup) overheads used for the "Products in the \$2M Plus price band" presentation given at the March "Commercial Woods" meeting.

If you have any questions or concerns, please don't hesitate to contact me.

Regards.

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# **\$2M PLUS - A G E N D A**

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## **MARKET DATA**

**Anker Berg-Sonne**

## **IBM OFFERING IN 1990**

**Paul Kampas**

## **DIGITAL OPPORTUNITY SUMMARY**

**Anker Berg-Sonne**

## **TWO VIEWS IN DETAIL**

**Science**

**Mike Peterson**

**MIS**

**Per Hjerppe**

## **BUSINESS ANALYSIS**

**Larry Rosenberg**

## **QUESTIONS, ISSUES, RISKS**

**Gary Eichhorn**

# **\$2M PLUS MARKET STUDY**

- **Monolithic Systems**
  - **No clusters or cluster add-ons**
  - **ONLY net equipment sales**
- **Market size**
  - **External/Internal**
- **Digital opportunity**
- **IBM scenario**
- **Business analysis**

# **PRESENTATION FORMAT**

- **Conclusions presented first**
  - **Supportive data to follow**
- **Detail available in package**

# **Groups participating in study**



**Product Marketing (OIS,LDP,MFG,ESG,MIS)**

**HPSC**

**Corporate Finance**

**Corporate Marketing**

**Product Operations**

**Management Sciences**

**Education**

**Medical**

**DECwest**

**GSG**

**TIG**

**MSB**

# **Summary Conclusions**

## **\$2M Plus**

- **IBM dominance - no surprise**
  - **can Digital provide alternative**
- **First pass estimates are, Digital can achieve 6-8% market share by 1995**
- **Investments required**
  - **Applications**
  - **TP**
  - **Vectors**
  - **Mass storage**
  - **Reliability**
- **Profitability**
  - **Exclusively \$2M+**

# Summary Conclusions

*(continued)*

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- **TO COMPLETE THE STUDY**
  - **Iterate \$2M+ numbers**
  - **\$1-2M price band**
  - **Field issues**

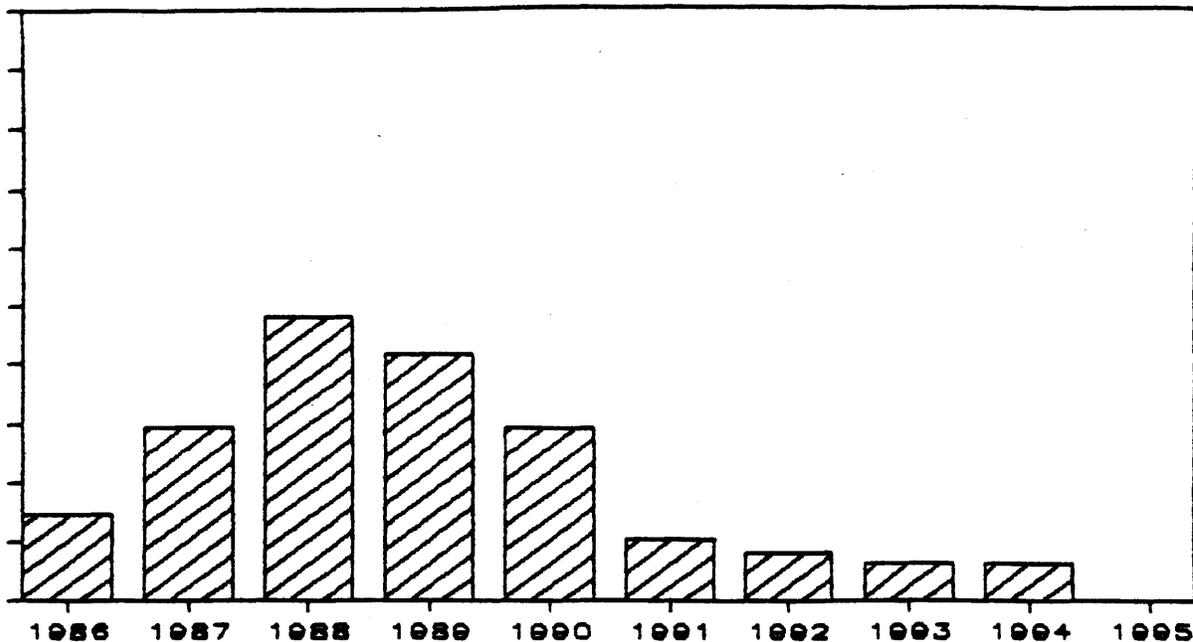
# **\$2M PLUS MARKET**

## ***HIGHLIGHTS***

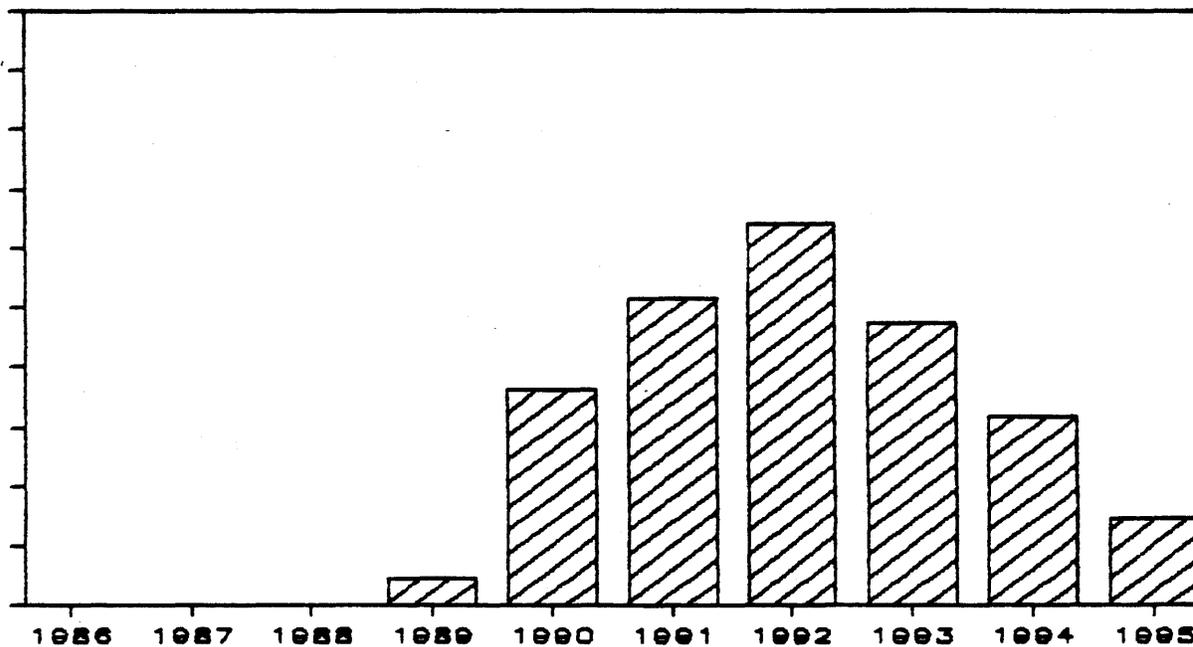
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- **Long-term business decision; NOT a product decision**
- **\$1 billion cash investment; recovery 10 years out**
- **Must take share and real growth from entrenched competition**
- **Profitability goals might be elusive**
  - **Competitive reaction**
  - **Internal risks**
- **Limited success results in substantial penalties**

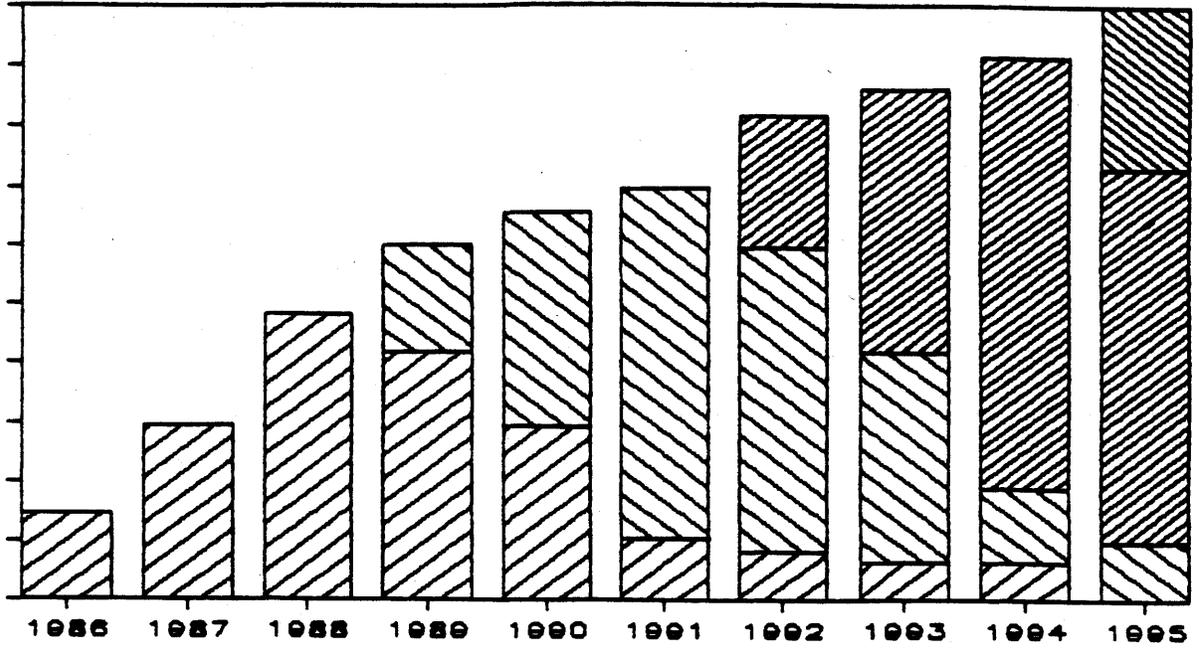
**\$2M PLUS MARKET**  
**ENGINEERING DISTRIBUTION - PRODUCT**



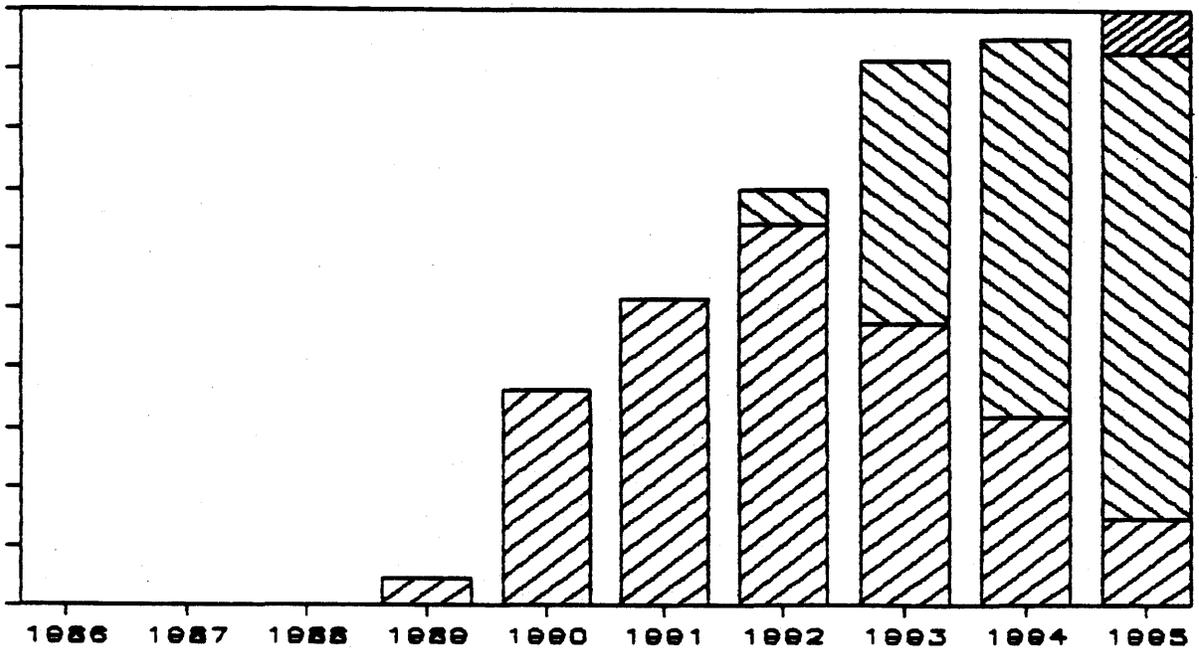
**\$2M PLUS MARKET**  
**REVENUE DISTRIBUTION - PRODUCT**



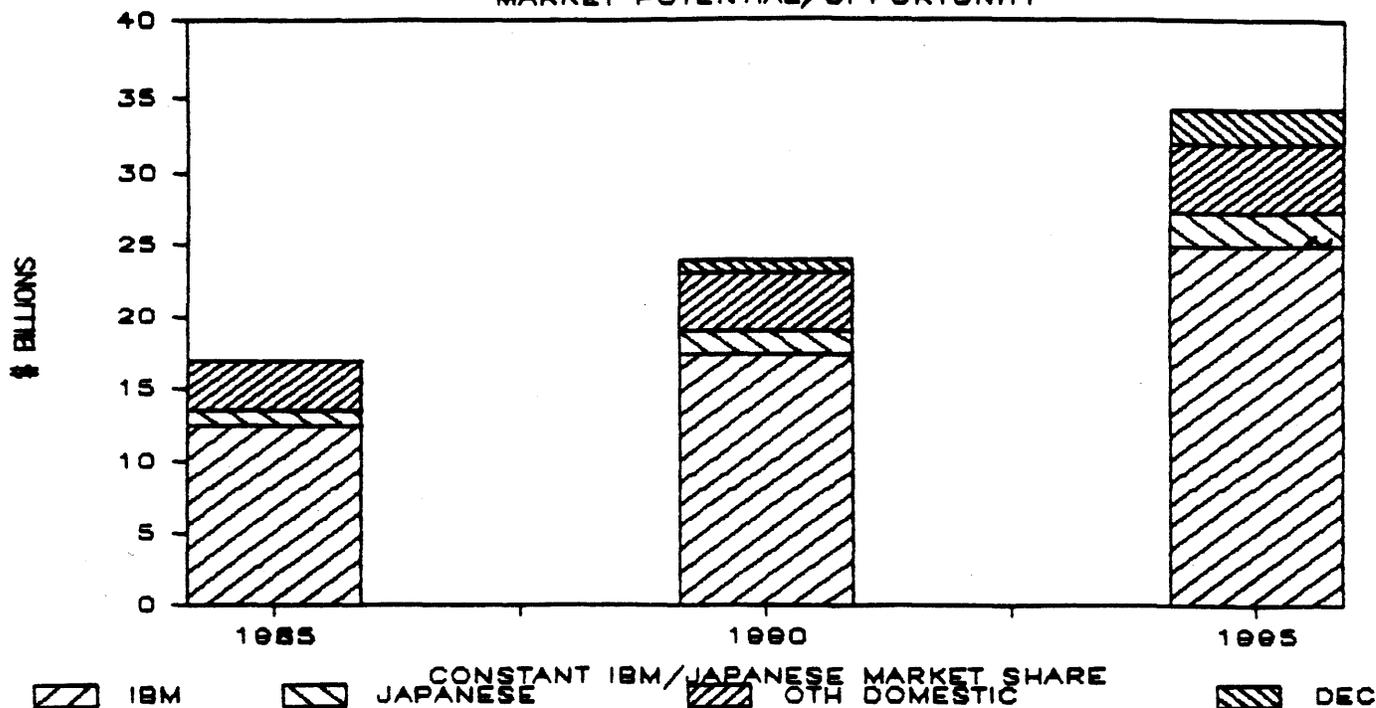
**\$2M PLUS MARKET**  
**ENGINEERING DISTRIBUTION - BUSINESS**



**\$2M PLUS MARKET**  
**REVENUE DISTRIBUTION - BUSINESS**



## \$2M PLUS MARKET MARKET POTENTIAL/OPPORTUNITY

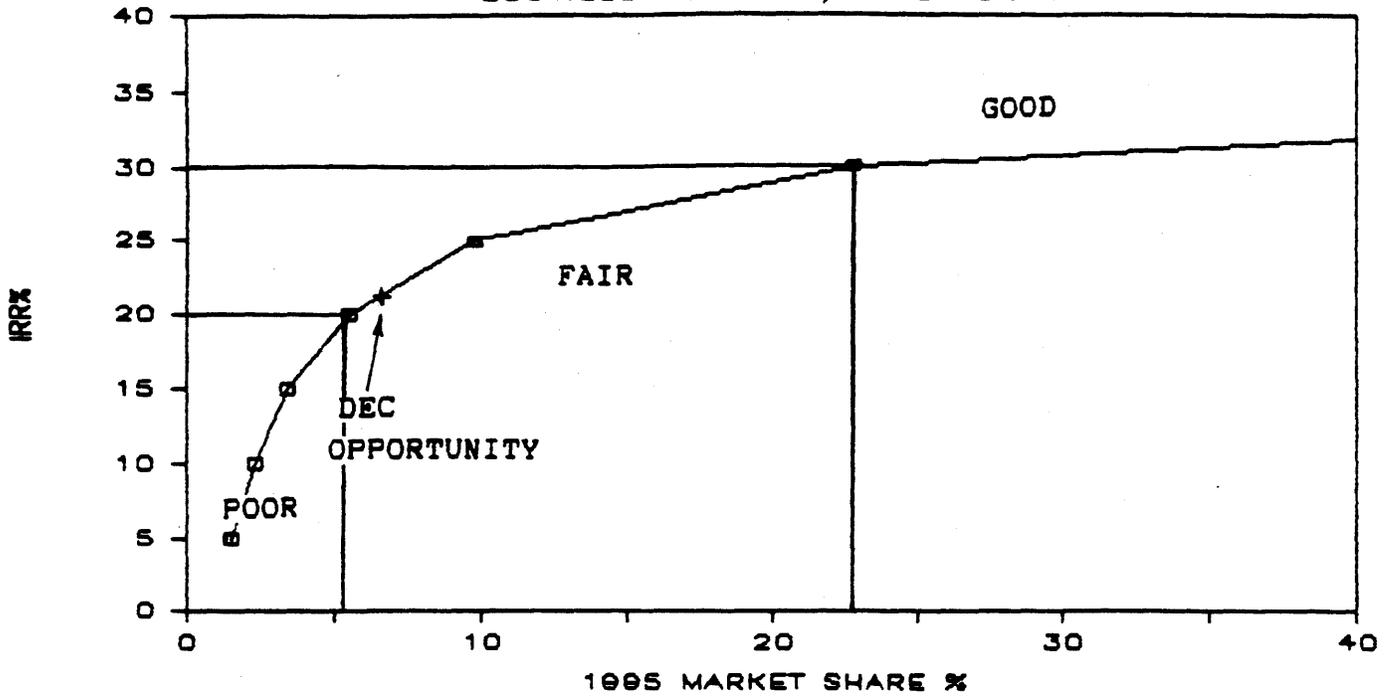


### REVENUE DISTRIBUTION\* (\$ BILLIONS)

	1985	1990	1995	1990-95 CAGR
DEC	0.0	1.0	2.2	17%
AMDAHL	1.2	1.2	1.2	
BURROUGHS	1.6	3.8	4.6	4%
OTHER	0.6	0.6	0.6	
FUJITSU/HITACHI	1.2	1.7	2.4	7%
IBM	12.4	17.5	24.8	7%
<b>TOTAL</b>	<b>17.0</b>	<b>24.0</b>	<b>34.0</b>	<b>7%</b>

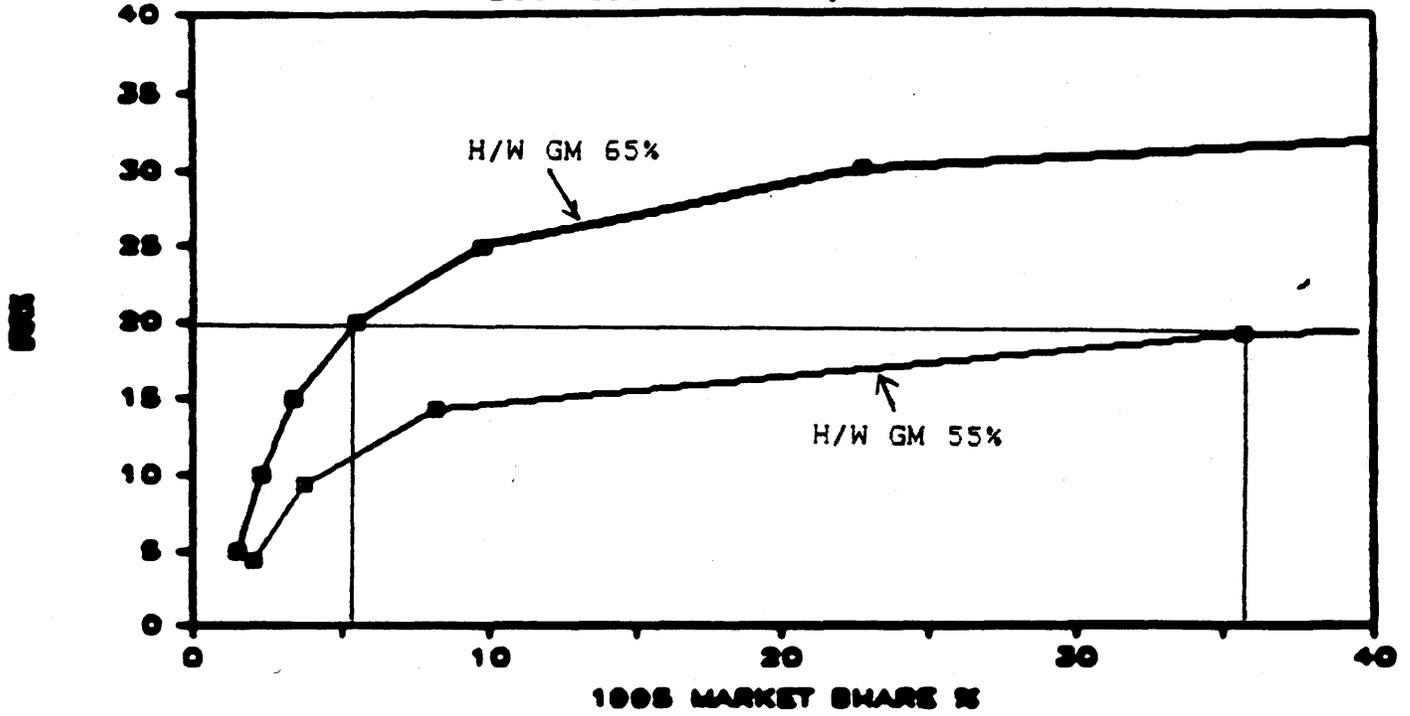
\* ASSUMES IBM AND FUJITSU/HITACHI MAINTAIN SHARE, AND DEC ACHIEVES PLANNED VOLUMES

**\$2M PLUS MARKET  
BUSINESS POTENTIAL/OPPORTUNITY**



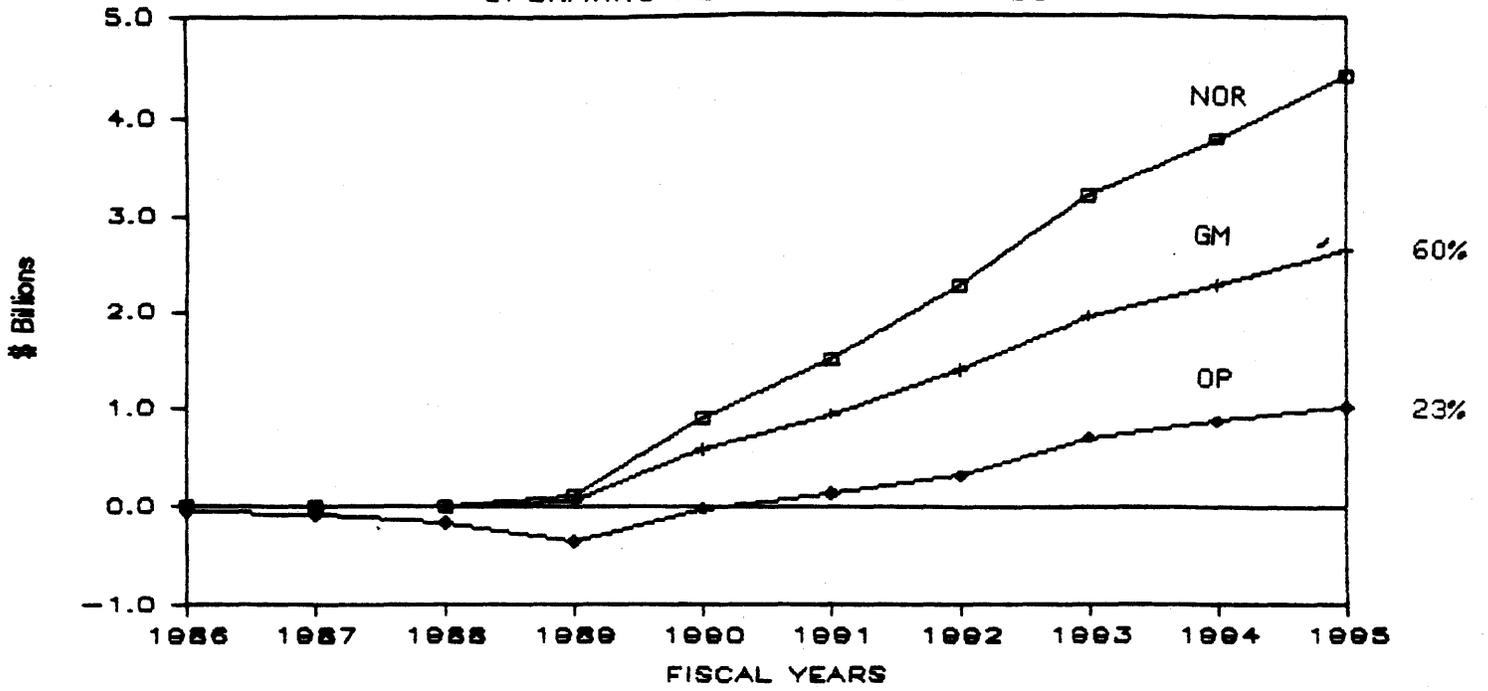
HARDWARE GROSS MARGIN	65%
TOTAL OPERATING PROFIT	20%
ASSET ASSUMPTIONS -INVENTORY TURNS	2.5 TURNS
-DSO	74 DAYS

# \$2M PLUS MARKET BUSINESS POTENTIAL/OPPORTUNITY

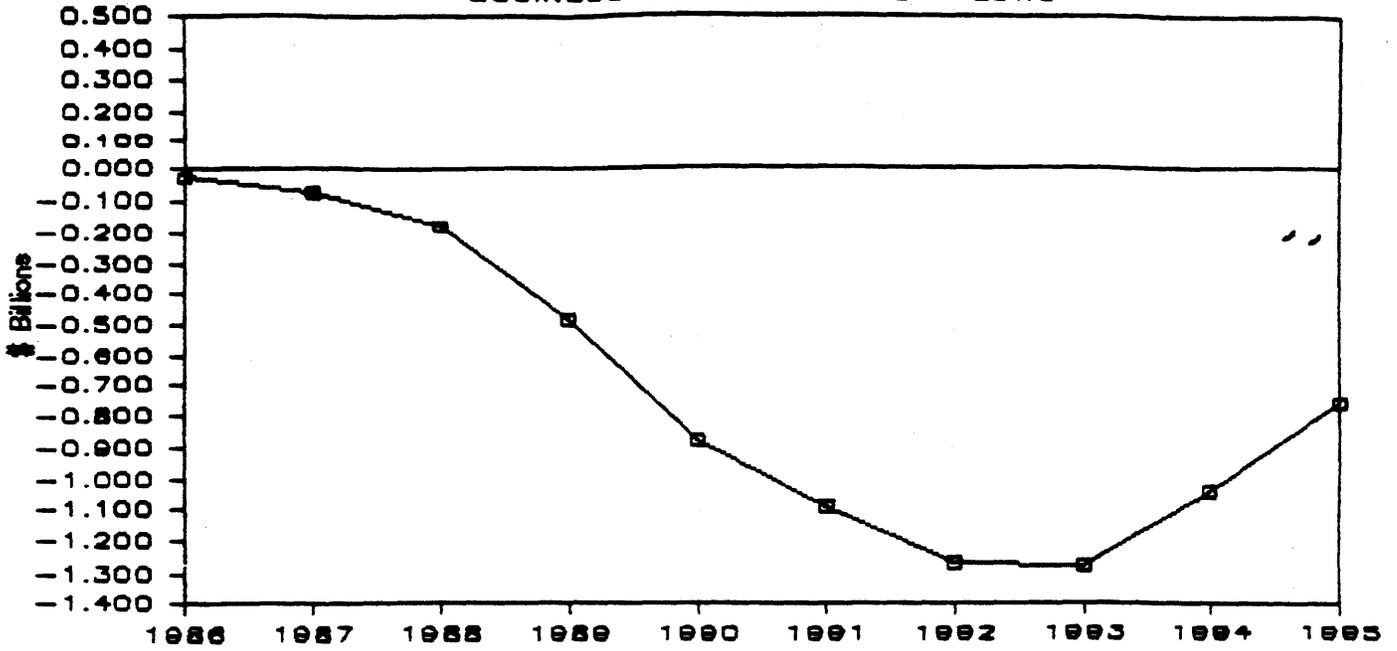


# \$2M PLUS MARKET OPERATING PERFORMANCE TRENDS

1995



# \$2M PLUS MARKET BUSINESS CUMULATIVE CASH FLOWS



# \$2M PLUS MARKET

## COMPETITION

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<i>COMPANY</i>	<i>1985 SHARE</i>	<i>GROSS MARGIN</i>
IBM	73%	60%
FUJITSU	4%	?
HITACHI	3%	?
BURROUGHS	9%	40%
CDC	2%	25%
AMDAHL	7%	50%
OTHER	2%	?
DEC	0%	65%

**\*Higher for mainframes**

# **\$2M PLUS MARKET**

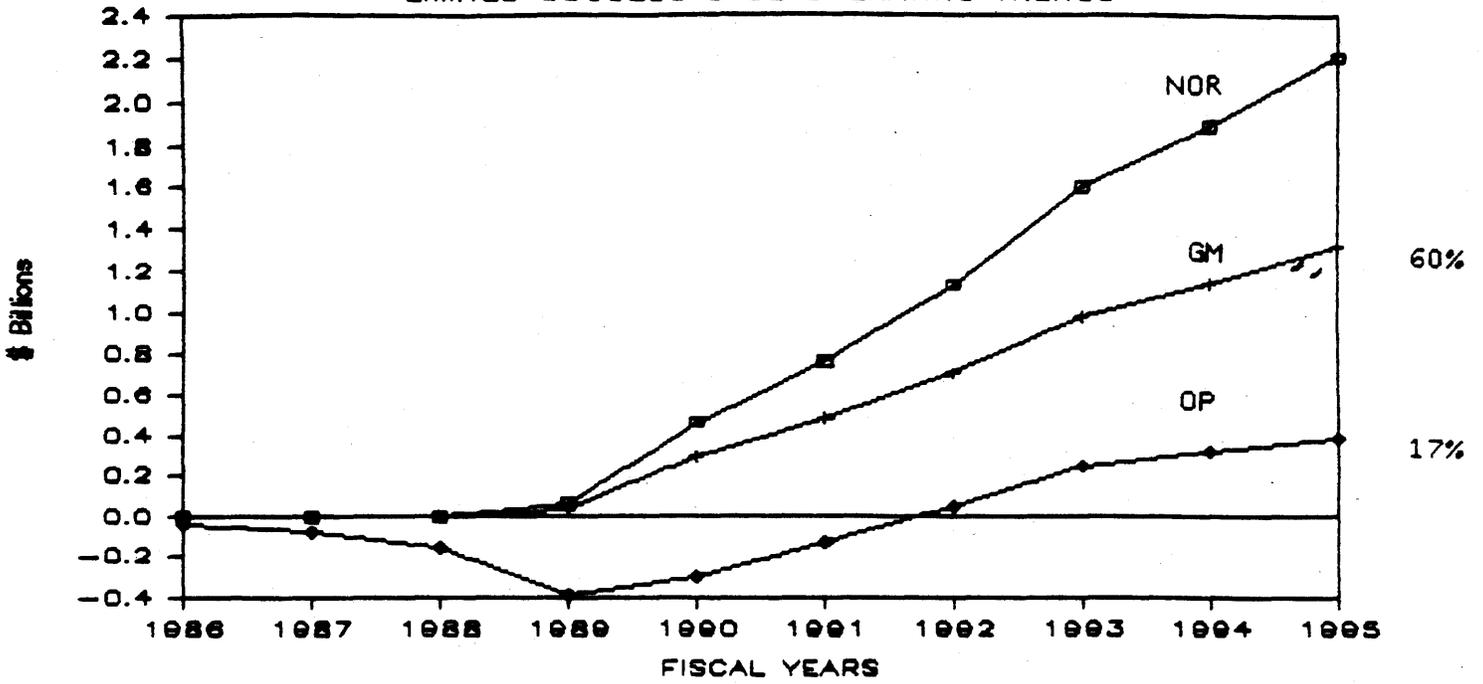
## ***LIMITED SUCCESS CASE ASSUMPTIONS***

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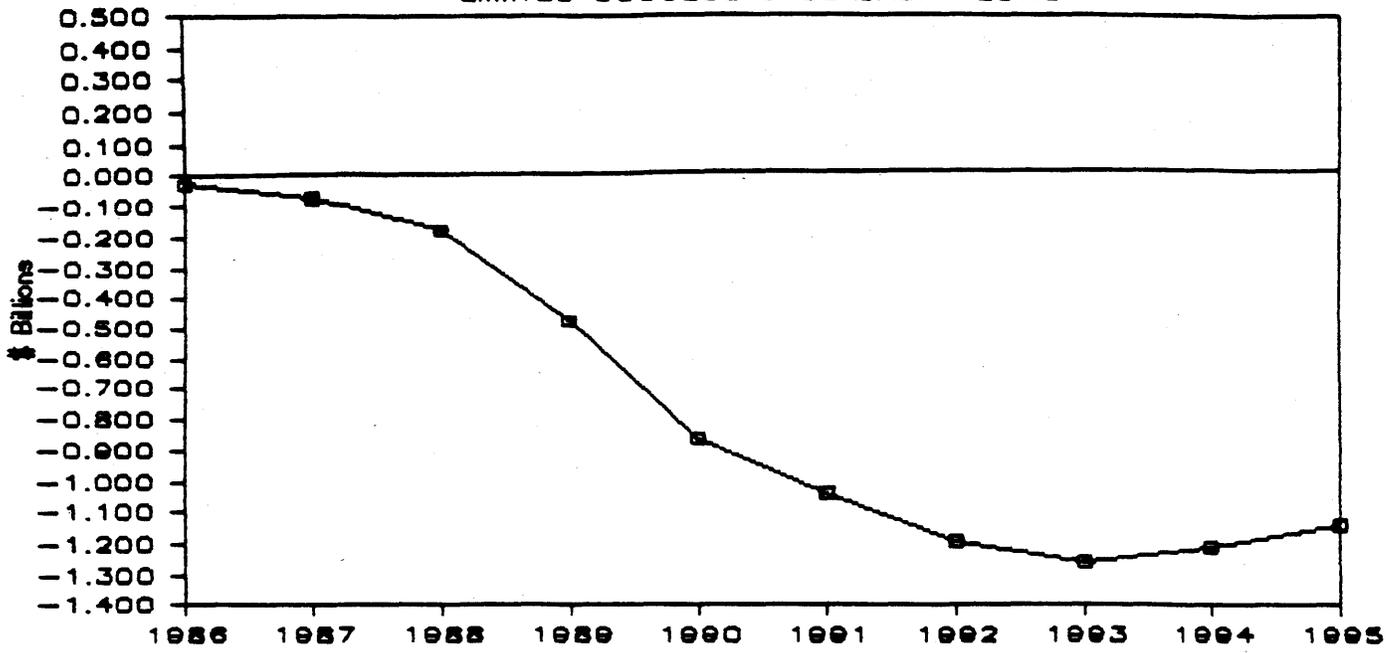
- **Engineering, marketing, and selling grow in anticipation of achieving planned volumes**
- **At year-end 1990, new forecasts indicate volume likely to be at 50% of original plan**

# \$2M PLUS MARKET

## LIMITED SUCCESS CASE OPERATING TRENDS



# \$2M PLUS MARKET LIMITED SUCCESS CASE CASH FLOWS



# **\$2M PLUS MARKET**

## ***ISSUES***

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- **Gross Margin percentage achievement**
- **Market share achievement**
- **Selling/marketing investment to achieve share**
- **Parallel engineering efforts**
- **Ability to deliver 'complete' systems**
- **When and how will IBM react?**
  - **When DEC achieves X% share**
  - **Now? (is IBM reducing price to compete with Digital)?**
- **Technical and MIS markets may have unique requirements**

**MARKET FOR  
\$2M+ SYSTEMS IN  
SCIENCE MARKET**

**MAIN MESSAGES**

**O OPPORTUNITY IS SMALL FOR \$2M+ "IBM-STYLE" SYSTEMS USED FOR  
SCIENTIFIC RESEARCH**

**BECAUSE. . .**

**O SCIENTIFIC COMPUTING STYLE FAVORS DISTRIBUTED COMPUTING WITH  
ELEGANT ACCESS TO LARGE, COMPUTE RESOURCES (...OR SPECIALIZED ONES)**

## **STRATEGY**

- 0 REPRESENTS MARKET FOR COMPLETE SYSTEMS FOR BASIC AND APPLIED RESEARCH**
  - o BIOLOGICAL SCIENCES (INCLUDING MEDICAL AND LIFE SCIENCES)**
  - o PHYSICAL SCIENCES (PHYSICS, CHEMISTRY, MATH, ETC)**
  - o SOCIAL SCIENCES (ECONOMICS, POPULATION DYNAMICS, ETC.,)**
  - o ENGINEERING SCIENCES (ESPECIALLY UNIVERSITY ENG DEPTS)**
  
- 0 THE MARKET PULL FOR THIS SPACE IS FOR COMPUTING ENVIRONMENTS THAT...**
  - o PROVIDE DISTRIBUTED, SMALL TO MIDRANGE SYSTEMS**
  - o PROVIDE ELEGANT ACCESS TO THE LARGEST POSSIBLE SCIENTIFIC COMPUTER (SUPERCOMPUTER AND/OR DEDICATED APPLICATIONS ENGINES...)**

## **PURCHASING CRITERIA**

- 1. PERFORMANCE**
- 2. FUNCTIONALITY (# APPLICATIONS)**
- 3. RELIABILITY<sup>1</sup>**

<sup>1</sup>  
A "GATING" CRITERIA

## BARRIERS TO SUCCESS

- **SCIENTIFIC APPLICATION MIX FAVORS MANY SMALL SYSTEMS (PRICE <\$2M), WITH READY ACCESS TO THE LARGEST POSSIBLE COMPUTER (CRAY CLASS)**
- **IN THE SCIENTIFIC MARKET WE'RE WINNING TODAY AGAINST IBM FOR SCIENTIFIC RESEARCH CENTERS WITH OUR EXISTING PRODUCT AND APPLICATION STRATEGIES**
  - . CERN
  - . ORNL (REPLACE 2 3033)
  - . SLAC (2 SITES, 1 308X, 1 3090)
  - . FERMI (CDC REPLACEMENT)
  - . LBL (CDC REPLACEMENT)
- **DIGITAL'S REPUTATION (POOR H/W RELIABILITY, DIFFICULT TO DO BUSINESS WITH, "MINI" MENTALITY)**
- **IBM IS ENTRENCHED**
- **ONLY 10% IS NEW BUSINESS, THE REST IS REPLACEMENT OF WHICH THE BUNCH WILL GET ABOUT 15% TO 18%**

## **INVESTMENT REQUIRED**

### **MARKETING INVESTMENT MUST BE TO:**

#### **1. UNDERSTAND THE CUSTOMER'S BUSINESS (I.E., SCIENCE)**

- o SCIENTIST PROFESSIONALS IN MARKETING
- o SYSTEMATIC APPLICATION CHARACTERIZATIONS
- o DEDICATED FIELD APPLICATIONS SUPPORT PROFESSIONALS

#### **2. MOTIVATE PROJECT-ORIENTED SALES TEAMS**

- o RESEARCH PROJECTS ARE OFTEN WORLD-WIDE OPPORTUNITIES
- o INCENTIVES TO PURSUE LONG TERM BUSINESS OPPORTUNITIES

#### **3. PROMOTE THE DEC STYLE FOR SCIENTIFIC COMPUTING**

- o MANY SMALLER MACHINES SERVED BY ONE OR MORE REALLY BIG ONES  
(...OR SPECIALIZED ONES)
- o WE'RE WINNING TODAY - DON'T FIX IT, IF IT AIN'T BROKE

#### **4. OTHER INVESTMENTS REQUIRED:**

- o S/W TECHNOLOGY
- o MASS STORAGE
  - . RELIABILITY
  - . BALANCED I/O
  - . CAPACITY

## SYSTEM REQUIREMENTS

- 0 APPLICATION THROUGHPUT (SEE ATTACHED DESCRIPTIONS FOR DETAILS)
  - o STRUCTURAL ANALYSIS (SIMULATION/MODELING)
  - o COMPUTATIONAL CHEMISTRY (SIMULATION/MODELING)
  - o SIGNAL PROCESSING (DATA ACQUISITION AND ANALYSIS)
  - o EVENT RECONSTRUCTION (DATA ACQUISITION AND ANALYSIS)
  
- 0 SYSTEM METRICS (AS DETERMINED BY ABOVE)
  - o BY 1990, A \$2M+ SCIENTIFIC SYSTEM WILL PROVIDE THE APPLICATION THROUGHPUT OF A CRAY XMP/48 TODAY, BUT WITH THE INTERACTIVE ELEGANCE OF A VAX
  - o DECRYPTABLE
  - o VHS FORTRAN COMPATIBLE (SOURCE CODE, INCLUDING SYSTEM SERVICES, RTL, ETC)
  
- 0 MESSAGE: MUST BE WELL-BALANCED. . .
  - o CPU SPEED
  - o I/O
  - o MASS STORAGE

**OPPORTUNITY**

**UNITS**

	<u>'90</u>	<u>'95</u>	<u>LIFETIME</u>	<u>MARKET SHARE</u>
<sup>1</sup> BUSINESS AS USUAL	8	24	73	5% - 8%
<sup>2</sup> LEADERSHIP SYSTEM	32	60	230	16% - 18% <sup>3</sup>

<sup>1</sup>  
EXTEND VAX TECHNOLOGY (PRICE/PERFORMANCE) INTO THE \$2M - \$5M RANGE (25-30 MIPS/CPU)

<sup>2</sup>  
VAX OR VAX-COMPATIBLE SYSTEMS OPTIMIZED FOR SCIENTIFIC COMPUTING

<sup>3</sup>  
AT IBM'S EXPENSE

**SCIENCE MARKET**  
(BY APPLICATION TAXONOMY)

	<u>'85</u>	<u>'86</u>	<u>'90</u>
TOTAL SIZE	2200	2300	4309
CAGR	-	16.0%	18.0%
MKT SHARE			
DIGITAL	27.0%	28.7%	36.0%
IBM	40.1%	39.1%	34.0%

SCIENCE (FY '86)

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 HPSC	 DAAC	 ILA
SIMULATION/ MODELING	DATA ANALYSIS/ ACQUISITION	DATA MGT/ REPORTING
CAGR	18%	30%
TOTAL	\$1075M	\$575M
DEC	300M	100M
IBM	550M	250M
OTHER		

1. R&D SPENDING/GNP RATIO WILL CONTINUE TO INCREASE THROUGH 1990
2. DISTRIBUTION OF R&D SPENDING SHIFTING MASSIVELY TOWARD PHYSICAL AND ENGINEERING SCIENCES - 74% OF TOTAL U.S. OUTLAYS FOR R&D (54% TODAY) - IBM'S WEAKEST MARKET, DEC'S STRONGEST!
3. DECLINE BECAUSE IBM MAINFRAME GROWTH, IN SCIENCE, IS MUCH LESS THAN OVERALL SCIENCE MARKET GROWTH (16% VS. 7%-9%)
4. IBM WILL NOT HAVE A MINISUPER OFFERING BY 1990. MINISUPER MARKET WILL BE \$2.9B BY 1990 (DATA QUERT)

# Hypothetical customer RFP

**YEAR: 1990**

**BUDGET: \$2,000,000 +**

**IBM PRODUCTS & PRICES ?**

**Scenario 1:**

**Business as usual (70% share)**

**Scenario 2: \***

**Some competition (60% share)**

**Scenario 3:**

**Serious competition (50% share)**

**\* expected scenario**

# IBM revenue/profit: 1985

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<i>Category</i>	<i>\$B</i>	<i>%</i>
DP Processors	12.135	24%
Peripherals	12.676	25%
Office/Wkstn	10.533	21%
Software	4.165	8%
Maintenance	6.103	12%
Supplies/U-R	2.134	5%
Federal	2.057	4%
Other	0.073	--
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Totals	50.056	100%
PBT	11.619	23%

# IBM revenue/profit: 1985-1984

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<i>Category</i>	<i>1985 (\$B)</i>	<i>←</i>	<i>1984 (\$B)</i>
DP Processors	12.135	+2%	11.919
Peripherals	12.676	+9%	11.652
Office/Wkstn	10.533	+6%	9.955
Software	4.165	+30%	3.197
Maintenance	6.103	+16%	5.266
Supplies/U-R	2.134	-5%	2.235
Federal	2.057	+25%	1.645
Other	0.073		0.068
	<hr/>		<hr/>
Totals	50.056	+9%	45.937
PBT	11.619	0%	11.623

# Summary of predictions

## SCENARIO 1:

- Continuation of two CPU, two family (43xx, 30xx) approach.
- 1990 introduction of 4391 & SUMMIT (9,30 MIPS/CPU).
- Continuation of same price points, spacing, mark-ups.
- PBT = 22%

## SCENARIO 2:

- Same as above plus . . .
- Upward extension of 4391 to \$2M with 4x SMP or clusters.
- Moderate SUMMIT repricing and earlier mid-life kickers.
- PBT = 16%

## SCENARIO 3:

- Same as above plus . . .
- 1989 4391/SUMMIT introduct'n.
- More drastic price cuts.
- Rapid move to next generation technology.
- PBT = 10%

# Scenario 1: Business as usual

## **SETTING:**

**IBM market share in 70%  
range; Japan, BUNCH, DEC  
sticking to their knitting.**

## **IBM STRATEGY:**

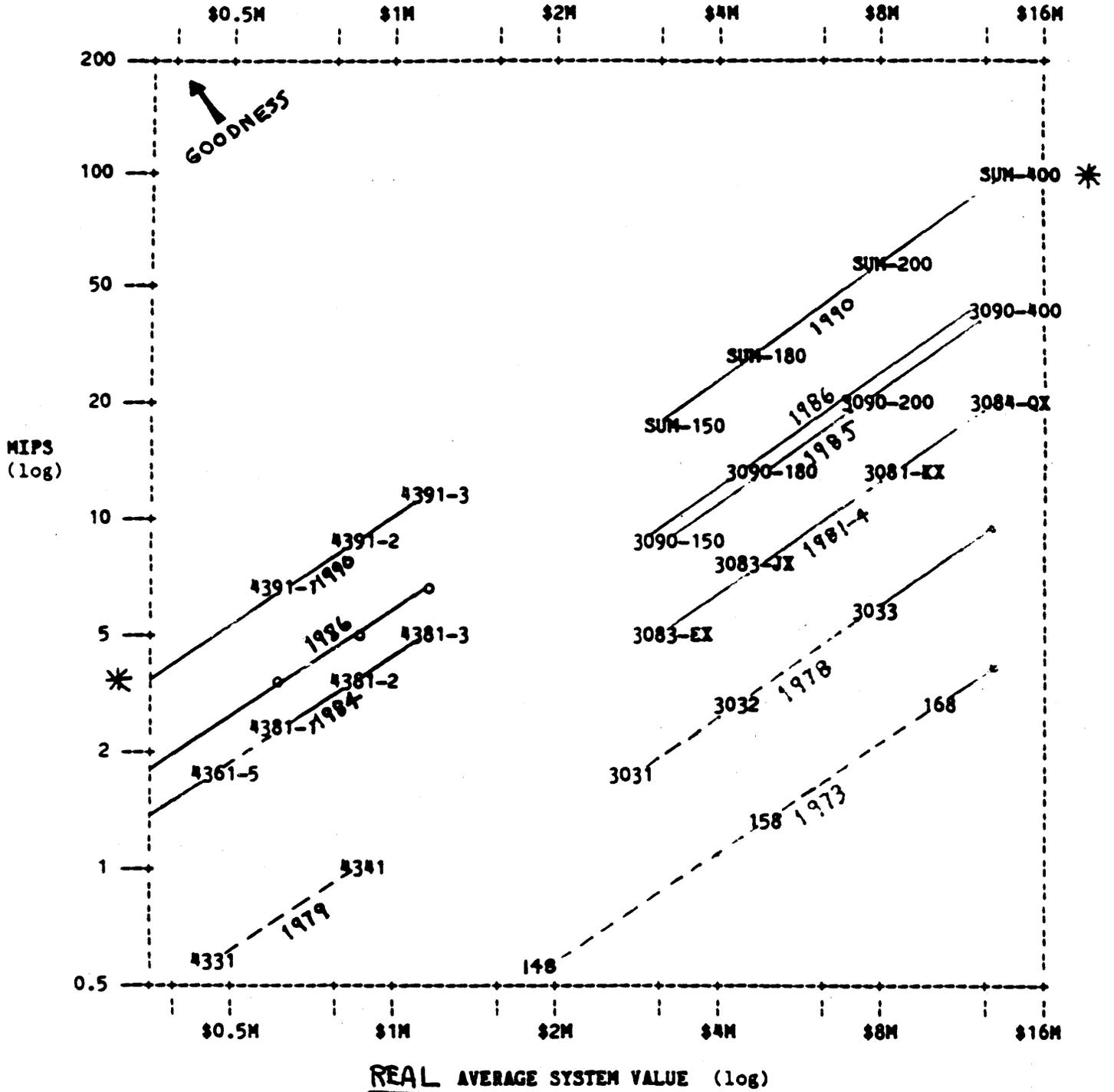
**Use moderate technologies;  
continue two family approach;  
introduce 4391, SUMMIT in  
1990; maintain price points,  
spacing, mark-ups.**

## **IBM PROPOSAL:**

**\$2M - nothing  
\$3M - SUMMIT 150  
\$4M - SUMMIT 180  
\$8M - SUMMIT 200  
\$16M - SUMMIT 400**

# IBM LARGE SYSTEMS POSITIONING: 1970-1990

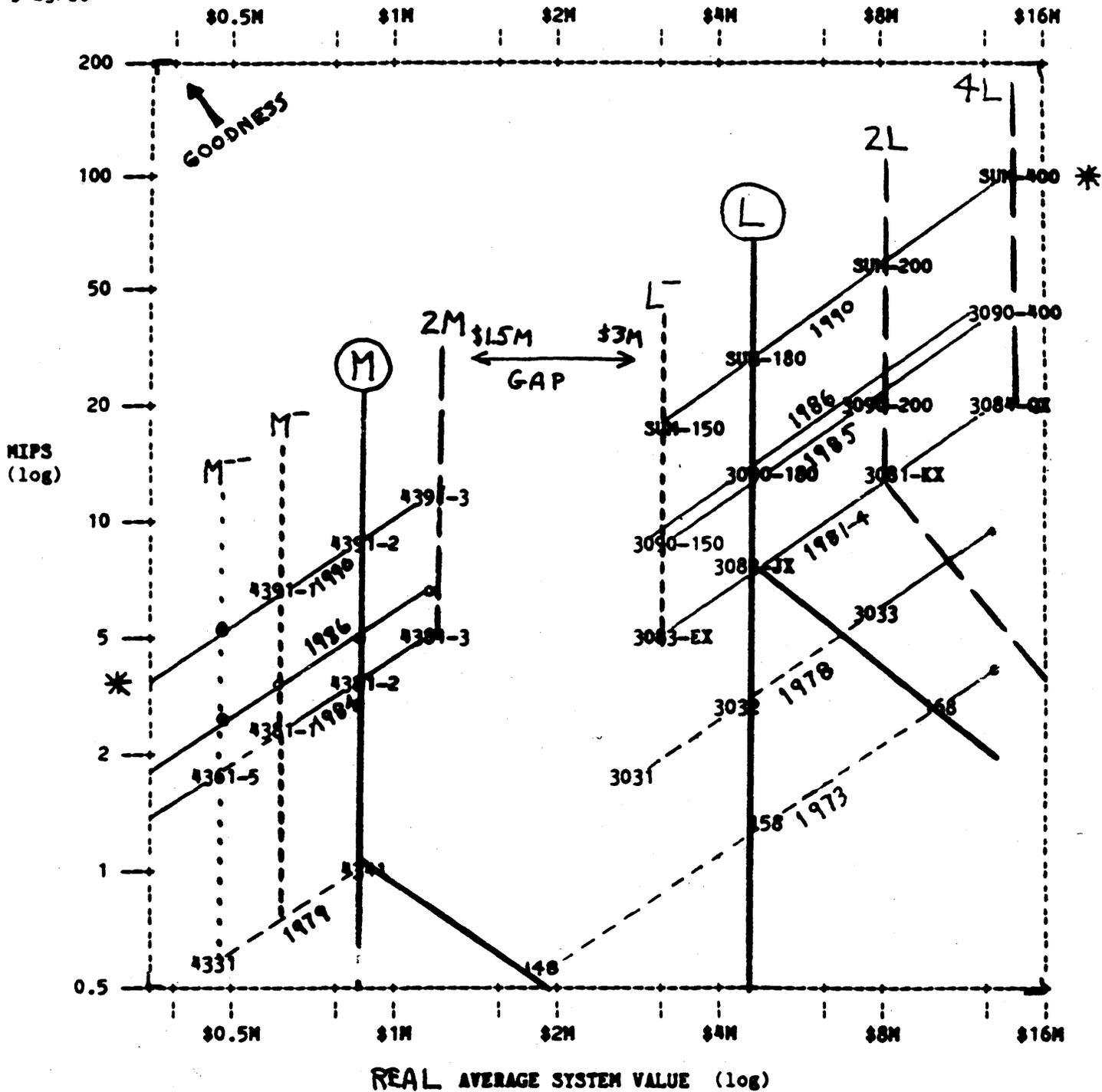
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3/23/86



IBM LARGE SYSTEMS POSITIONING: 1970-1990

SCENARIO 1: BUSINESS AS USUAL

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# Scenario 2: Some competition

## **SETTING:**

**IBM market share falling to 60% range; Japan capturing some high-performance sales, DEC getting some \$1-3M sales.**

## **IBM STRATEGY:**

**Extend 4391 to \$2M with 4x SMP/cluster; reprice SUMMIT downward moderately and move in mid-life kickers.**

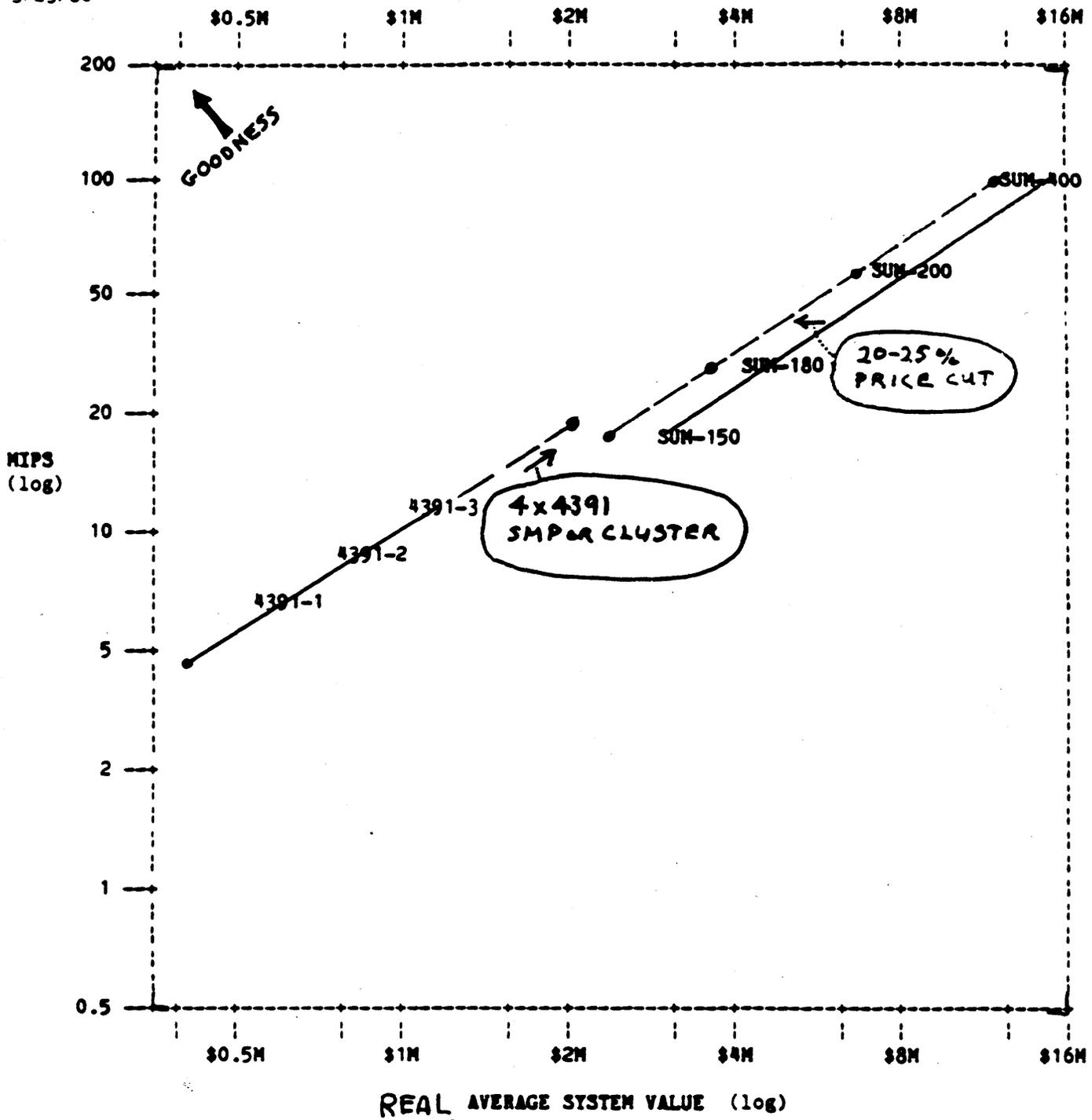
## **IBM PROPOSAL:**

**\$2M - 4391 x 4**  
**\$2.5M - SUMMIT 150**  
**\$3.5M - SUMMIT 180**  
**\$6.5M - SUMMIT 200**  
**\$13M - SUMMIT 400**

IBM LARGE SYSTEMS POSITIONING: 1970-1990

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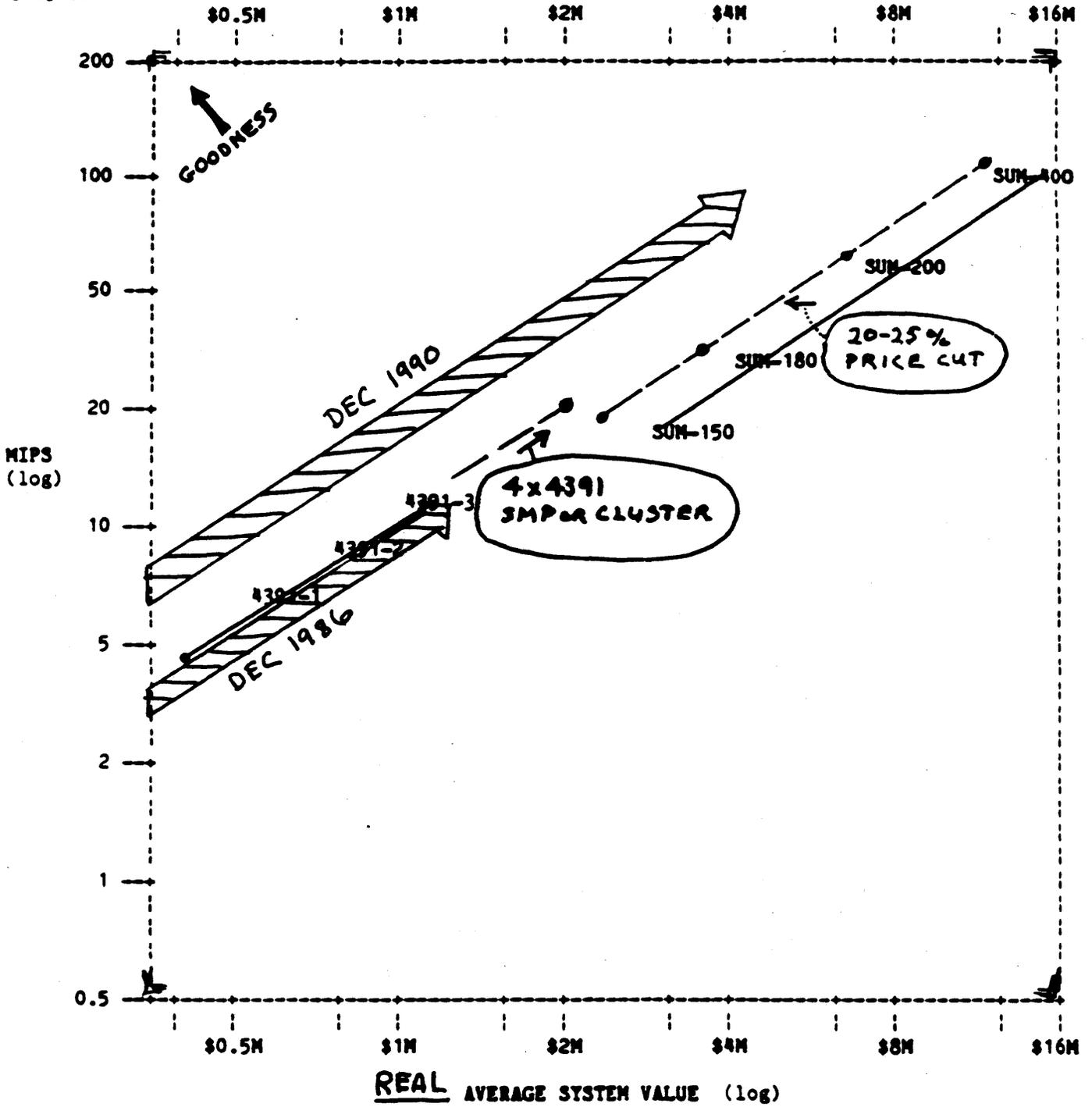
\* SCENARIO 2: SOME COMPETITION



IBM LARGE SYSTEMS POSITIONING: 1970-1990

\* SCENARIO 2: SOME COMPETITION

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3/23/86



# Scenario 3: Serious competition

## **SETTING:**

**IBM market share falling to 50% range; Japan, DEC threatening to crack IBM's dominance, price umbrella.**

## **IBM STRATEGY:**

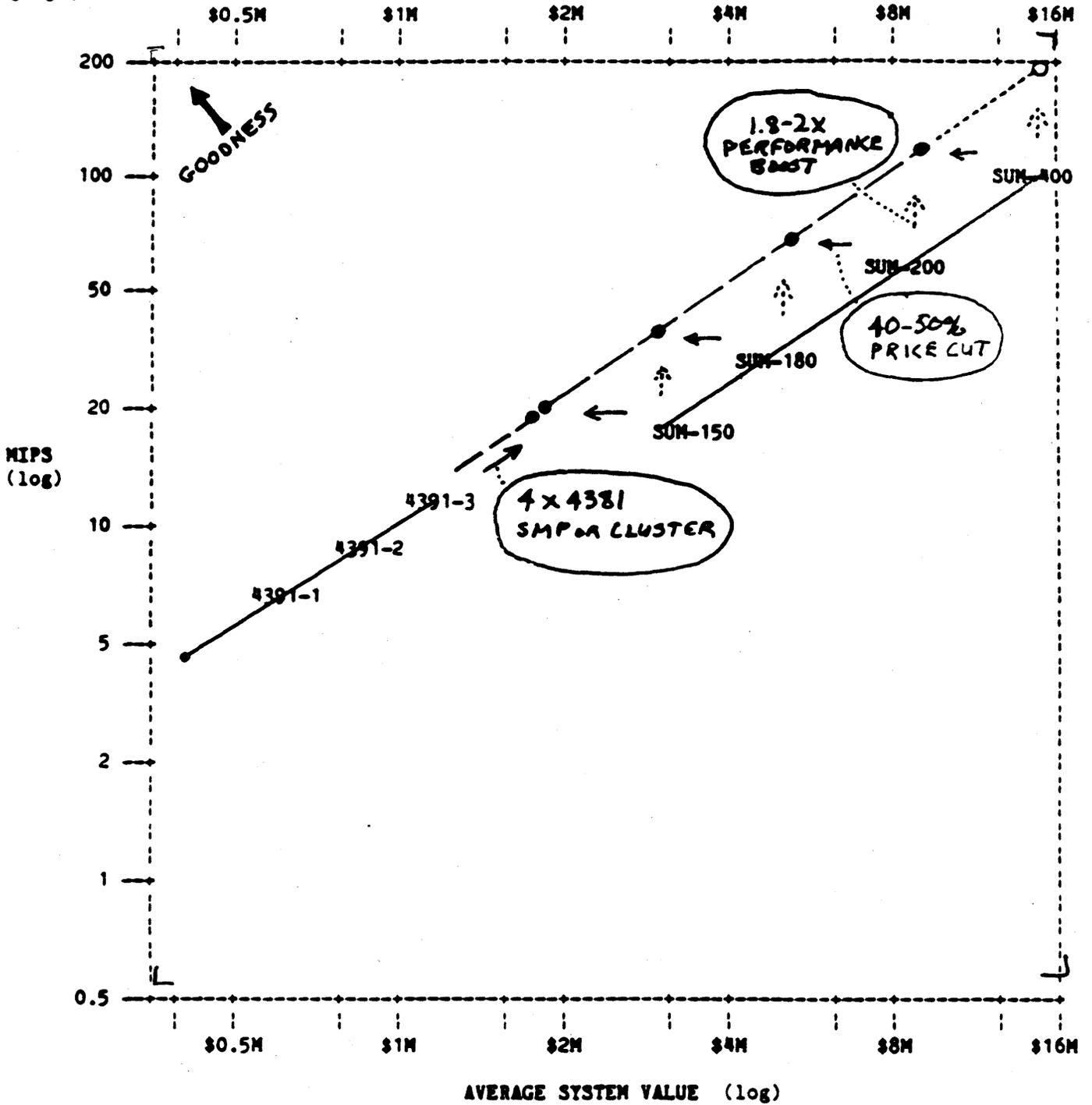
**Move 4391/SUMMIT introductions to 1989; dramatically price SUMMIT line downward; move in mid-life kickers; advance rapidly to next generation technology to regain margins.**

## **IBM PROPOSAL:**

**\$2M - SUMMIT 150 or 4391 x 4  
\$3M - SUMMIT 180; SUM+ 150  
\$4M - SUMMIT 200; SUM+ 180  
\$8M - SUMMIT 400; SUM+ 200  
\$16M - SUM+ 400**

# IBM LARGE SYSTEMS POSITIONING: 1970-1990 SCENARIO 3: SERIOUS COMPETITION

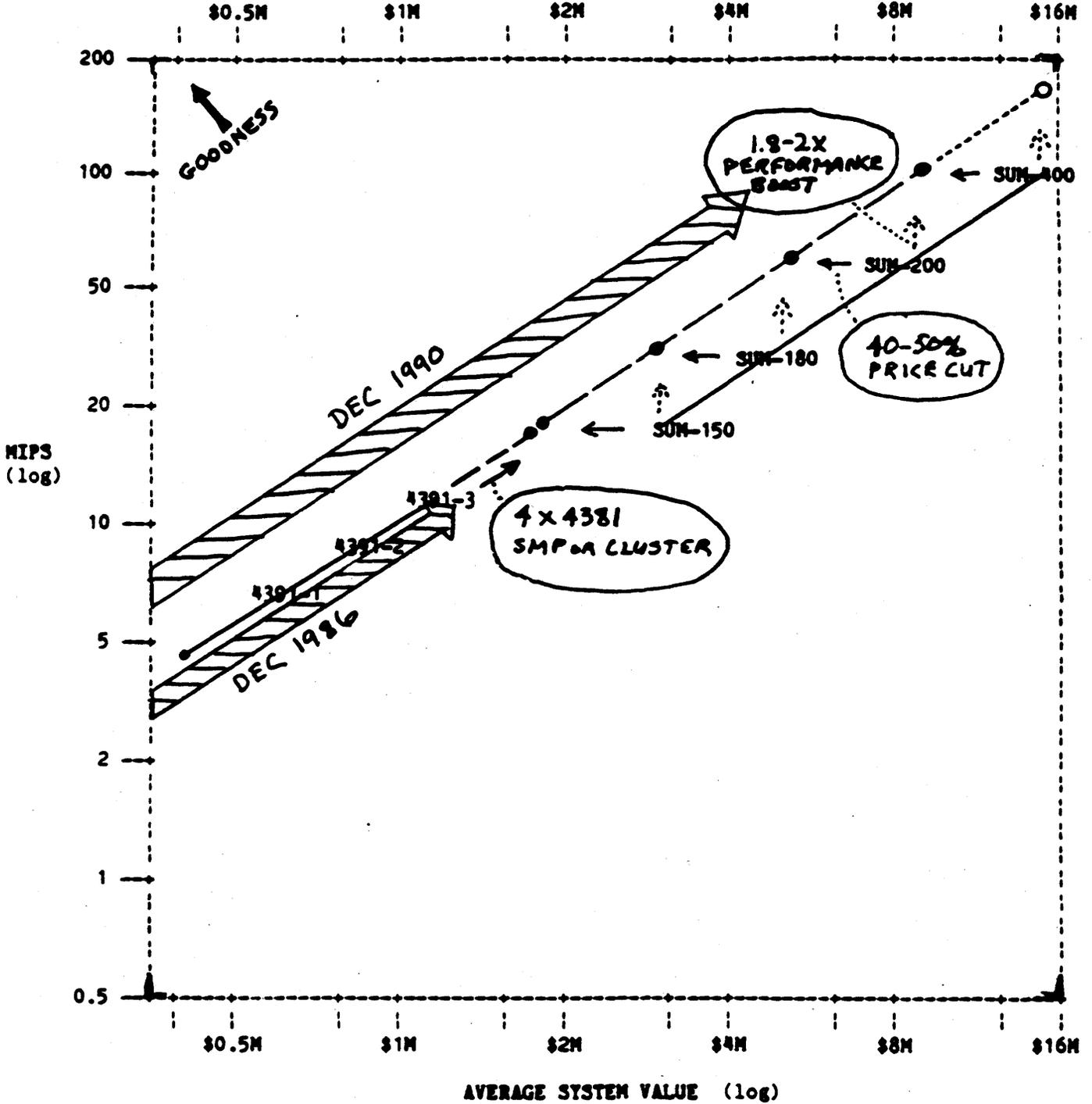
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3/23/86



IBM LARGE SYSTEMS POSITIONING: 1970-1990

SCENARIO 3: SERIOUS COMPETITION

P. Kampas, HPS  
3/23/86



# **\$2M PLUS PROJECT**

## ***MARKET DATA***

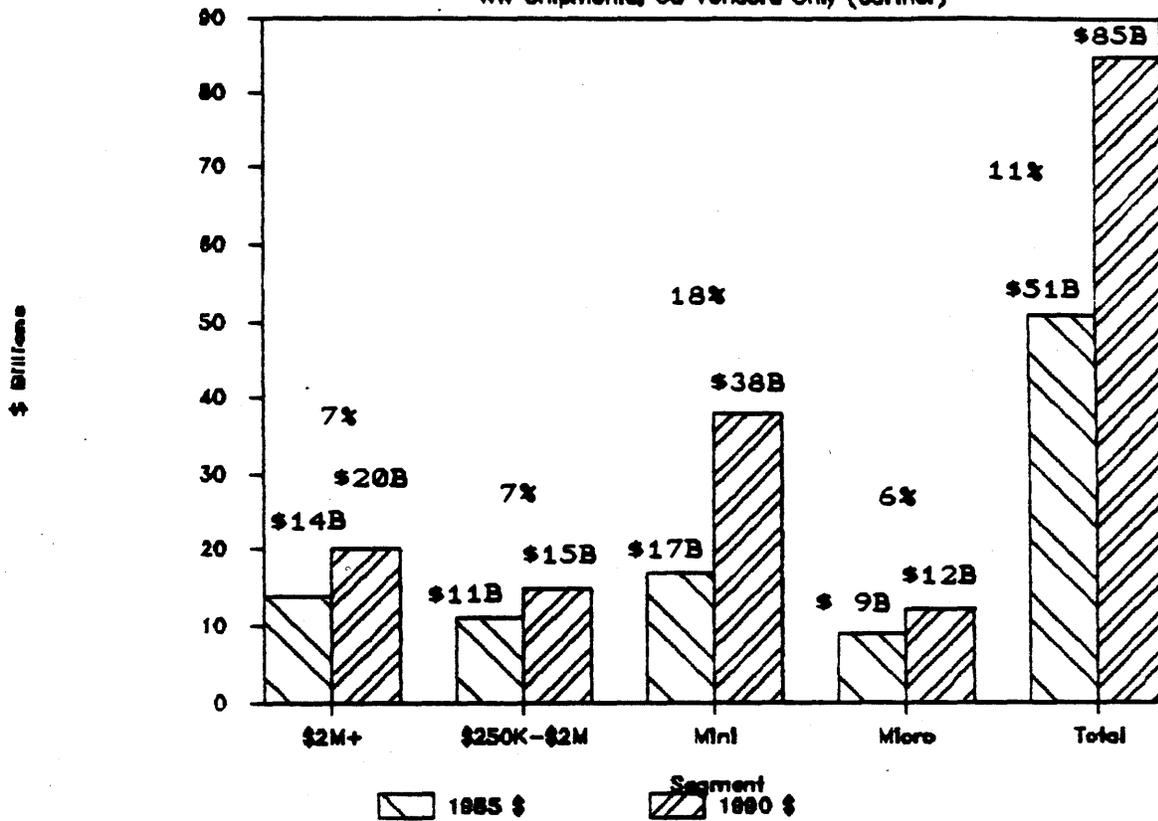
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- **Large market - \$20B in 1990, 24% of total**
- **Low growth - 7% CAGR**
- **Technical segment - \$4B in 1990, 15% CAGR**
- **Dominated by IBM and PCMs - 87% of revenues**
- **Almost all systems run traditional, commercial production applications - 93%**
- **All \$2M+ mainframes are purchased as replacements or additions to existing mainframe installations**

# \$2M PLUS PROJECT

## \$2M+ Market Relative to Other Markets

WW Shipments, US Vendors Only (Gartner)



Mainframe Market Relative to Other Systems Markets

-----  
 (WW Shipments, US Vendors only)  
 Revenues(\$B)  
 Excluding Software and Services

	1985	%	1990	%	CAGR
	-----	---	-----	---	-----
Mainframe(\$2M+)	\$14B	27%	\$20B	24%	7%
Mainframe(\$250K-\$2M)	\$11B	22%	\$15B	18%	7%
Mini	\$17B	33%	\$38B	45%	18%
Micro	\$ 9B	18%	\$12B	14%	6%
TOTAL	\$51B	100%	\$85B	100%	11%

ASV in the \$2M+ bracket is \$5M

Digital growth from LRPs is 27%

Gartner

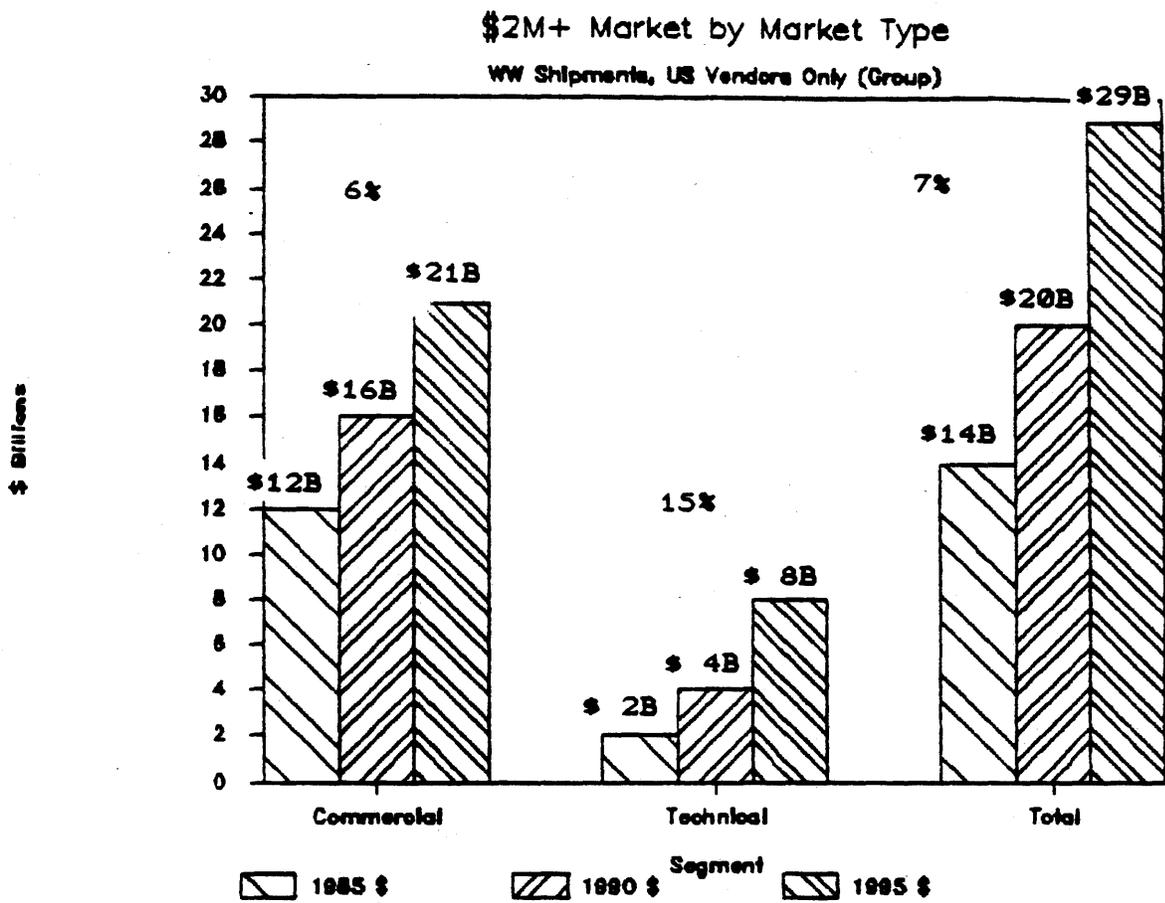
Represents only hardware revenues. Software and services excluded.

Software and services represent approximately the same amount of revenue

The mainframe end of the market grows at a much smaller rate than the minicomputer end that we are familiar with

The \$5M average system value in the \$2M+ bracket indicates that the market spans a very large size range

# \$2M PLUS PROJECT



\$2M+ Mainframe Revenue by Market Type

-----  
(WW Shipments, US Vendors only)  
1985 Revenues(\$B)

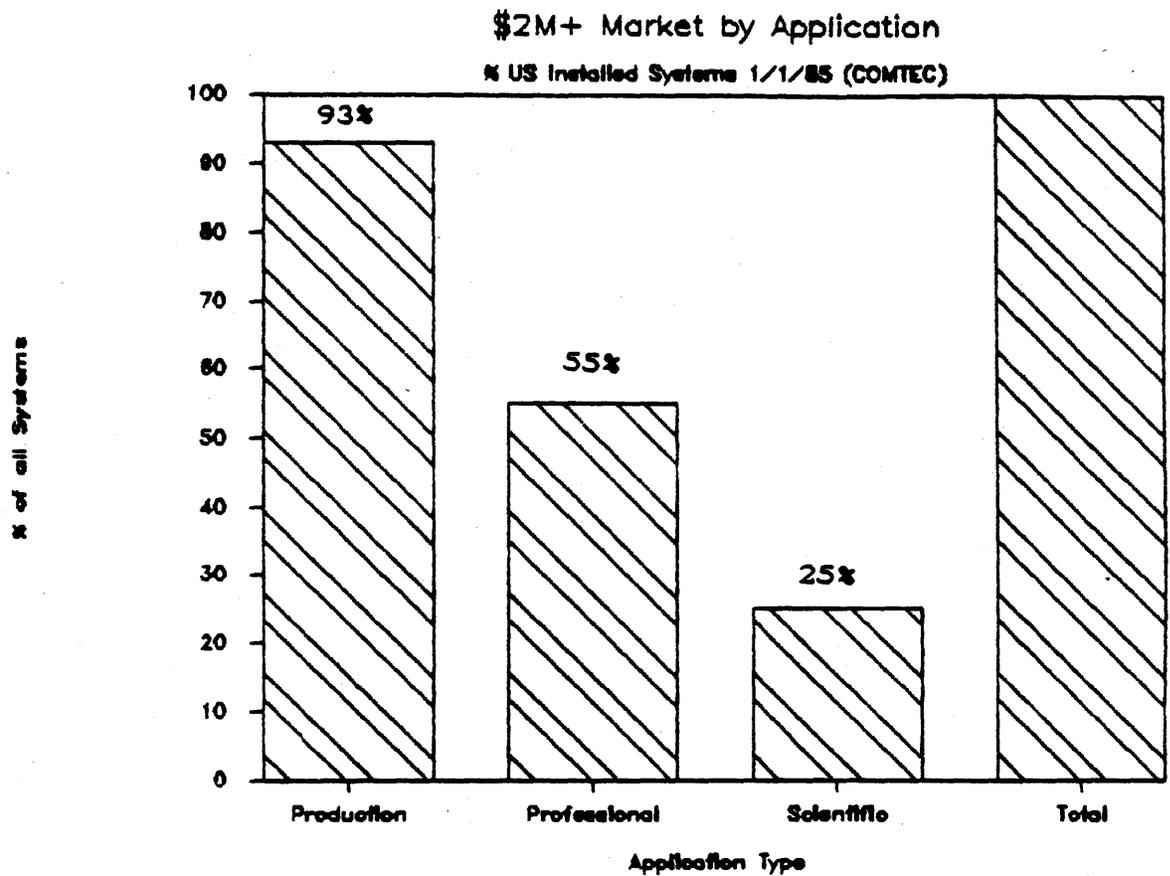
	1985	1990	1995	CAGR
	-----	-----	-----	-----
Commercial	\$12B	\$16B	\$21B	6%
Technical	\$ 2B	\$ 4B	\$ 8B	15%
TOTAL	\$14B	\$20B	\$29B	7%

Team consensus

The is lower than average growth in the commercial segment of the mainframe market

In spite of much higher than average growth in the technical segment, it will continue to be much smaller than the commercial segment for the foreseeable future

# \$2M PLUS PROJECT



Segmentation by Application

(Large Systems \$2M+)

% US Installed Systems as of 1/1/85

	<u>Application</u>	<u>% of all Systems</u>
Production	On-line TP	-
	Accounting	72%
	Data entry	-
	Data Base Mgmt	-
	Total	93%
Professional	Time Share	-
	Distrib. Proc.	-
	Word Proc.	-
	Total	55%
Scientific	Total	25%

Percentages do not add up to 100% because of systems running multiple applications

COMTEC

Percentages add up to less than 100% because a single system may run applications from several classes

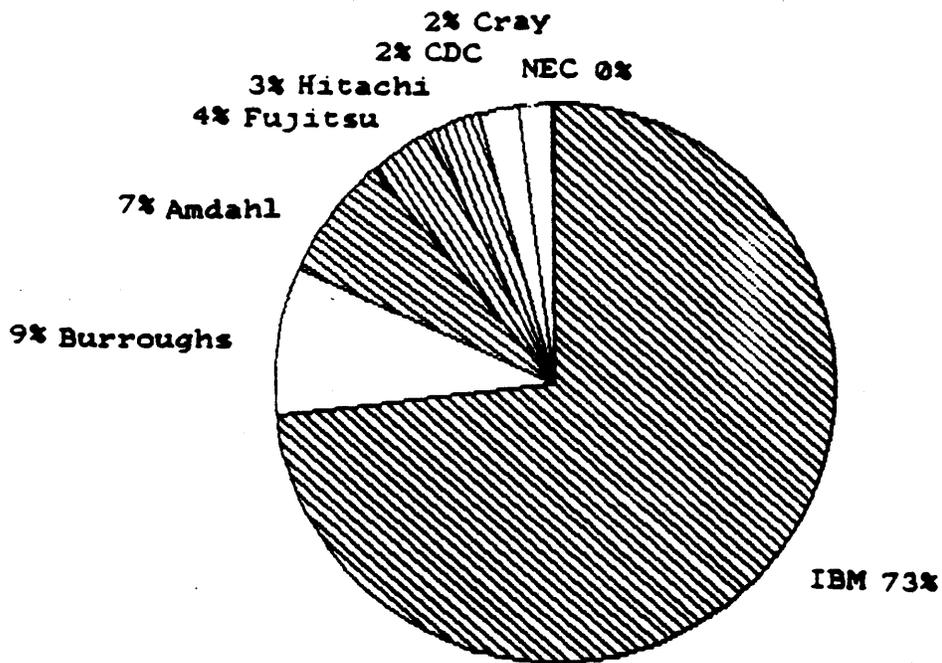
93% of mainframes run traditional mainframe production systems, and 72% run accounting

55% run professional applications, most probably because of "excess capacity"

25% run scientific applications, statistics, modeling, simulation, etc.

# \$2M PLUS PROJECT

\$2M+ Market by Vendor  
WW Shipments, WW Vendors (Infocorp)



Market Segmentation by Vendor

-----  
(WW Shipments, WW Vendors)  
1985 Estimate, \$2M+ Systems

Vendor	Revenue	Share
-----	-----	-----
IBM	\$10,890M	73%
Burroughs	\$ 1,275M	9%
Amdahl	\$ 1,051M	7%
Fujitsu	\$ 568M	4%
Hitachi	\$ 442M	3%
CDC	\$ 345M	2%
Cray	\$ 285M	2%
NEC	\$ 28M	0%
Total	\$14,884M	100%
PCMs	\$ 2,061	14%

IBM+PCMs = 87% of total

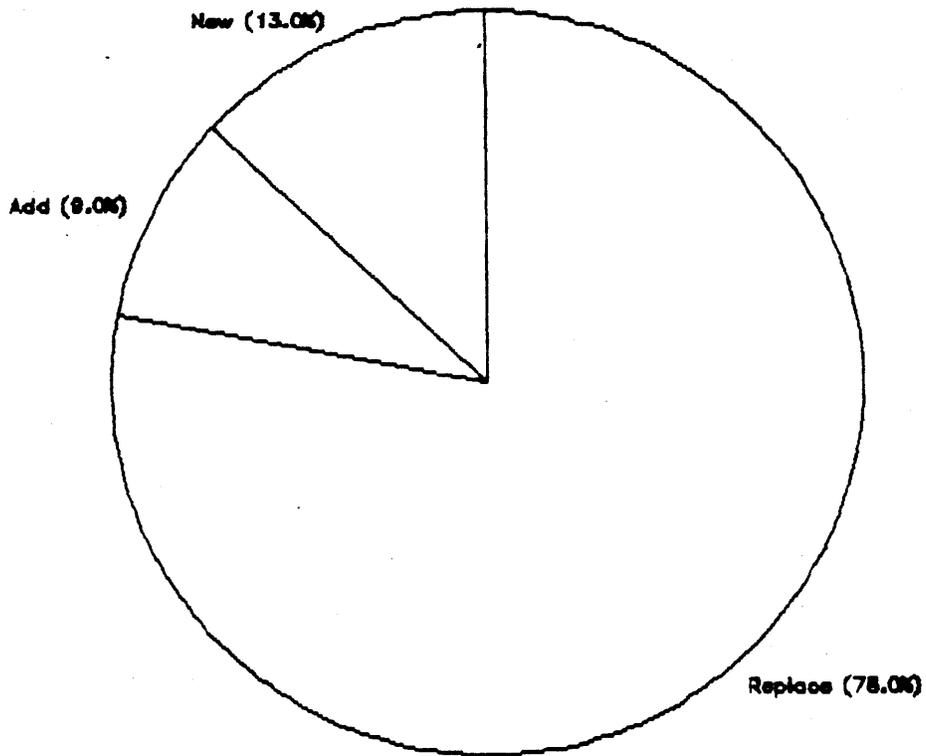
Infocorp Forecast

IBM and PCMs account for 87% of the revenues

Burroughs is the only significant non-IBM-compatible vendor

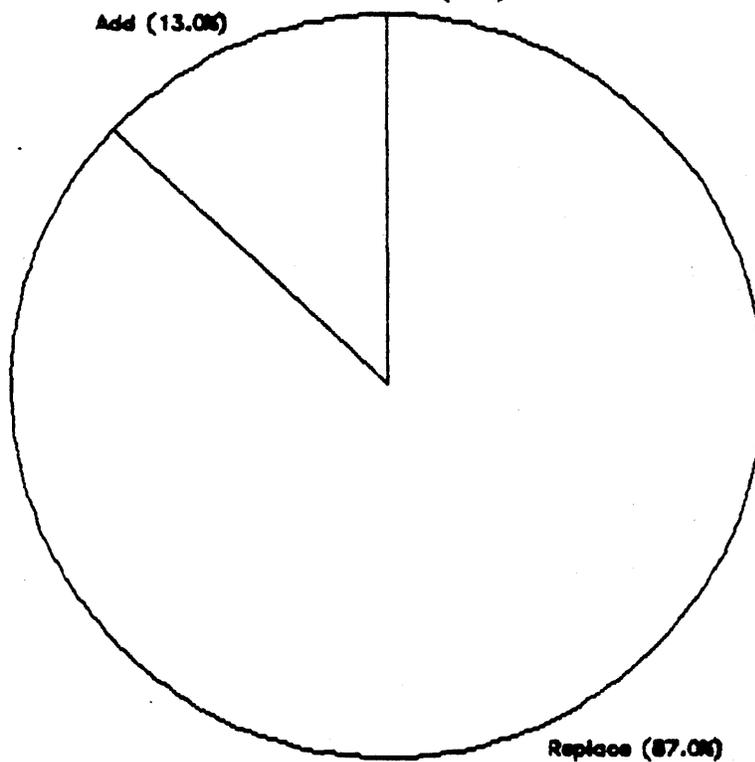
# \$2M PLUS PROJECT

Mainframe Purchasing Plans 1985-1986  
For \$250K+ from US Establishments

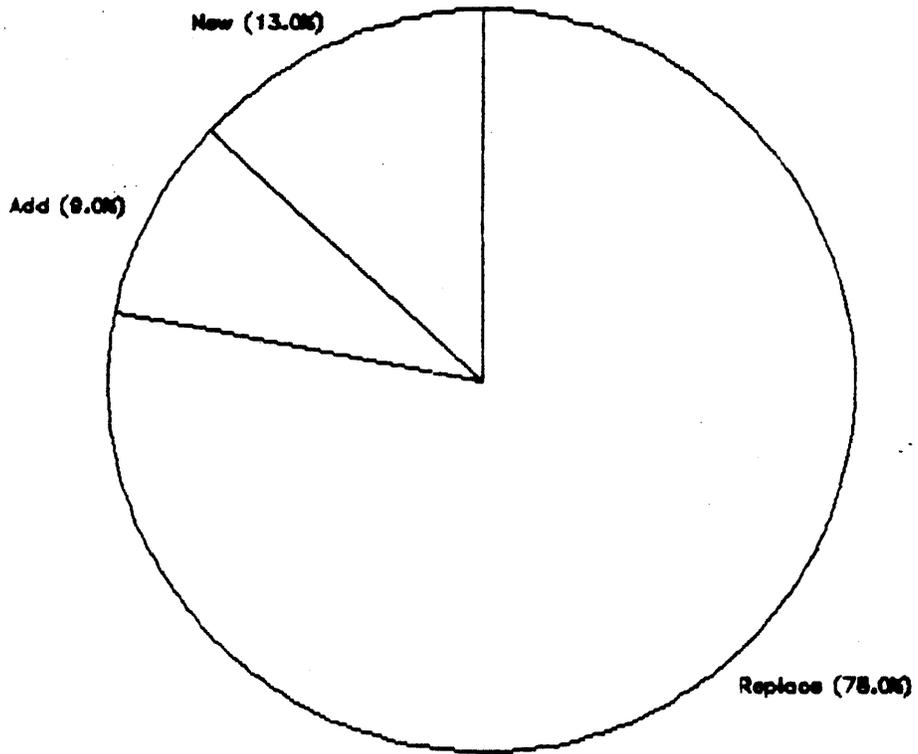


# \$2M PLUS PROJECT

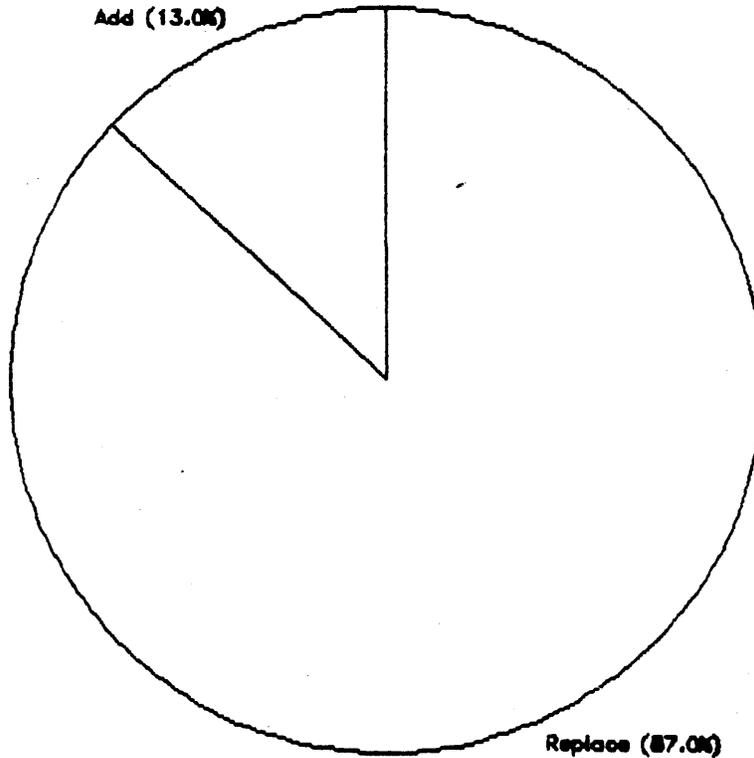
Mainframe Purchasing Plans 1985-1986  
For \$2M+ from US Establishments  
New (0.0%)



Mainframe Purchasing Plans 1985-1986  
For \$250K+ from US Establishments



Mainframe Purchasing Plans 1985-1986  
For \$2M+ from US Establishments



Mainframe Purchasing Plans

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(US Establishments planning to purchase during '85-86)

	% \$250K+ units	% \$2M+ units
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Replace	78%	87%
Add	9%	13%
New	13%	0%

COMTEC

All initial mainframe purchases are systems smaller than \$2M

Most mainframes in the \$2M range are purchased by mainframe installations

Market Data

Large market - \$20B in 1990, 24% of total

Low growth - 7% CAGR

Technical segment - \$4B in 1990, 15% CAGR

Dominated by IBM and PCMs - 87% of revenues

Almost all systems run traditional, commercial production applications - 93%

All \$2M+ mainframes are purchased as replacements or additions to existing mainframe installations

# **\$2M PLUS PROJECT**

## *Requirement & opportunity summary*

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- **NEEDS**

- **Office and manufacturing have no need for a large monolithic system**
- **Engineering & science need systems with very high disk & floating point performance & good price/performance**
- **MIS needs a commercial transaction processing, information center, and production system**

- **OPPORTUNITY**

- **Small outside the MIS area**
- **Represents the tail end of a large opportunity in the \$1M to \$2M space**

# **Requirement and opportunity summary**

*(continued)*

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- **Critical investment areas**
  - **Production system applications**  
**Transaction processing**
  - **Scientific application performance -**  
**Vectors**
  - **System/peripheral reliability**  
**and performance**
  - **Balanced system performance**  
**MIPS**  
**MFLOPS**  
**Single channel disk I/O**
  
- **All these investments are needed even if we**  
**do not build a monolithic \$2M+ system**

# **\$2M PLUS PROJECT**

***Purchasing criteria (market groups)***

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- **Ability to do the job**

- **Applications**
- **Performance**

**ESG, LDP; Application turnaround**

**MIS: Transactions per second**

**OIS: Number of users supported**

# **Purchasing Criteria**

*(continued)*

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- **System reliability**
  - **Application MTTR most critical**
  - **Application MTBF close to a year**
  
- **Vendor recognition**
  - **Business partner**
  - **Viable**

**Committed to solving their problems**  
**Dependable**

	OIS	ESG	MFG	LDP	MIS
Applications	*	*	*	*	*
System reliability		*	*	*	*
Performance	*	*		*	*
Vendor recognition	*	*		*	*

OIS

Approach - Integrated systems  
Capacity and ability to grow  
Ability to support large numbers of users

MIS

Adequate systems for job at hand - reliability  
Recognition as viable vendor  
Application support  
    Internal applications development  
    Third party software

MFG

Complete solutions  
System reliability  
Support

SCI

Performance  
Functionality (# of applications)  
Reliability

ESG

Ability to do job - Performance in M/GFLOPS  
Reliability of system  
Service Capabilities

# **\$2M PLUS PROJECT**

## **Barriers to Digital success**

*(Market groups)*

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- **Perceived system reliability**
  - **MTBF to short**
  - **MTTR to long**
  - **Greatest problem with peripherals**
  
- **Image/recognition**
  - **Business partnership**
  - **Not viewed as a commercial vendor**
  - **Ability/commitment to provide "fail safe" service**

	OIS	ESG	MFG	LDP	MIS
Image/recognition	*				*
Perceived reliability	*	*		*	
Ability to sell		*			*
Alternate solutions	*		*		

OIS

Digital not viewed as a provider of mainstream applications  
 Digitals ability/commitment to provide "fail safe" service

MIS

Investment in existing software systems  
 Lack of image as a Commercial IS vendor  
 Lack of software (TP, Database)

SCI

IBM entrenchment  
 Application either run on smaller or larger computers  
 Digital's reputation for poor reliability, difficult to do business with

ESG

Ability to provide systems with perceived value of \$2M  
 Perceived problems with system reliability  
 Ability to maintain leadership in interim period

# **\$2M PLUS PROJECT**

***Investment/system requirements (Mkt. groups)***

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- **Applications**
- **Floating point performance - Vector H/W**
  - **Transparent, Automatic Decomposition/  
Vectorization**
- **Transaction processing**

## ***Investment/system requirements (Mkt. groups)***

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- **Disk I/O**
  - **Throughput to application**
  - **Backup performance**
- **Reliability**
- **System management**
  - **Large databases**

	OIS	ESG	MFG	LDP	MIS
Transaction processing			*		*
Performance, MFLOPS/MIPS			*		*
Performance, Disk		*		*	*
Automatic Decomp./Vect.		*		*	

MIS

Storage 6-8GB/MIP  
Transaction processing @ 150 TPS  
Dramatically increased reliability

OIS

Recommends investing in distributed processing

SCI

Project-oriented sales teams  
Application throughput  
    single job  
        400 MFLOPS  
        200 VUPS  
        10-30 MB/SEC single channel I/O  
VAX fortran compatibility

ESG

High reliability  
Fast memory/disk access  
SMP

# Opportunity for Digital

## (Market groups)

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	<i>1990</i>	<i>1995</i>
	<i>units</i>	<i>units</i>
<b>Manufacturing</b>	<b>10</b>	<b>30</b>
<b>Engineering</b>	<b>20</b>	<b>35</b>
<b>Office</b>	<b>20</b>	<b>50</b>
<b>Science</b>	<b>32</b>	<b>60</b>
<b>MIS</b>	<b>340</b>	<b>700</b>
<b>TOTAL</b>	<b>422</b>	<b>875</b>
<b>Market share</b>	<b>4.4%</b>	<b>6.4%</b>

- **No cluster add-ons included**
- **System value over \$2M**

## Requirement and Opportunity Summary

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### Needs

Office and Manufacturing have no need for a large monolithic system

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### Opportunity

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Represents the tail end of a large opportunity in the \$1M to \$2M space

## Requirement and Opportunity Summary

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### Critical investment areas

Production system applications

Transaction processing

Scientific application performance

Vectors

System/peripheral reliability and performance

Balanced system performance

MIPS

MFLOPS

Single channel disk I/O

ALL THESE INVESTMENT ARE NEEDED EVEN IF WE DO NOT BUILD A  
MONOLITHIC \$2M+ SYSTEM

# **\$2M PLUS PROJECT**

## ***RISKS***

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- **Program incomplete before product**
- **Retaliation by IBM**
- **Japan**
- **Opportunity risk**