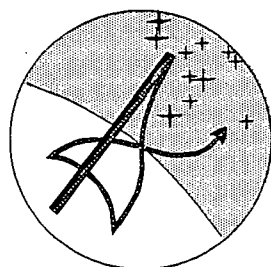N92-12498

NASA 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
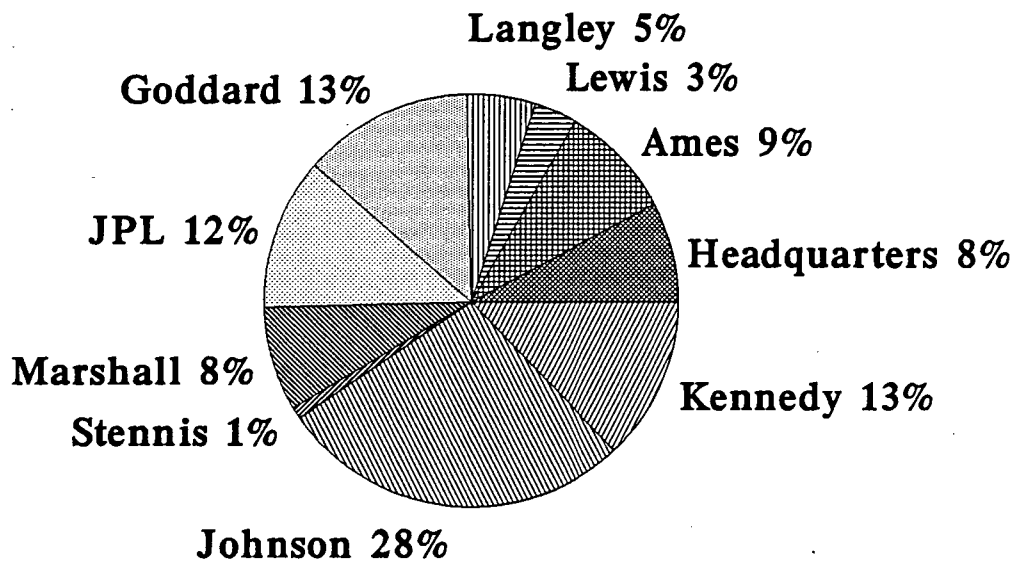

Presentation Outline

- ## JSC Network Perspectives

- ## IRM Approach at JSC

- ## The Information Systems Directorate

- ## Approach to JSC Networking Growth and Consolidation

netstc01-jrg10421

2

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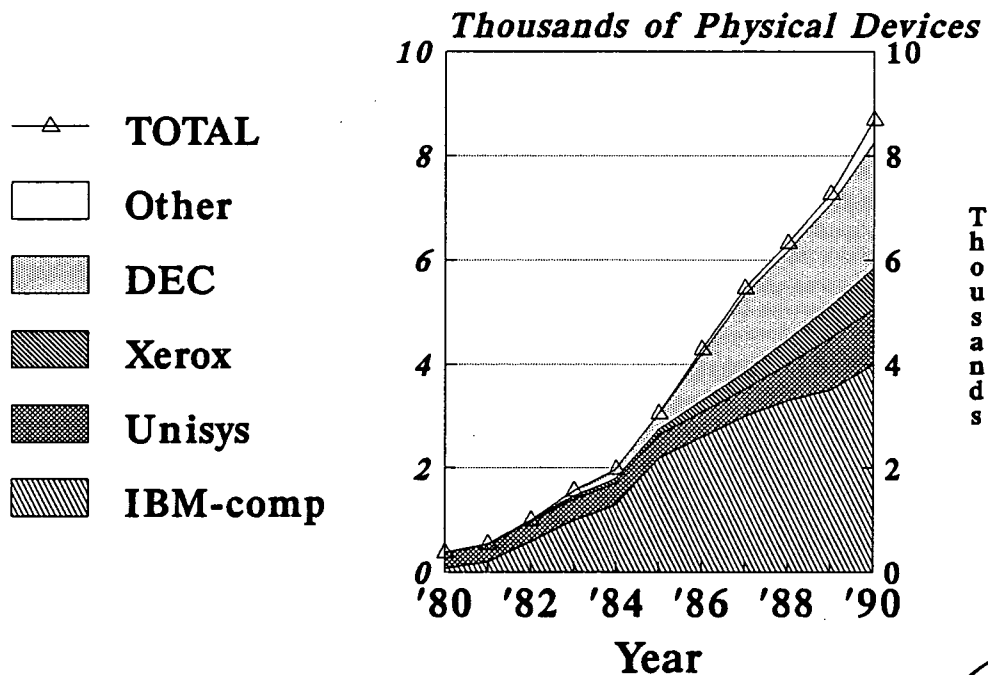
NASA IRM Budget by Center

Langley 5%

Goddard 13%

Lewis 3%

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

Thousands

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

Year

net01-jrg10417

4

Networks Evolution at JSC
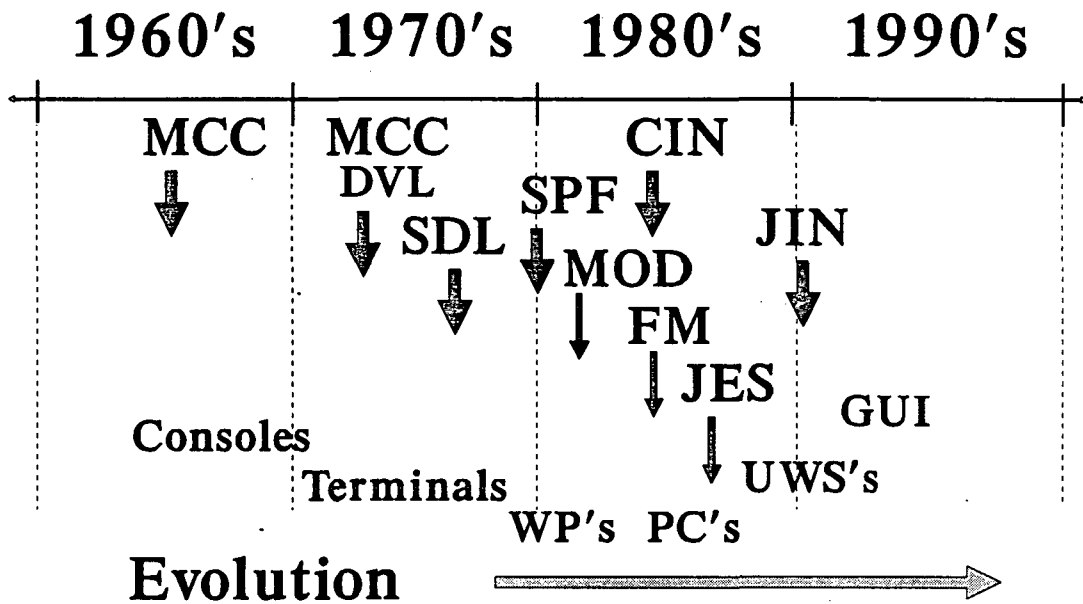
1960's	1970's	1980's	1990's

MCC

MCC
DVL

SDL

SPF

CIN

MOD

FM

JES

JIN

GUI

UWS's

Consoles

Terminals

WP's   PC's

Evolution ⟹

Networking Evolution

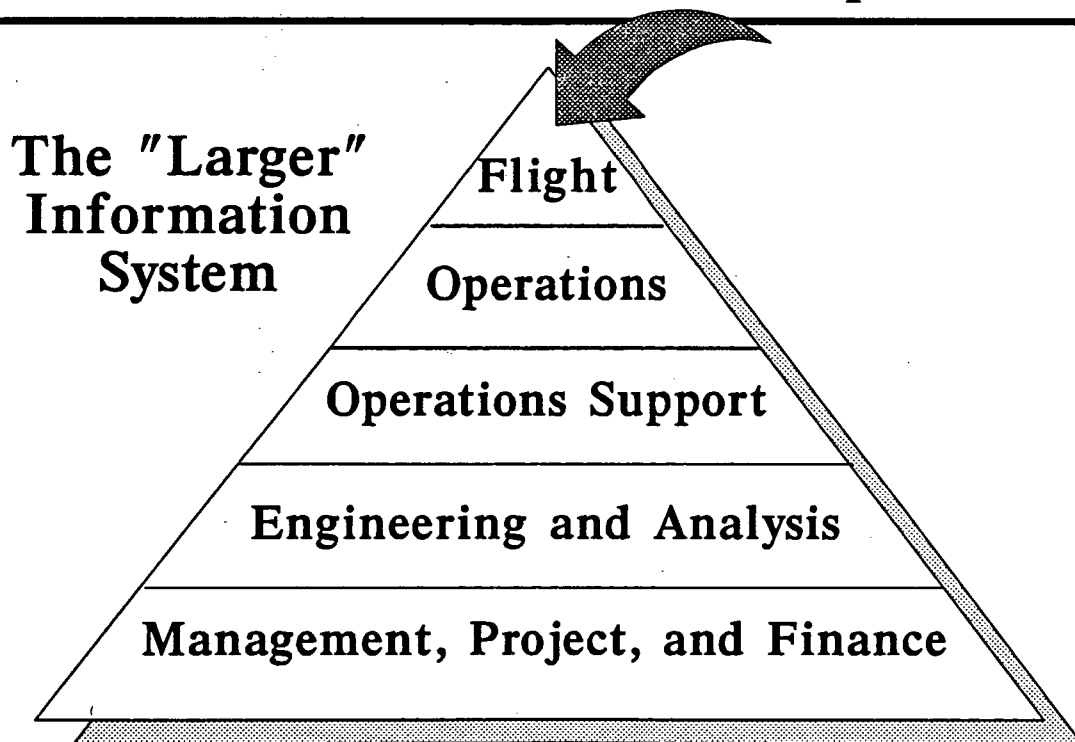| 1960's	1970's	1980's	1990's
Hosts and "Cards"	Hosts and Terminals	Micros and Networks	Networks as the Utility
"Batch"	"Inter-active"	"Shared"	"Distributed"
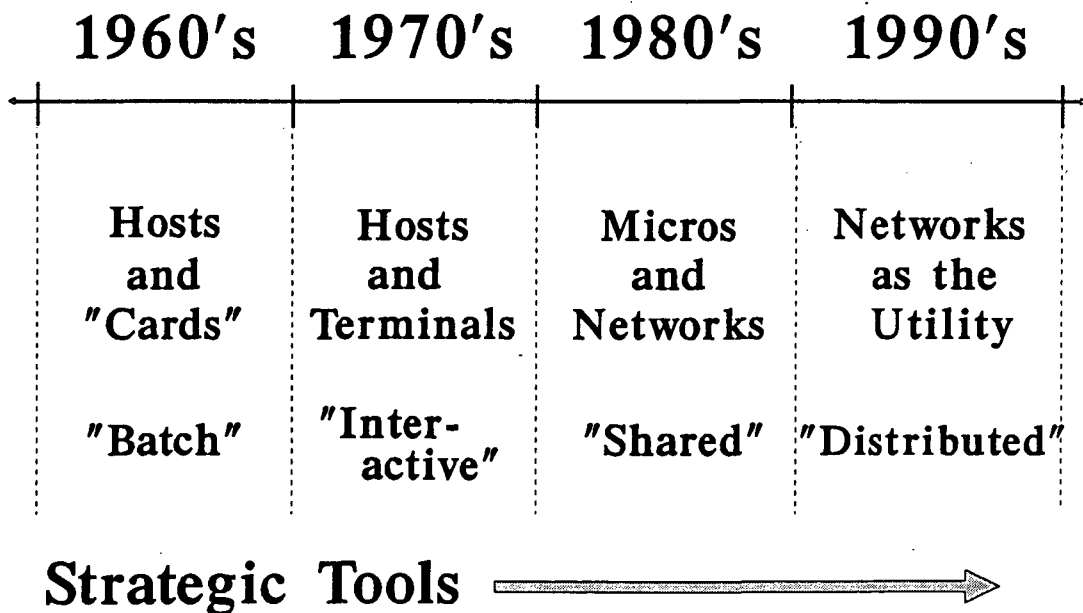
Strategic Tools ⟹

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

---

I/S Environment - "Mission" Perspective

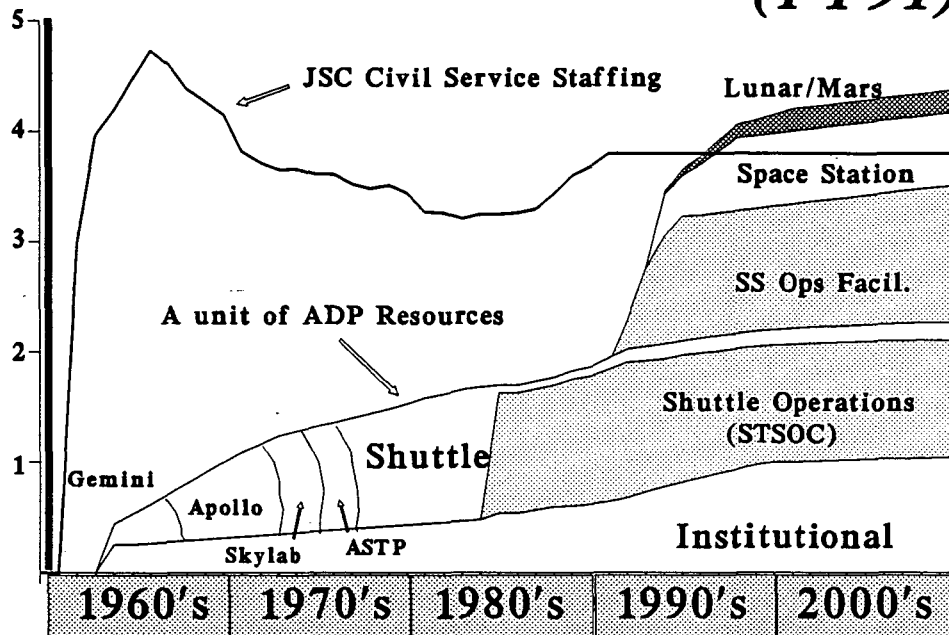The "Larger" Information System

Flight

Operations

Operations Support

Engineering and Analysis

Management, Project, and Finance

JSC ADP vs. Civil Service Staffing
(FY91)

5
4
3
2
1

JSC Civil Service Staffing

Lunar/Mars

Space Station

A unit of ADP Resources

SS Ops Facil.

Shuttle Operations
(STSOC)

Gemini

Shuttle

Apollo

Skylab   ASTP

Institutional

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

b46hq15z-tj10323/jrg10417

9

I/S Quality Approach - Efficiency

#1

*Reduce
Unique
Resources*

A B C D

A B C D

A B C D
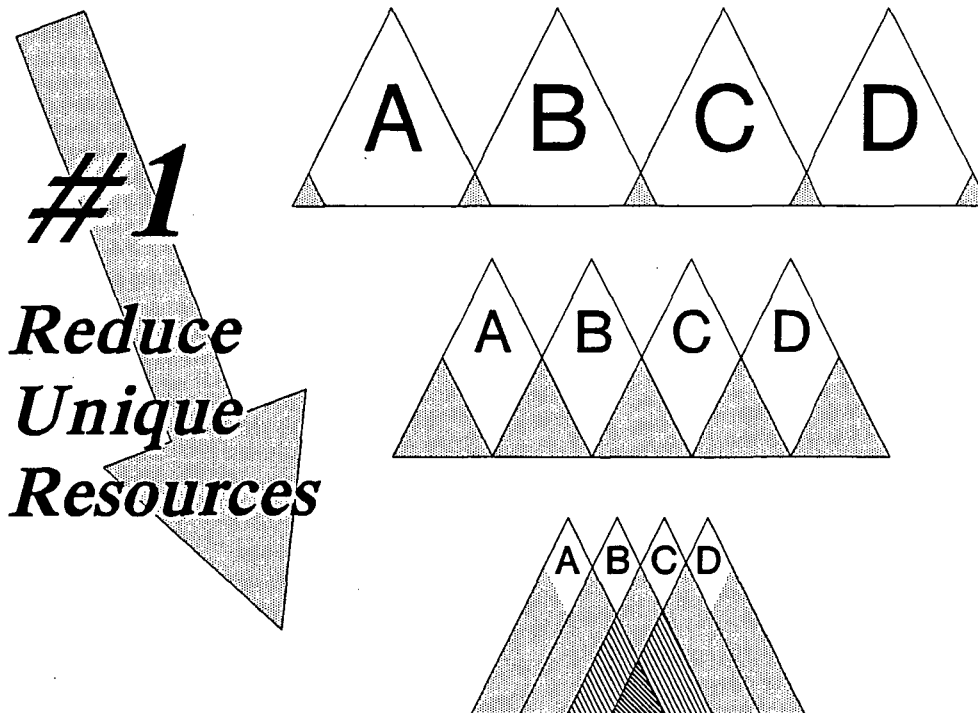
roi10-jrg10210

10

I/S Quality Approach - Focus

#2

Focus on the Primary Business

A B C D
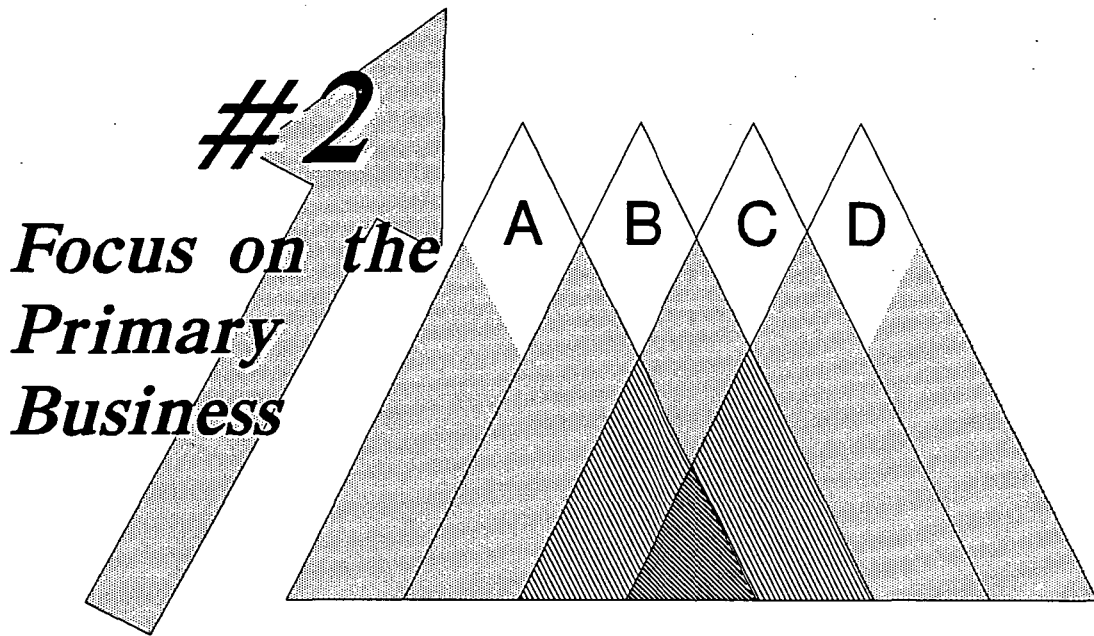
11

I/S Quality Approach - Commonality

A B C D
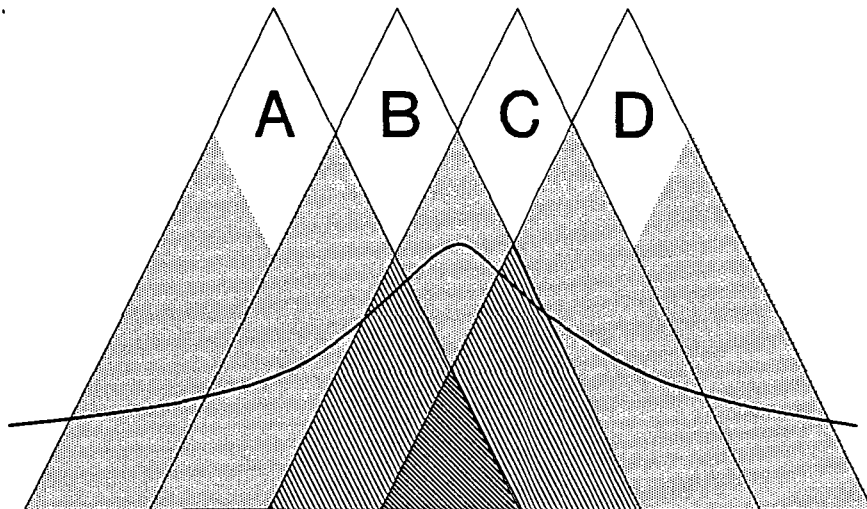
12

I/S Management/Contract Evolution

A   B   C   D

Central Management

"Outsourcing"
single contracts for single functions

Platform Services
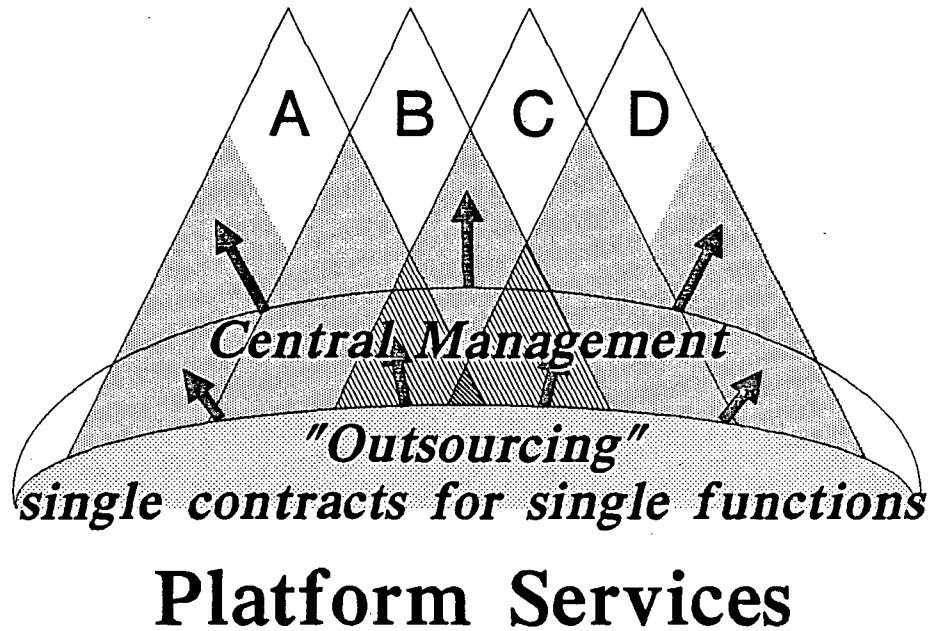
rol12-jrg10210

13

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
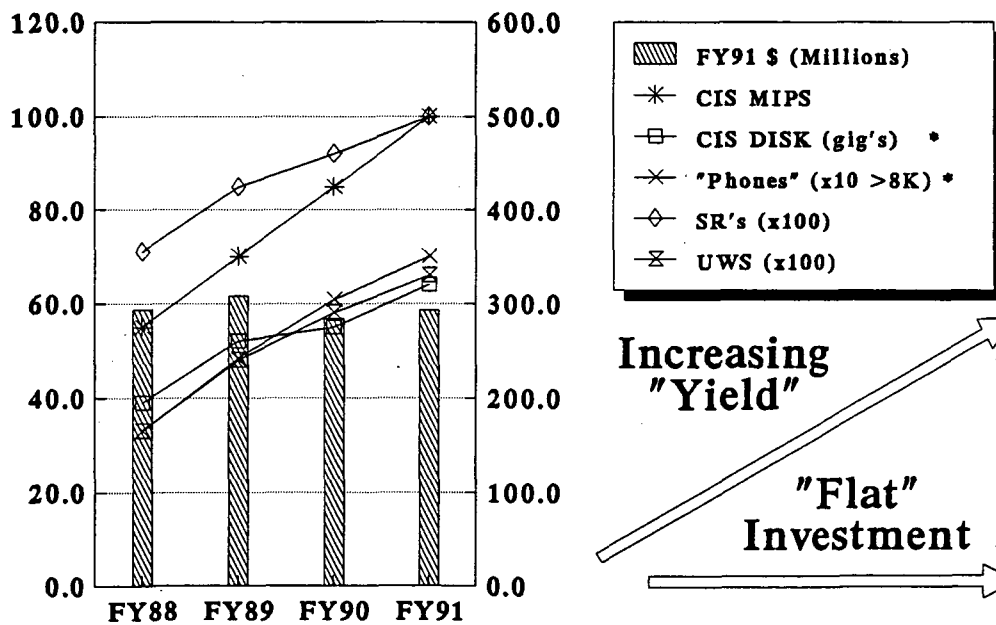
rol02-jrg0417

Note: FY91 statistics are projections

14

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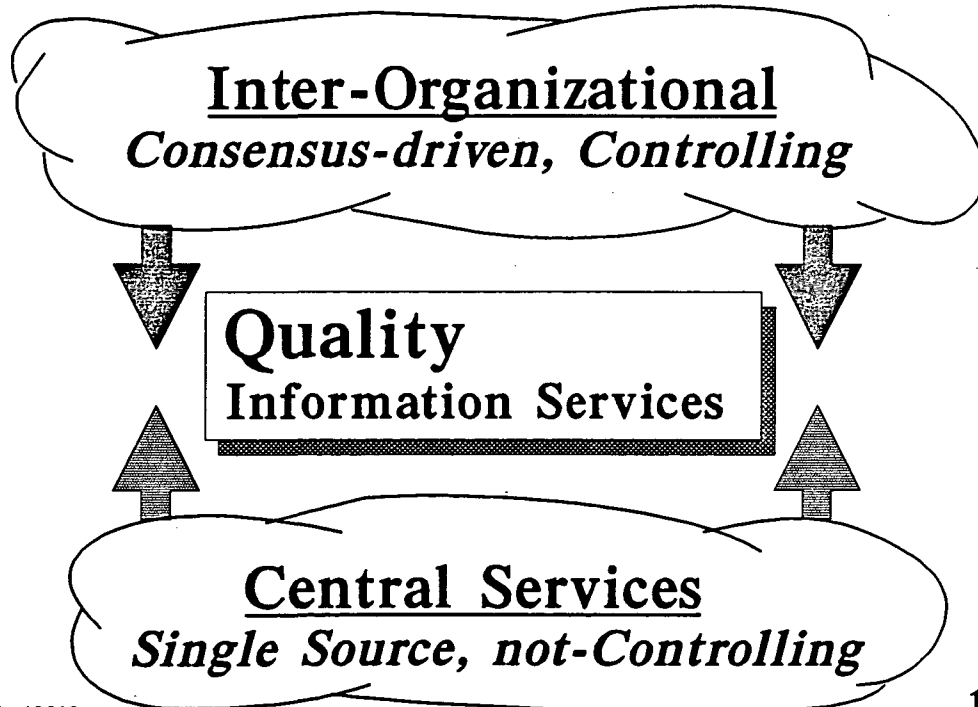
Aaron Cohen
Director, Johnson Space Center
JSC Announcement 90-062
March 30, 1990

isd25-jrg10210

15

General IRM Approach for JSC

Inter-Organizational
Consensus-driven, Controlling

Quality
Information Services

Central Services
Single Source, not-Controlling

isd23f-jrg10210

16

JSC Networking Challenges

- Proliferation and Autonomy

- Rapid and continuing growth

- Acquisition Risks in Standards

- ADP security
  - unknown vulnerabilities
  - no ranked services

- Budget

JSC Network Requirements
Functions

- Distributed Processing
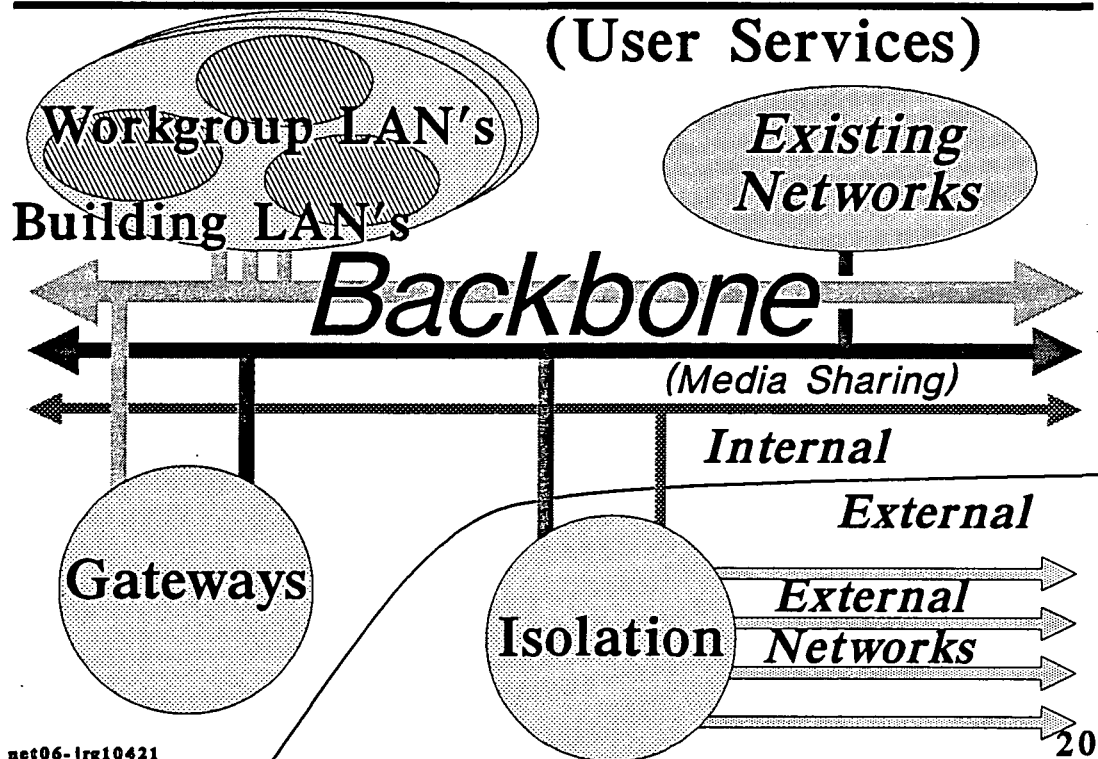- Growth
- Heterogeneous
- Security
- Management

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
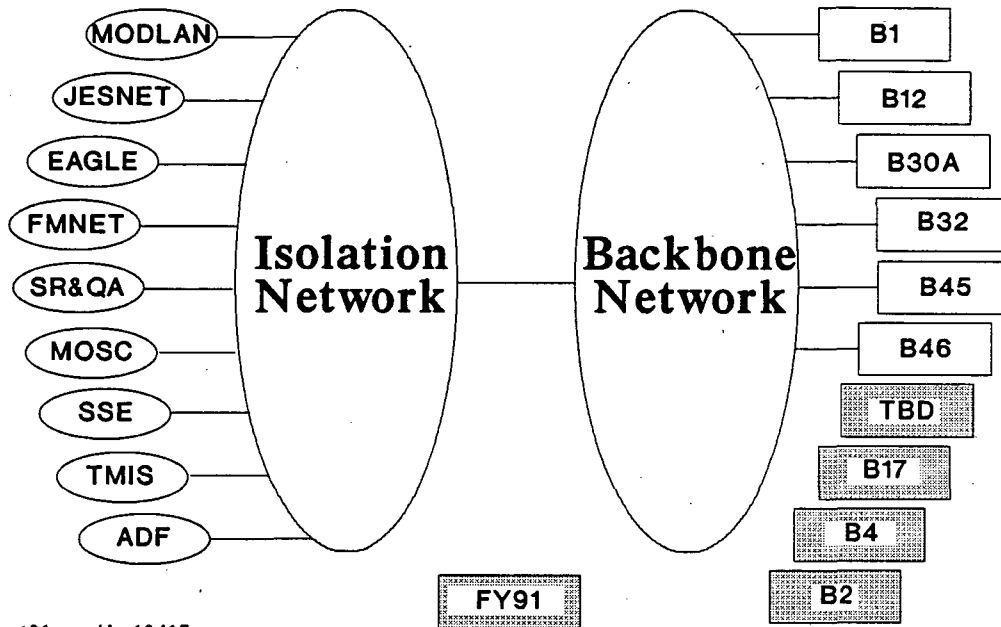## (User Services)

net06-jrg10421   20

JSC Information Network Status

jinnet01-raw/jrg10417

21

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)

netstc10-jrg10421

22

The End

of the briefing......