

NSIUWG

Science Networking Retreat

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Overview

Sponsor:

Ray Arnold, Chief, Code SC Headquarters

Purpose:

**Study, Identify Alternatives, Recommend for Science Networking:
Vision,
Roles and Responsibilities, and
Technical Approach and Transition**

Retreat dates:

June 7, 1990

July 30, 1990

Implementation Status:

Draft "White Paper" being prepared

Management and technical implementation in progress

Participants

Dr. Robert Price Deputy, Earth Sciences Directorate (900), GSFC

Tony Villasenor Program Mgmt, Science Networks, Headquarters SCI

Jim Hart Manager, NSI, Ames (ED)

Dr. Jim Green Manager, NSSDC, GSFC (930)

Sandy Bates Program Mgmt, Headquarters PSCN (OS)

Rick Helmick MSFC, PSCN (AI)

Ray Arnold, Joe Bredekamp: Management support as needed

Vision

Science Networking is End-to-End service under OSSA management.

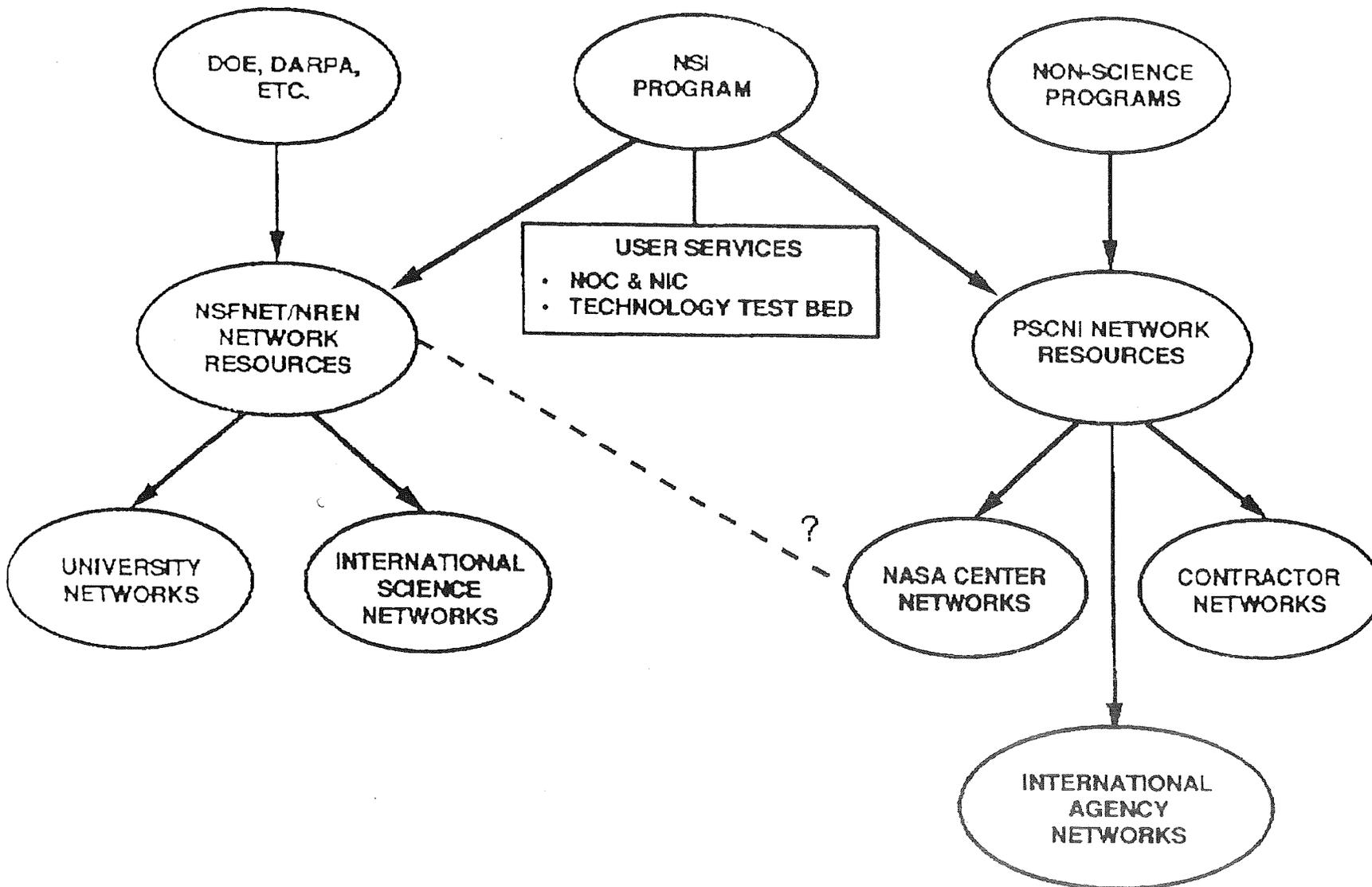
OSSA direct efforts to achieve single homogeneous network over 3-5 years, based on OSI.

Cooperate with other agency efforts to achieve single agency-wide network over 8-10 years. (Create Inter-Center Coordinating Comm)

Upgrade current science network to basic service offering of 56kbps tails and T1 backbone circuits.

Provide service for both Science Data Operations (Mission Essential and Mission Success) as well as general research and analysis communities.

OPERATIONAL MODEL FOR INTERNETWORKING NASA



SCIENCE NETWORK

ROLES AND RESPONSIBILITIES - HQ OFFICES

OSO

- OVERALL MANAGEMENT OF NETWORKING FOR AGENCY
- INSTALLATION AND MAINTENANCE OF ENTIRE AGENCY BACKBONE
- OVERALL NETWORK ENGINEERING
- INTERFACE TO INTERNATIONAL AGENCY NETWORKS

OSSA

- MANAGEMENT OF SCIENCE NETWORKING
- SCIENCE USER REQUIREMENTS ASSEMBLY AND ANALYSIS
- SCIENCE NETWORK ENGINEERING AND OPERATIONS
- INTERFACE TO INTERNATIONAL SCIENCE NETWORKS AND U.S. NON-NASA NETWORKS
- USER SERVICES AND APPLICATIONS DEVELOPMENT

SCIENCE NETWORK

ROLES AND RESPONSIBILITIES - CENTERS

ARC

- NSI MANAGEMENT
- NSI ENGINEERING
- NSI OPERATIONS
- CONNECTIVITY TO INTERNATIONAL SCIENCE NETWORKS
- CONNECTIVITY TO NSF, NREN, AND UNIVERSITY NETWORKS

GSFC

- USER SUPPORT SERVICES
- APPLICATIONS DEV

MSFC

- PSCN MANAGEMENT
- AGENCY BACKBONE ENGINEERING
- PSCN OPERATIONS
- CONNECTIVITY TO INTERNATIONAL AGENCY NETWORKS
- CONNECTIVITY TO CONTRACTOR NETWORKS AND NON-SCIENCE ACTIVITIES

Assignment Summary for Science Networking

Function	Now	Proposed
0.0 Program Management	HQ	HQ
1.0 Project Management	ARC	ARC
2.0 Network Engineering	ARC, GSFC	ARC
3.0 Network Operations	ARC, GSFC+	ARC
4.0 User Support Services	All	GSFC
5.0 User Application Development	None	GSFC

0.0 NSIPO PROGRAM MANAGEMENT

(Assigned to HQ)

**PROVIDES OVERALL PROGRAM MANAGEMENT AND
ADMINISTRATION OF OSSA SCIENCE NETWORKING OBJECTIVES
AND GOALS**

0.1 PROGRAM MANAGEMENT

POLICY PLANNING

USAGE, ETHICS, SECURITY

STRATEGIC AND ADVANCED PLANNING

OSI and NREN

Program Reviews (regularly scheduled)

Program Plan

0.3 External Interfaces

NASA: Code O, R, Centers

Other NREN agencies: NSF, DOE, DARPA

National

International

1.0 NSIPO MANAGEMENT AND ADMINISTRATION

(Assigned to ARC)

**PROVIDES OVERALL PROJECT MANAGEMENT AND ADMINISTRATION
OF OSSA SCIENCE NETWORKING OBJECTIVES AND GOALS**

1.0 Project Management

SSC, User Group, and ICC I/

BUDGETING AND ACCOUNTING

SCHEDULING

PROCUREMENT

PERSONNEL PLANNING

FACILITIES DEVELOPMENT

1.1 USER REQUIREMENTS MANAGEMENT

Requirements gathering and validation (NSR Process)

MOU development

Tracking & Statusing

1.2 SECURITY MANAGEMENT

Risk analysis

Incident investigations

External coordination

1.3 External Relations

PSCN

National & International

2.0 ENGINEERING

Assigned to ARC

2.1 Requirements Support

Requirements databasing

Requirements consolidation

2.2 General network engineering

2.2.1 NETWORK ARCHITECTURE/CONFIGURATION

Overall architecture

Technical i/f with external architectures

2.2.2 DECNET & IP ENGINEERING WORKING GROUPS

Design of logical networks (P V conversion)

Parameters and addressing

Configuration Documentation

2.2.3 SERVICE INSTALLATION and TESTING

Network service acquisition, testing, checkout

2.2.4 SECURITY

Development & implementation of security measures

Development of network security tools

2.2.5 PSCN I/F Representative

2.2.6 TESTBED ACTIVITIES

OSI Planning

Advanced network technologies

2.3 NREN SUPPORT

2.3.1 High Performance Network Technologies

3.0 OPERATIONS

**Assigned to
ARC
GSFC**

3.1 NETWORK OPERATIONS (ARC)

7-DAY, 24-HOUR NETWORK OPERATIONS CENTER (NOC)

NETWORK MONITORING AND TRAFFIC ANALYSIS

PROBLEM MANAGEMENT: Reporting, Repair, Maintenance Service

FLIGHT PROJECTS AND MISSIONS NETWORK SUPPORT

UPDATES AND MAINTENANCE

PROPERTY AND INVENTORY MANAGEMENT

Interface With Remote Site Local Area Networks and Management

ROUTER HW/SW MAINTENANCE CONTRACTS AND LOGISTICS

OFF SHIFT SUPPORT FOR NIC

Security Monitoring, Verification, Auditing

4.0 USER SUPPORT SERVICES

Assigned to GSFC

4.0 USER SUPPORT SERVICES

Network Information Center (NIC)

White/Yellow Pages Directory Services

User Help Desk & HOTLINE (WITH NOC)

User Information Forums

NSI User Working Group Coordination & Logistics Support

Conference Support

Regional Customer Support

User Security

Inform end users on security policies and plans

Distribute "kits" and other security material to all users

Online Requirements Status Lookup

5.0 NETWORKAPPLICATIONS DEVELOPMENT

(Assigned to GSFC)

5.1 Application Development

INTEGRATION OF CODE SC INFORMATION SYSTEMS IN NETWORKING

Interoperability Gateways

Applications Utilities

Distributed Applications Development and Support

Applications Demonstrations

Development of Host Security Software Tools

Information Systems Documentation

5.2 Advanced Network Applications

**ADVANCED APPLICATIONS, SUCH AS REMOTE VISUALIZATION,
WIDEBAND VIDEO**

X Windows

Interoperating Databases

Development of "Super NIC"

Technical Transition Plan

Science Networking to Maintain End-to-End Service Responsibility

Convert DECnet Phase IV Science Traffic From 56KBPS "SPAN" Backbone to NSI Backbone. Initially at Fractional T1; Upgrade to FULL T1

Convert All Tail Circuits to Multi-Protocol Capability at Minimum of 56kbps

Support IP, Phase IV and Phase V When Available

Replace Single Protocol Equipment With Multi-Protocol or Equivalent

Reduce Over Time the Number of NASA-Owned (PSCN) Tail Circuits Through Use of Internet, Interim NREN, and NREN Except for Certain Mission Essential Requirements

Connect NREN to Science Centers and Utilize National Backbone Infrastructure for Primary Routing of Science Traffic

Transition (Science-PSCN)

Explore and Determine Feasibility of Utilizing Expanded Code OS (PSCN) Services for Science Traffic (Phase V and/or IP) on PSCN Backbone.

If Technically Feasible,

Define "Contract" Relationship With PSCN to Preserve OSSA End-to-End Science Services

Define and Test Using Segment Prototype Demonstrations

Phase V on PSCNI Backbone (Using Science Phase V Tails)

IP on PSCNI Backbone

Expand as Desired

Migrate to Vision

Technical Meeting: March 4, 1991, Dallas TX

Agency-Wide Responsibilities Protocol Address Space

Address Space

Agency Coordination

DECnet Phase IV

NSI

Incl. SSF, etc. (Area 48 With Representation on NSI DECnet Eng. Group
PSCN Responsible for End-to-End Service for Their Requirements

IP

NSI

e.g., . . .NASA.GOV and . . .PSCNI.NASA.GOV

NSI and PSCN Responsible for End-to-End Service for Their Requirements

OSI (e.g., Phase V)

PSCN

TBD

NSI and PSCN Responsible for End-to-End Service for Their Requirements