# Johnson Space Center
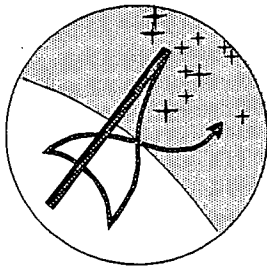
## Information Systems Directorate

# Networking at JSC

presentation to
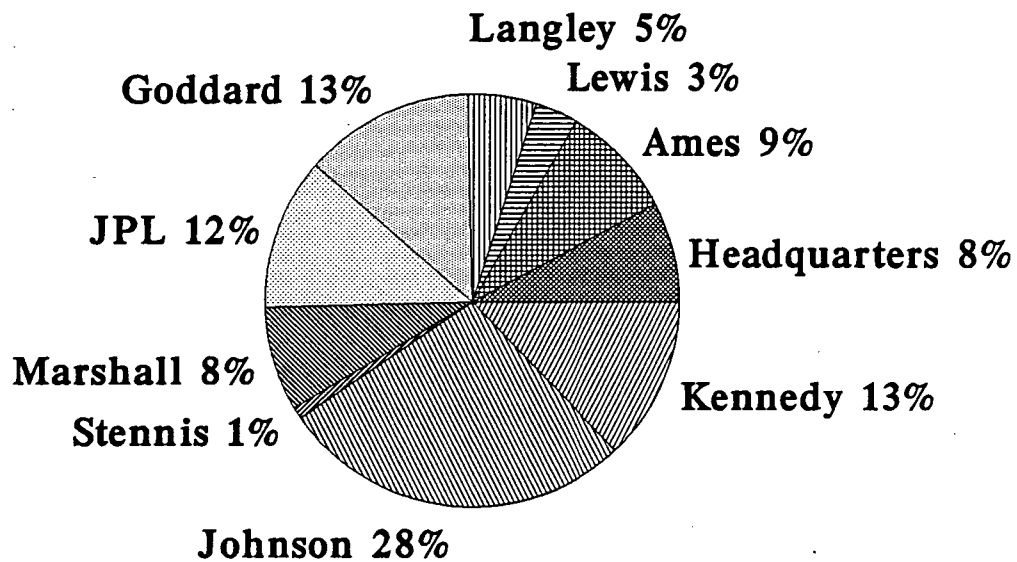"Networking as a Strategic Tool"
Conference

John R. Garman
April 30, 1991

netstc00-jrg10421

# Presentation Outline

- JSC Network Perspectives

- IRM Approach at JSC

- The Information Systems Directorate

- Approach to JSC Networking Growth and Consolidation

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# NASA IRM Budget by Center

Langley 5%
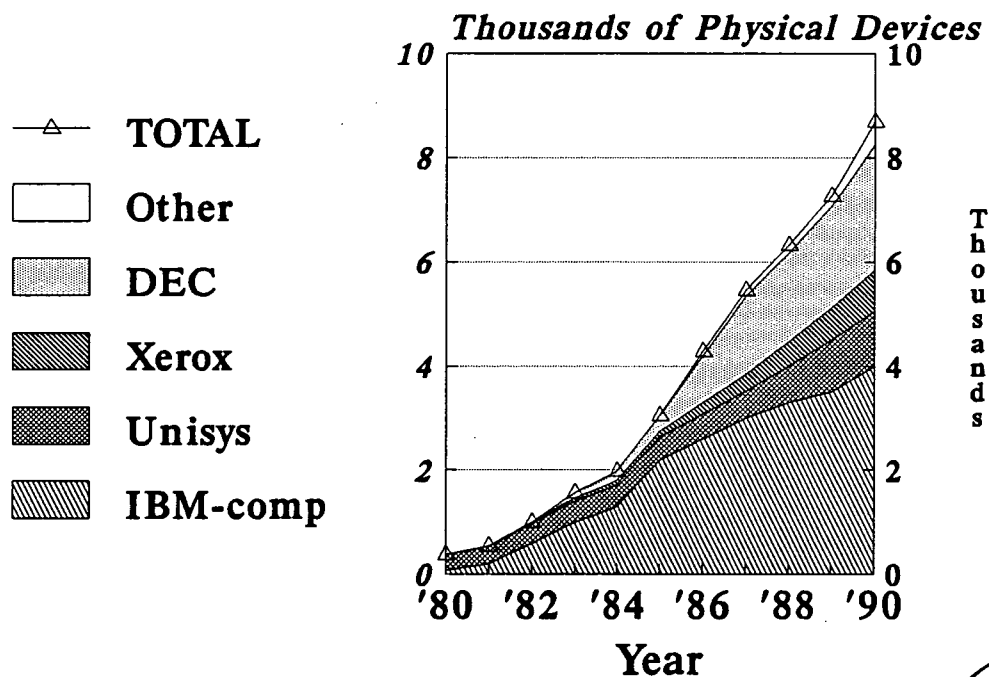
Lewis 3%

Goddard 13%

Ames 9%

JPL 12%

Headquarters 8%

Marshall 8%

Kennedy 13%

Stennis 1%

Johnson 28%

3

itsp01-jrg10421

Source: GSA Report based on FY89 ITSP

# JSC Campus Networks

Thousands of Physical Devices

—△— TOTAL

☐ Other

▨ DEC

▧ Xerox

▨ Unisys

▨ IBM-comp

10

8

6

4

2

0

10

8

6

4

2

0

'80   '82   '84   '86   '88   '90

Year

Thousands

net01-jrg10417

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# Networks Evolution at JSC
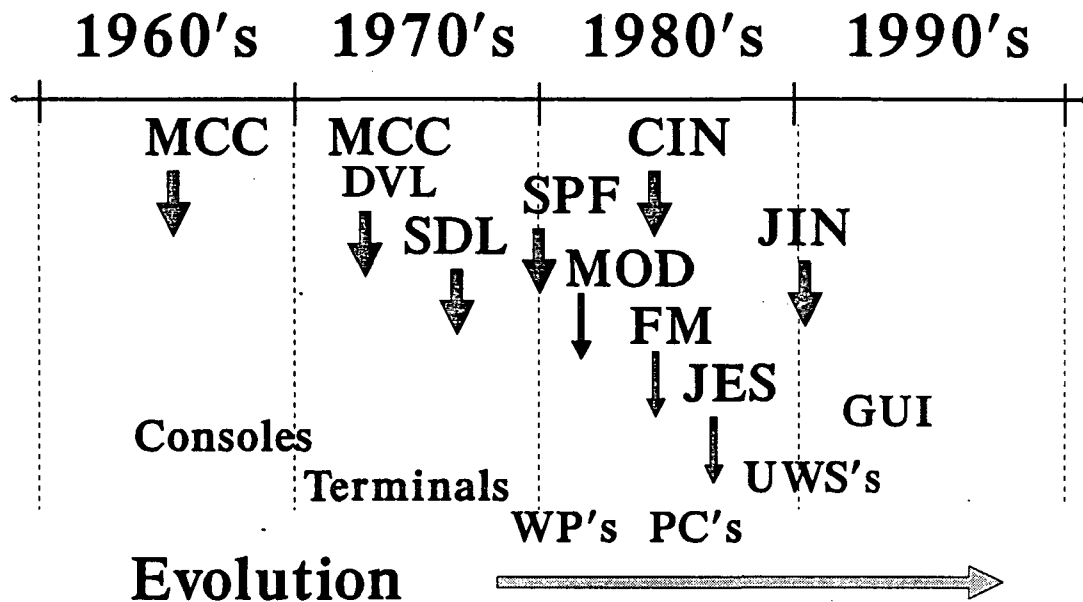
| 1960's | 1970's | 1980's | 1990's |
|---|---|---|---|

MCC

MCC
DVL

SPF

CIN

SDL

MOD

JIN

FM

JES

GUI

Consoles

Terminals

UWS's

WP's  PC's

Evolution

---

# Networking Evolution

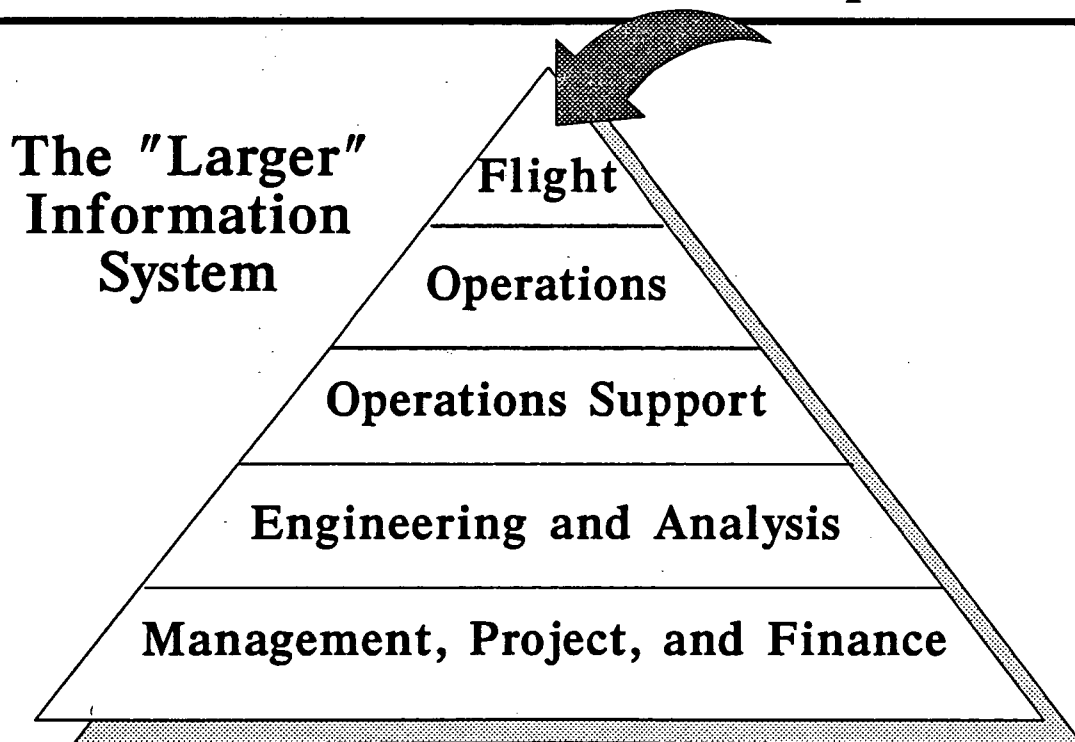| 1960's | 1970's | 1980's | 1990's |
|---|---|---|---|
| Hosts and "Cards" | Hosts and Terminals | Micros and Networks | Networks as the Utility |
| "Batch" | "Inter-active" | "Shared" | "Distributed" |
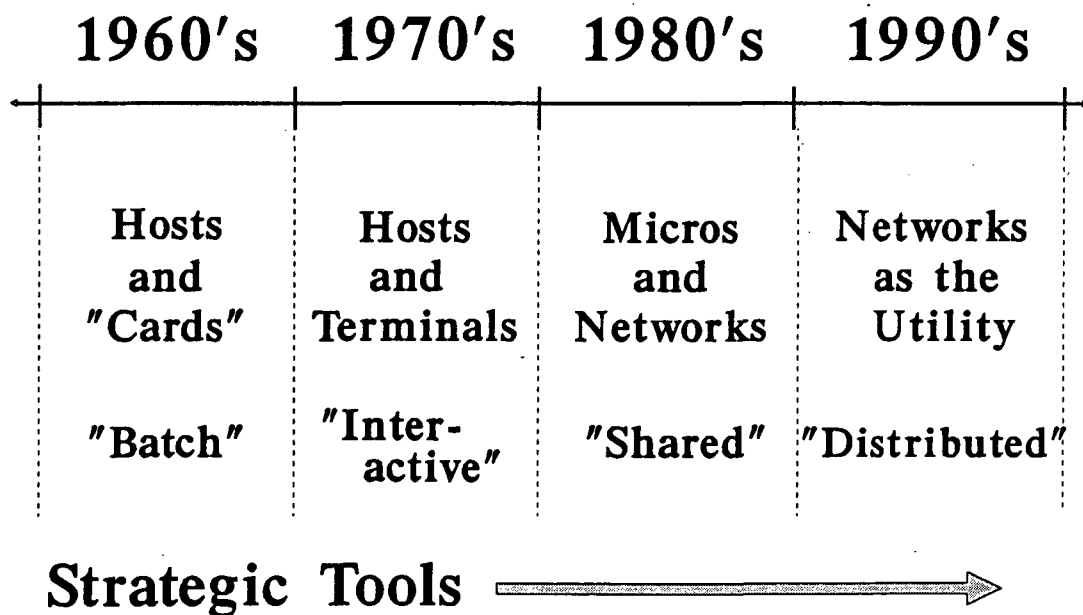
Strategic  Tools

# Networking as a Strategic Tool

- Since the 1960's, computing power has been shifting from centralized hosts to distributed environments

- Networks are a strategic tool for distributed computing platforms

- Strategic planning is necessary to insert the technology, and increase reliability and availability of networks
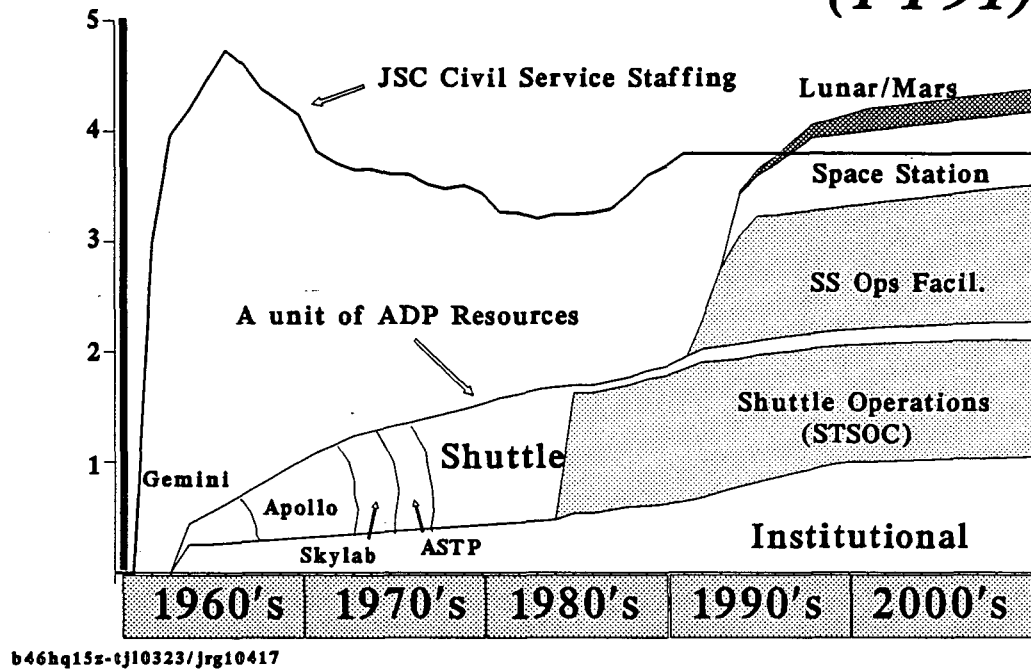
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# I/S Environment - "Mission" Perspective

The "Larger" Information System

- Flight
- Operations
- Operations Support
- Engineering and Analysis
- Management, Project, and Finance

# JSC ADP vs. Civil Service Staffing
## (FY91)



JSC Civil Service Staffing

Lunar/Mars

Space Station

SS Ops Facil.

A unit of ADP Resources

Shuttle Operations (STSOC)

Shuttle

Gemini

Apollo

Skylab  ASTP

Institutional

| 1960's | 1970's | 1980's | 1990's | 2000's |

b46hq15z-tj10323/jrg10417

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# I/S Quality Approach - Efficiency



#1

*Reduce Unique Resources*

A  B  C  D

A  B  C  D

A B C D
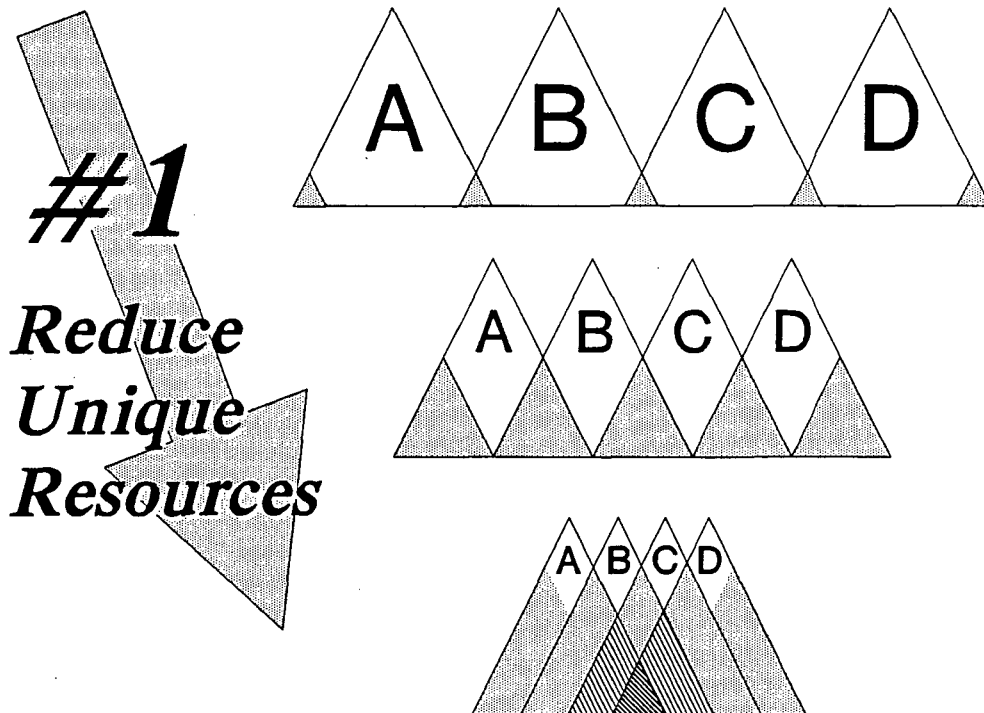
roi10-jrg10210

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# I/S Quality Approach - Focus

*#2*

*Focus on the Primary Business*

A  B  C  D
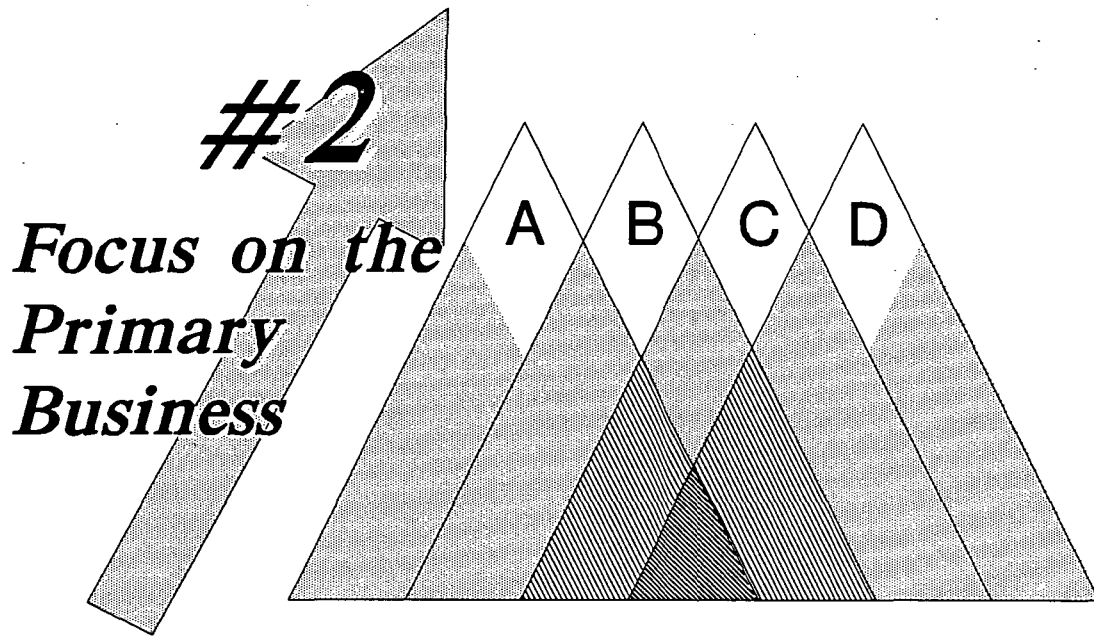
# I/S Quality Approach - Commonality

A  B  C  D
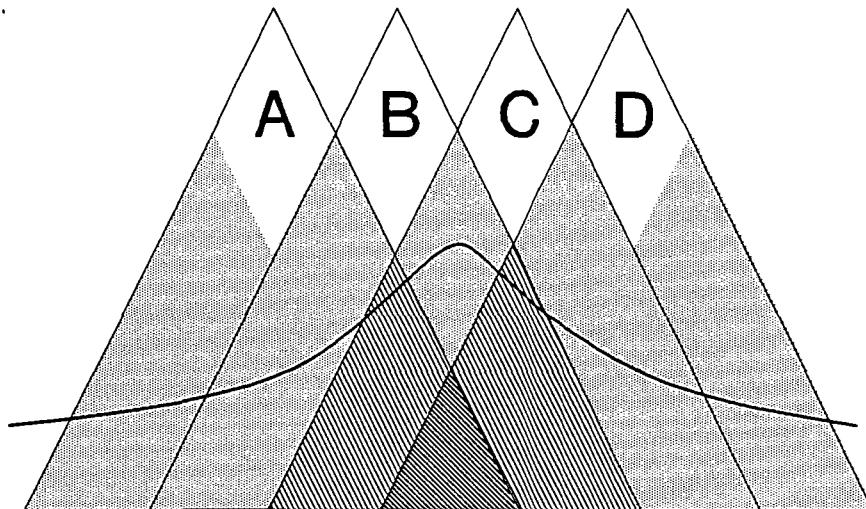
# I/S Management/Contract Evolution

A   B   C   D

*Central Management*

*"Outsourcing"*
*single contracts for single functions*

## Platform Services
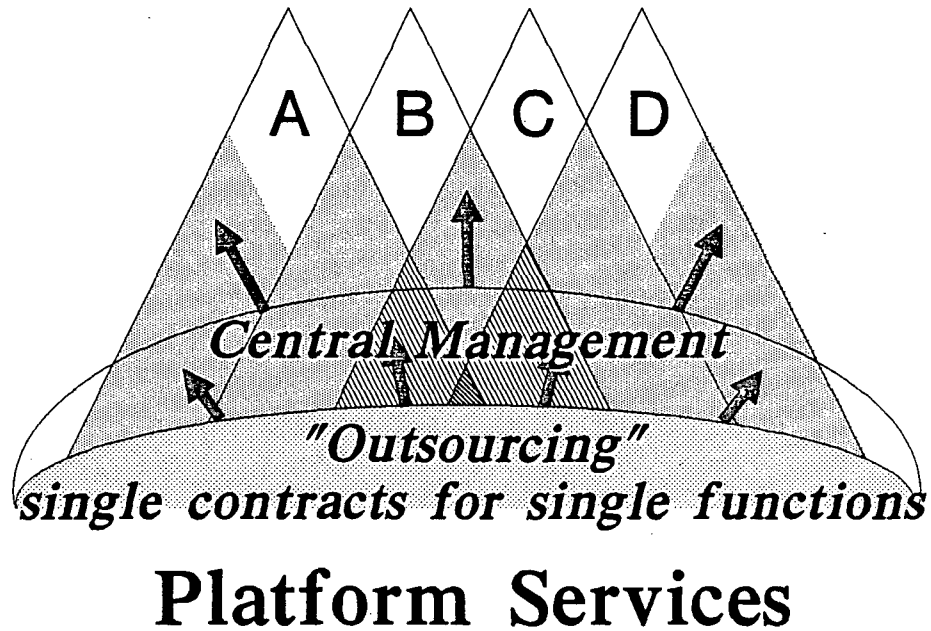
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# ISD "Return-on-Investment"

| Legend | |
|---|---|
| ▨ | FY91 $ (Millions) |
| ✳ | CIS MIPS |
| ▱ | CIS DISK (gig's) * |
| ✕ | "Phones" (x10 >8K) * |
| ◇ | SR's (x100) |
| ⧖ | UWS (x100) |

Increasing "Yield"

"Flat" Investment

FY88  FY89  FY90  FY91
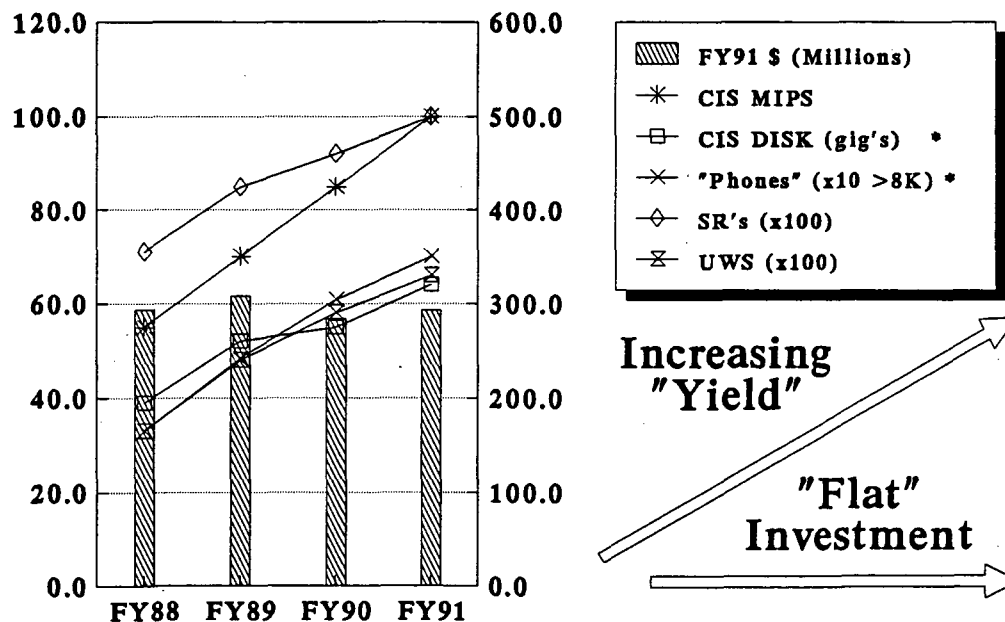
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*Note: FY91 statistics are projections*

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## Information Systems Directorate "Charter"

"ISD is established to lead and support
the IRM Council in the establishment
of Centerwide standards and policies
for information services and to
consolidate, in time, all institutional
information services under a single
JSC organizational structure".

*Aaron Cohen*
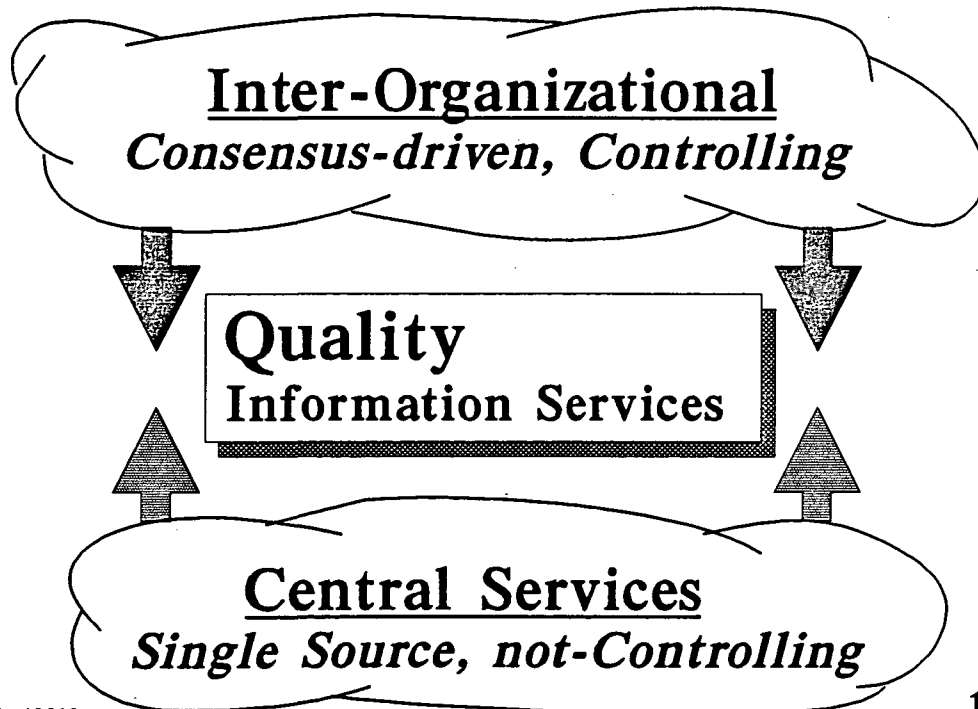*Director, Johnson Space Center*
*JSC Announcement 90-062*
*March 30, 1990*

isd25-jrg10210

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# General IRM Approach for JSC

Inter-Organizational
*Consensus-driven, Controlling*

Quality
Information Services

Central Services
*Single Source, not-Controlling*

isd23f-jrg10210

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# JSC Networking Challenges

- Proliferation and Autonomy

- Rapid and continuing growth

- Acquisition Risks in Standards

- ADP security
  - unknown vulnerabilities
  - no ranked services

- Budget

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# JSC Network Requirements
# Functions

- Distributed Processing
- Growth
- Heterogeneous
- Security
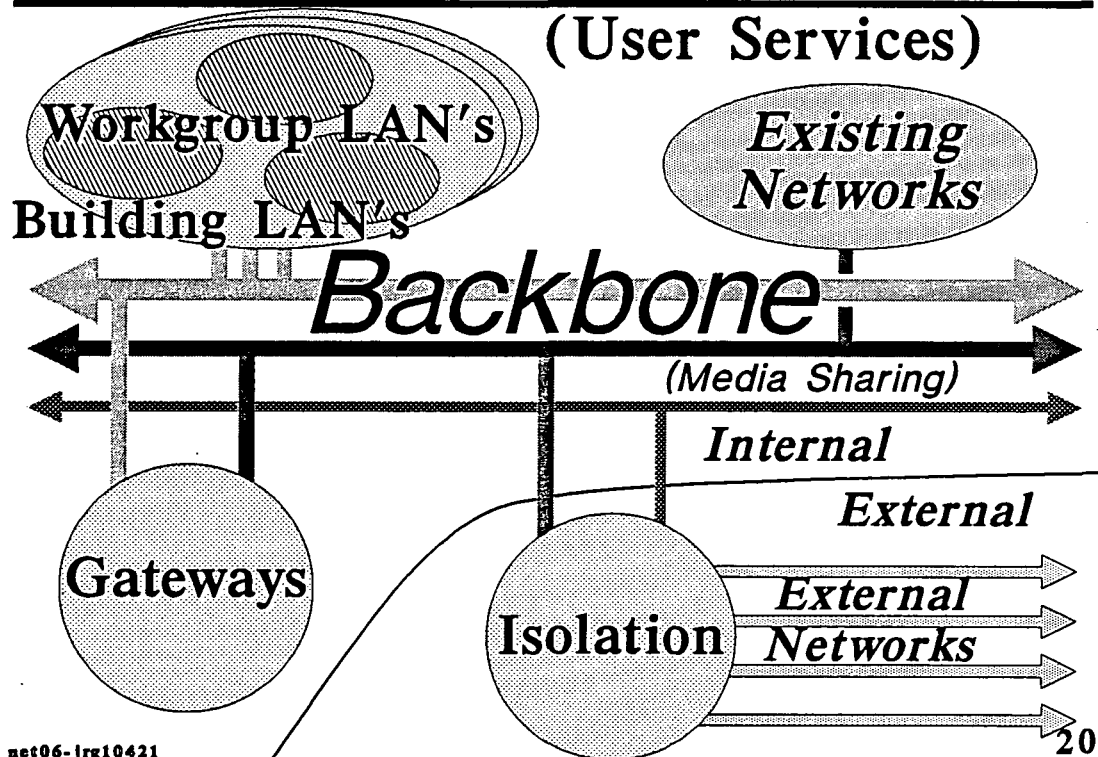- Management

# JSC Network Requirements
# Results

- A full range of network services on an institutional platform

- Open (authorized) access

- Focal point for outside interfaces

- Consolidation and integration of resources at JSC

# JSC Information Network
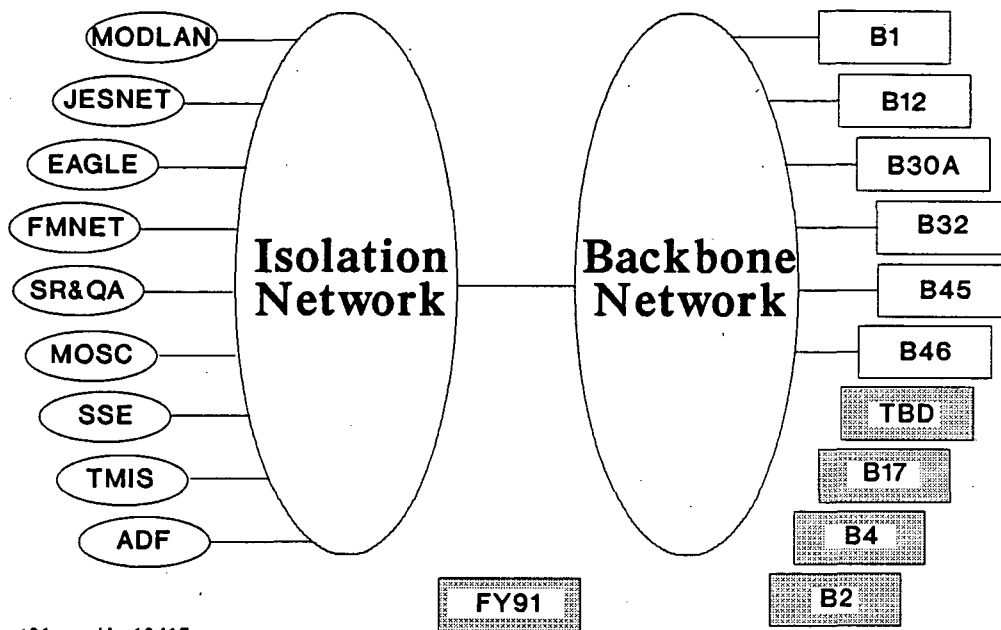## (User Services)



Workgroup LAN's

Building LAN's

Existing Networks

*Backbone*

(Media Sharing)

Internal

External

Gateways

Isolation

External Networks

# JSC Information Network Status



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jlnnet01-raw/jrg10417                                              21
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# CONCLUSION

- Networks have evolved and proliferated rapidly in the industry

- JSC is undergoing fundamental changes (Multi-programs in particular)

- Networkings is the foundation of the next major evolution in I/T strategies (Consolidation via distributed processing)

- Network Technology isn't up to the task yet! (standards, products, speed)

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# The End

### of the briefing......