607-CD-001-002

EOSDIS Core System Project

ECS Maintenance and Operations Position Descriptions

March 1996

Hughes Information Technology Systems
Upper Marlboro, Maryland

ECS Maintenance and Operations Position Descriptions

March 1996

Prepared Under Contract NAS5-60000
CDRL Item 114

APPROVED BY

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Upper Marlboro, Maryland

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Preface

This document is a contract deliverable with an approval code 2. As such, it does not require formal Government approval, however, the Government reserves the right to request changes within 45 days of the initial submittal. Once approved, contractor changes to this document are handled in accordance with Class I and Class II change control requirements described in the EOS Configuration Management Plan, and changes to this document shall be made by document change notice (DCN) or by complete revision.

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Abstract

The ECS Maintenance and Operations Position Descriptions document identifies and defines the roles and responsibilities of, software tools used by and interactions among the ECS Maintenance and Operations (M&O) staff members at the System Monitoring and Coordination Center (SMC), System Engineering Organization (SEO), EOS Operations Center (EOC) and the Distributed Active Archive Centers (DAAC). The M&O staffs' roles and responsibilities delineated in this version of the document are those required to operate the ECS Release-B data processing system in support of the TRMM, Landsat-7 and AM-1 science mission operations, V0 data migration and V0 system interoperability, and archive and distribution of Oak Ridge (ORNL) and Alaska (ASF) DAAC science data. The EOC operations roles and responsibilities described are those required to maintain and operate the ECS Release-B flight system in support of AM-1 spacecraft operations.

Keywords: Operations roles and responsibilities, science data processing, flight operations, Distributed Active Archive Centers ops, DAAC ops, Systems Monitoring and Coordination Center ops, SMC ops, ECS Operations Center ops, EOC ops, operators, position descriptions, Maintenance and Operations, M&O

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1. Introduction

1.1 Identification

This document, Contract Data Requirements List (CDRL) Item 114, whose requirements are specified in Data Item Description (DID) 607/OP2, is a required deliverable under the Earth Observing System Data and Information System (EOSDIS) Core System (ECS), Contract (NAS5-60000).

The EOSDIS, as the National Aeronautics and Space Administration's (NASA) overall Earth Science discipline data system, provides the ground system for the collection and analysis of science data to support scientists in resolving the dynamics of the Earth's components and the processes by which they interact. As a part of the EOS Program, EOSDIS supports: the planning, scheduling, and control of the EOS series of spacecraft; exchanging commands, data and algorithms with the European Space Agency (ESA), Japan, Canada, the National Oceanic and Atmospheric Administration (NOAA), and any other non-NASA entities involved in the overall EOS mission; the coordination of these activities with other data gathering systems and the transformation of the observations into physical variables, providing for higher levels of processing and presenting the data to users in forms that facilitate and stimulate interactive scientific research. The portion of EOSDIS addressed in this document is the EOSDIS Core System (ECS).

1.2 Scope

The Systems Monitoring and Coordination Center (SMC), System Engineering Organization (SEO), and Distributed Active Archive Centers (DAAC) operational roles and software tools described in this document are intended to be consistent with the functionality and capabilities provided by the Science Data Processing Segment (SDPS) and Communications and Systems Management Segment (CSMS) Release-B of ECS and are those required to support the following mission operations:

1. Follow-on TRMM science software integration and test
2. TRMM on-orbit science data operations
3. Landsat-7 readiness and on-orbit science data operations
4. V0-V1 data migration and V0-V1 interoperation
5. AM-1 science software integration and test, interface testing and on-orbit science data operations
6. Archive and distribution of ORNL and ASF science data
7. Other spacecraft/instrument missions, e.g., COLOR, ADEOS II

The EOS Operations Center (EOC) roles and responsibilities described in this version are those required to execute AM-1 flight operations with the support of ECS Release-B Flight Operations Segment (FOS) capabilities. Later versions of this document will address M&O roles for subsequent ECS releases and missions.

The ECS system operators, operations support and engineering roles and responsibilities are the focus of this document. The operations management practices and organizational structure are described in DID 601, Maintenance and Operations Management Plan. Operations staffing levels for the operators described will vary by site and mission workload and are not a subject of this document, but are described in DID 608, ECS Operations Plan. Descriptions of how the system is operated are contained in DID 604, ECS Ops Concepts Document; DID 605, SDPS/CSMS Operations Scenarios; and DID 611, Mission Ops Procedures. Descriptions of the operating characteristics of the operations software tools can be found in DID 305, Design Specifications, or DID 609, Operations Tools Manual.

This document reflects the February 14, 1996 Technical Baseline maintained by the contractor configuration control board in accordance with ECS Technical Direction No. 11 dated December 6, 1994.

1.3 Purpose

The purpose of this document is to identify the ECS operators, operations support and engineering staff positions, describe their roles, responsibilities and interactions and identify their software tools required to operate the ECS system and successfully execute mission operations. As illustrated in Figure 1-1 below, the roles, responsibilities, staff interactions and tools described were derived from and are intended to be consistent with the system functions and capabilities specified in the ECS design specifications and the operations activities described in the ECS Operations Concept Document. In addition, the Maintenance and Operations Management Plan for the ECS Project provides the ECS M&O Statement of Work (SOW) tasks in a contractor organizational structure. Consistent with that organizational structure, this document further identifies the operator positions and allocates the operations responsibilities to those positions.

This identification of positions and assignment of roles and responsibilities provides a model required to complete the operations concept and a basis for development of staffing profiles and forecasting staffing costs. The actual assignment of operations positions and allocation of roles and responsibilities can be modified and tailored by each Site Manager (DAAC, SMC, EOC)/ESDIS to adapt to their site's configuration, missions and workloads.

1.4 Status and Schedule

The original document version was submitted to Goddard Space Flight Center (GSFC) after the completion of the ECS Release-A Science Data Processing/Communications Segments' Critical Design Review (CDR) and prior to the ECS Release-A/B Flight Operations Segment CDR. This formal release is scheduled for two weeks prior to CDR for the ECS Release-B SDPS/CSMS.

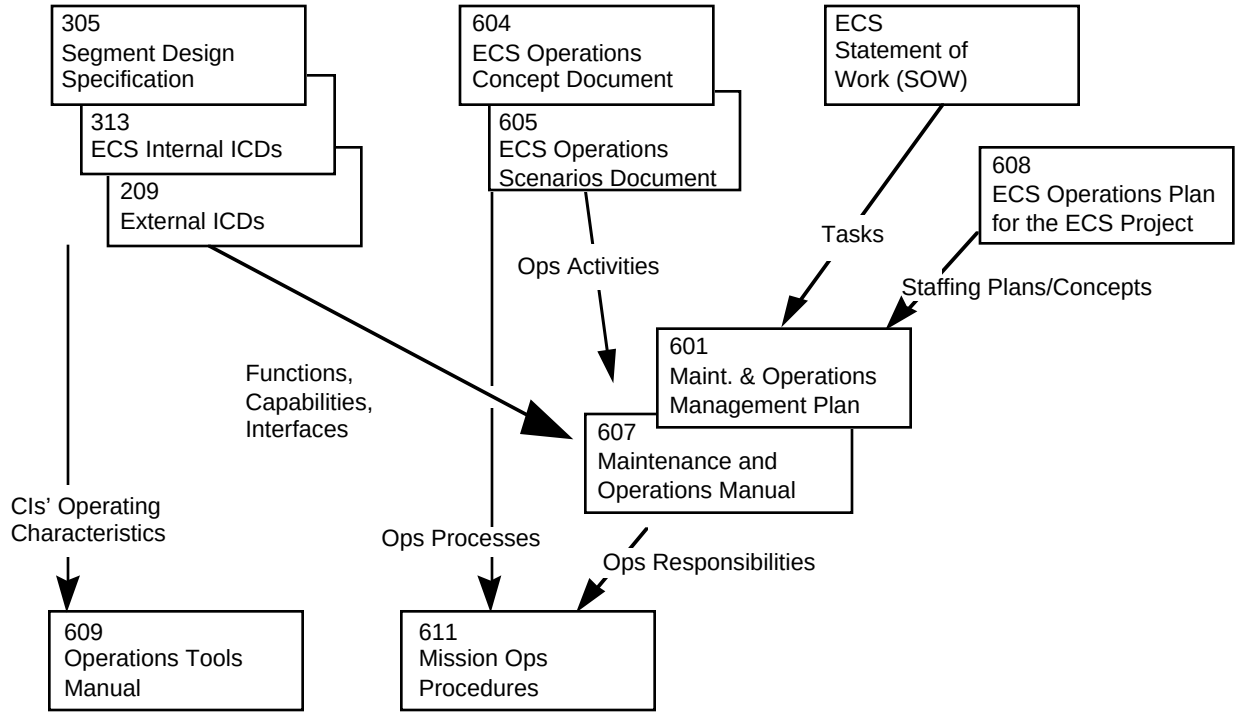

Figure 1-1 Ops Document Relationships

1.5 Organization

The contents of this document are organized as follows:

Section 1 Introduction - Describes this document's purpose, scope and organization

Section 2 Related Documentation - Lists documents that drive, support or expand on the material in this manual

Each of the remaining sections identify the site-specific operator positions, illustrate the interactions with others, describe the position roles and responsibilities and identify the software tools used by the staff to perform each responsibility.

Section 3 Systems Monitoring and Coordination Center (SMC) Roles

Section 4 Distributed Active Archive Center (DAAC) Roles

Section 5 Sustaining Engineering Organization (SEO) Roles

Section 6 Integrated Logistics Support (ILS) Roles

Section 7 Flight Operations Team (FOT) Roles

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2. Related Documentation

2.1 Parent Documents

The parent documents are the documents from which this Maintenance and Operations Manual's scope and content are derived.

423-41-01	Goddard Space Flight Center, EOSDIS Core System (ECS) Statement of Work
423-41-03	Goddard Space Flight Center, EOSDIS Core System Contract Data Requirements Document

2.2 Applicable Documents

The following documents are referenced within this Manual, or are directly applicable, or contain policies or other directive matters that are binding upon the content of this document.

209-CD-001-003	Interface Control Document Between EOSDIS Core System (ECS) and the NASA Science Internet
209-CD-002-003	Interface Control Document Between EOSDIS Core System (ECS) and ASTER Ground Data System
209-CD-005-005	Interface Control Document Between EOSDIS Core System (ECS) and Science Computing Facilities (SCF)
209-CD-006-005	Interface Control Document Between the EOSDIS Core System (ECS) and the National Oceanic and Atmospheric Administration (NOAA) Affiliated Data Center (ADC) for the ECS Project
209-CD-007-003	Interface Control Document Between the EOSDIS Core System (ECS) and TRMM Science Data and Information System (TSDIS), Final
209-CD-008-004	Interface Control Document Between the EOSDIS Core System (ECS) and the Goddard Space Flight Center (GSFC) Distributed Active Archive Center (DAAC) for the ECS Project
209-CD-009-002	Interface Control Document Between the EOSDIS Core System (ECS) and the Marshall Space Flight Center (MSFC) Distributed Active Archive Center (DAAC) for the ECS Project, Final
209-CD-010-002	Interface Control Document Between the EOSDIS Core System (ECS) and the Langley Research Center (LaRC) Distributed Active Archive Center (DAAC) for the ECS Project

209-CD-013-003	Interface Control Document Between the EOSDIS Core System (ECS) and the Landsat 7 System [for the ECS Project]
305-CD-002-002	Science Data Processing Segment (SDPS) Design Specification for the ECS Project
305-CD-003-002	Communications and System Management (CSMS) Design Specification for the ECS Project, Preliminary
305-CD-020-002	Release B SDPS/CSMS Design Overview Specification for the ECS Project
305-CD-021-002	Release B SDPS Client Subsystem Design Specification for the ECS Project
305-CD-022-002	Release B SDPS Interoperability Subsystem Design Specification for the ECS Project
305-CD-023-002	Release B SDPS Data Management Subsystem Design Specification for the ECS Project
305-CD-024-002	Release B SDPS Data Server Subsystem Design Specification for the ECS Project
305-CD-025-002	Release B SDPS Ingest Subsystem Design Specification for the ECS Project
305-CD-026-002	Release B SDPS Planning Subsystem Design Specification for the ECS Project
305-CD-027-002	Release B SDPS Data Processing Subsystem Design Specification for the ECS Project
305-CD-028-002	Release B CSMS Communications Subsystem Design Specification for the ECS Project
305-CD-029-002	Release B CSMS System Management Subsystem Design Specification for the ECS Project
305-CD-030-002	Release B GSFC DAAC Design Specification for the ECS Project
305-CD-031-002	Release B LaRC DAAC Design Specification for the ECS Project
305-CD-032-001	Release B MSFC DAAC Design Specification for the ECS Project
305-CD-033-002	Release B EDC DAAC Design Specification for the ECS Project
305-CD-034-002	Release B ASF DAAC Design Specification for the ECS Project
305-CD-035-002	Release B NSIDC DAAC Design Specification for the ECS Project
305-CD-036-002	Release B JPL PO.DAAC Design Specification for the ECS Project

305-CD-037-002	Release B ORNL DAAC Design Specification for the ECS Project
305-CD-038-002	Release B System Monitoring and Coordination Center (SMC) Design Specification for the ECS Project
305-CD-039-002	Release B Data Dictionary for the ECS Project Subsystem Design Specification
305-CD-040-001	Flight Operations Segment (FOS) Design Specification for the ECS Project (Segment Level Design) Overview
305-CD-041-001	Flight Operations Segment (FOS) Planning and Scheduling Design Specification for the ECS Project
305-CD-042-001	Flight Operations Segment (FOS) Command Management Design Specification for the ECS Project
305-CD-043-001	Flight Operations Segment (FOS) Resource Management Design Specification for the ECS Project
305-CD-044-001	Flight Operations Segment (FOS) Telemetry Design Specification for the ECS Project
305-CD-045-001	Flight Operations Segment (FOS) Command Design Specification for the ECS Project
305-CD-046-001	Flight Operations Segment (FOS) Real-Time Contact Management Design Specification for the ECS Project
305-CD-047-001	Flight Operations Segment (FOS) Analysis Design Specification for the ECS Project
305-CD-048-001	Flight Operations Segment (FOS) User Interface Design Specification for the ECS Project
305-CD-049-001	Flight Operations Segment (FOS) Data Management Design Specification for the ECS Project
305-CD-050-001	Flight Operations Segment (FOS) Planning and Scheduling Program Design Language (PDL) for the ECS Project
305-CD-051-001	Flight Operations Segment (FOS) Command Management Program Design Language (PDL) for the ECS Project
305-CD-052-001	Flight Operations Segment (FOS) User Interface Design Specification for the ECS Project
305-CD-053-001	Flight Operations Segment (FOS) Telemetry Program Design Language (PDL) for the ECS Project
305-CD-054-001	Flight Operations Segment (FOS) Real-Time Contact Management Program Design Language (PDL) for the ECS Project

305-CD-055-001	Flight Operations Segment (FOS) Analysis Program Design Language (PDL) for the ECS Project
305-CD-056-001	Flight Operations Segment (FOS) User Interface Program Design Language (PDL) for the ECS Project
305-CD-057-001	Flight Operations Segment (FOS) Data Management Program Design Language (PDL) for the ECS Project
305-CD-058-001	Flight Operations Segment (FOS) Command Program Design Language (PDL) for the ECS Project
313-CD-006-002	Release B SDPS/CSMS Internal Interface Control Document for the ECS Project
601-CD-001-004	Maintenance and Operations Management Plan for the ECS Project, Final
604-CD-001-004	ECS Operations Concept for the ECS Project: Part 1-- Overview
604-CD-002-003	ECS Operations Concept for the ECS Project: Part 2B --Release B
604-CD-003-002	ECS Operations Concept for the ECS Project: Part 2A -- Release A
604-CD-004-001	ECS Operations Concept for the ECS Project: Part 2 -- FOS
605-CD-002-001	Release B SDPS/CSMS Operations Scenarios for the ECS Project

2.3 Information Documents

Several documents provide additional information or influence elements of this document.

101-CD-001-004	Project Management Plan for the EOSDIS Core System, Revision 1, DCN No. 01
102-CD-001-004	Development Configuration Management Plan for the ECS Project, Revision 1
220-CD-001-004	Communications Requirements for the ECS Project, Revision 1
608-CD-001-002	ECS Operations Plan for Release B, Final
622-CD-002-001	Release B Training Plan for the ECS Project
none	Goddard Space Flight Center, EOSDIS DAAC Strategic/Management Plan

3. Systems Monitoring and Coordination Center (SMC) Roles

This section describes the primary interfaces and roles and responsibilities for the following SMC operations positions.

3.1 SMC Operations Support/Engineering Roles

3.1.1 SMC Accountant

Administer system science data costing, collection and reporting, support each center's accounting/accountability activities. Review and supervise ECS user billing and collection activities.

3.1.1.1 Interfaces

See Figure 3.1.1-1.

3.1.1.2 Roles and Responsibilities

1. Monitor and distribute science data costing figures, maintaining costing/pricing list(s) within the accounting system, ensuring that all figures are up-to-date, using a to be determined Billing/Accounting Tool.
2. Supervise SMC Billing Clerk(s) activities.
3. Investigate and resolve billing issues/conflicts, using a to be determined Billing/ Accounting Tool.
4. Collect, review, analyze and distribute financial reports and summaries.
5. Prepare, analyze and distribute advanced financial reports, reviews and proposals, using a to be determined Billing/Accounting Tool.

6. Manage and oversee billing system usage and implementation, using a to be determined Billing/Accounting Tool.

7. Supervise handling of funds received by Billing Clerk(s), i.e., payments/advance deposited into accounts.

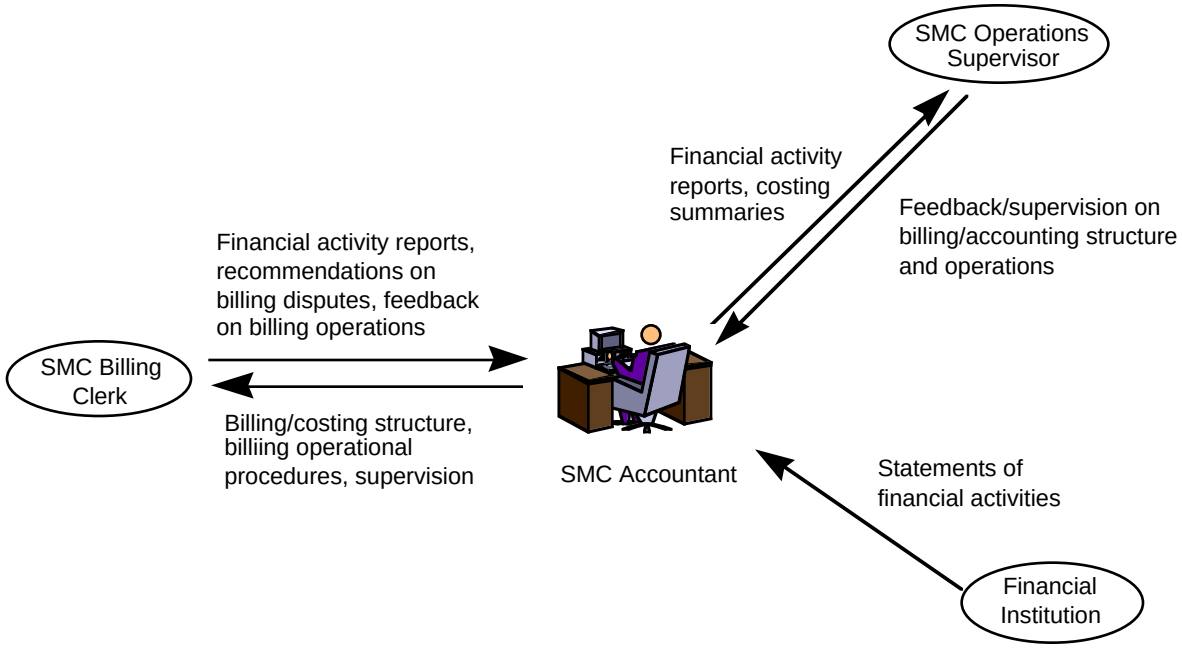

Figure 3.1.1-1 SMC Accountant Interfaces

3.1.2 SMC Billing Clerk

Operate user billing system to generate and distribute ECS system user bills. Receive and process all payments into billing system, depositing funds/advance payments into appropriate user account. Generate periodic and on-demand account verification and financial reports.

3.1.2.1 Interfaces

See Figure 3.1.2-1.

3.1.2.2 Roles and Responsibilities

1. Operate billing system, monitor and implement billing adjustments made by DAAC user services, using a to be determined Billing/Accounting Tool.

2. Generate, verify and distribute science user bills, using a to be determined Billing/Accounting Tool.

3. Periodically generate, verify and distribute science user statements, using a to be determined Billing/Accounting Tool.
4. On-demand verification and generation of science user bills and statements, using a to be determined Billing/Accounting Tool.
5. Receive and process all user payments into billing system, using a to be determined Billing/Accounting Tool.
6. Deposit funds received in appropriate account(s).
7. Generate periodic and on-demand financial reports, using a to be determined Billing/Accounting Tool.
8. Investigate and recommend solutions of user billing disputes to SMC Accountant, using a to be determined Billing/Accounting Tool.

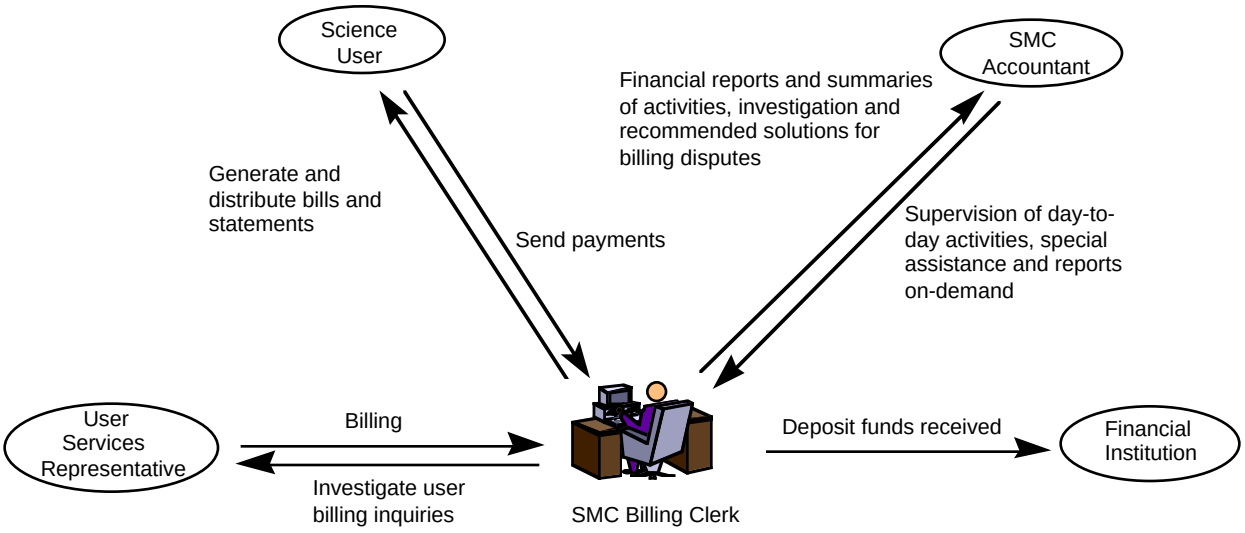

Figure 3.1.2-1 SMC Billing Clerk Interfaces

3.1.3 SMC System Administrator

Administer and maintain all SMC office and operations support computer hosts, peripherals and workstations, including troubleshooting, preventive and general system maintenance. Complete initial program loads for all system upgrades. Provide configuration, security and access administration.

3.1.3.1 Interfaces

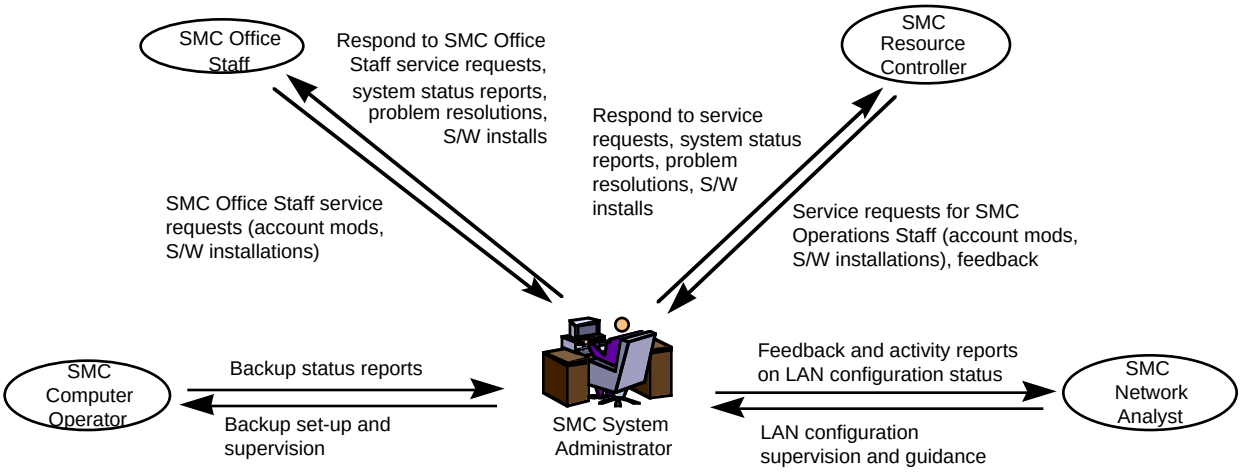

Figure 3.1.3-1 SMC System Administrator Interfaces

3.1.3.2 Roles and Responsibilities

1. Create, modify, delete and maintain SMC office staff user accounts.
2. Initialize and conSMC office site hosts and workstations.
3. Perform preventive maintenance on SMC office staff hosts and workstations. (HPOV, MSS)
4. Diagnose and correct system problems on-demand. (HPOV, Remedy, MSS)
5. Document, investigate and resolve errors, faults and observations on site hosts and workstations. (HPOV, Remedy, MSS)
6. Monitor SMC staff workstation performance - tuning when applicable. (HPOV)
7. LAN and local DCE configuration at the SMC.
8. Provide system-level management of directory services.
9. Oversee and manage backups and recoveries. (Backup Tool)
10. Install latest version of ECS and COTS software on SMC hosts and workstations.

3.1.4 SMC Configuration Management (CM) Administrator

Provide ECS system-wide configuration management and monitoring including collecting information describing the state of ECS resources, the network subsystem and its communications resources; exercise control and/or monitoring over the configurations,

parameters and resources of the subsystems and over the information collected; store the configuration information collected and display the configuration information for reporting purposes; assist the SMC personnel in fault, performance and security management.

3.1.4.1 Interfaces

The figure shows the role interfaces of the CM Administrator who acts as database administrator of several tools known as the Trouble Ticket System (Remedy), Change Request Manager (DDTS), SW Change Manager (ClearCase), and Baseline Manager (XRP-II) in support of the SMC Change Control Board and the Trouble Ticket Review Board. Site-to-site transfer of software changes will be accomplished with the use of a utility tool called Tivoli Courier.

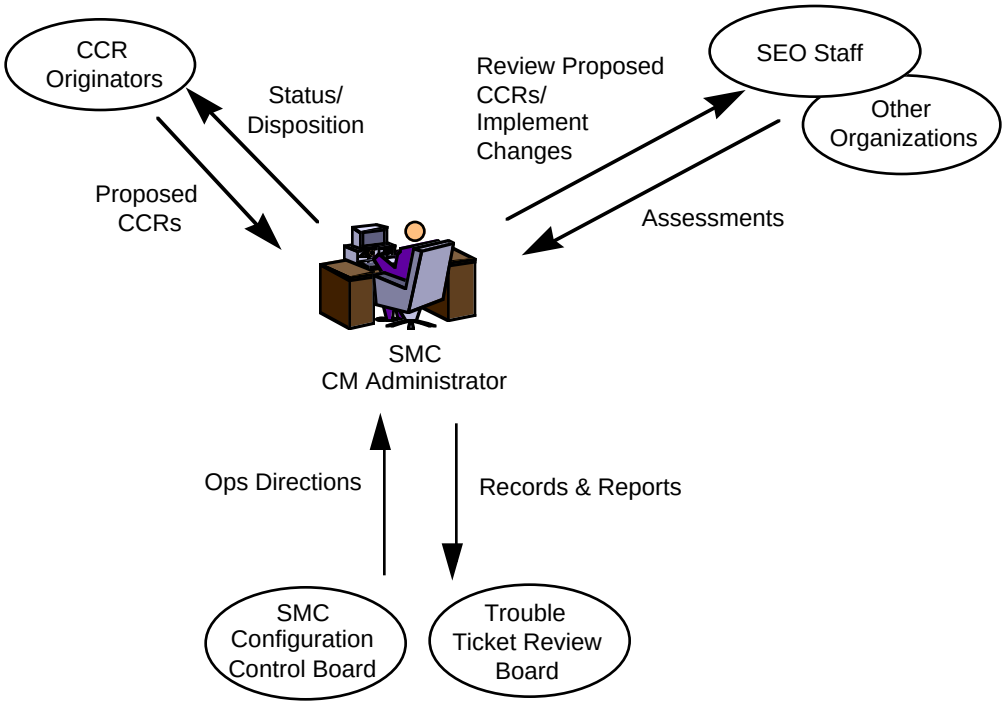

Figure 3.1.4-1 SMC Configuration Management (CM) Administrator Interfaces

3.1.4.2 Roles and Responsibilities

The following list of roles and responsibilities correspond to the interfaces in Section 3.1.4.1.

1. Trouble Ticket System — Record, report and track system-level problems recorded in the Trouble Ticket System Database (Remedy). Act as the Trouble Ticket database administrator at SMC. Responsible for the tracking of ECS system-level issues discovered at the sites and propagating system problem resolutions to the site-level. Support for the deliberations of the Trouble Ticket Review Board.

2. Change Request Manager — Record and manage proposed and approved Configuration Change Requests (CCRs) in the Change Request Manager (Distributed Defect Tracking System--DDTS). Act as the Change Request Manager database administrator at SMC. Responsible for the tracking of ECS system-level CCRs proposed at the sites, coordination of impact assessments and propagating system CCR resolutions to the site-level. Support for the deliberations of the SMC Configuration Control Board.

3. SW CM Manager — Record, report, manage and distribute changes to custom ECS SW, science SW and database control files in the ClearCase tool. Maintain privileged access to the ECS SW library at the SMC for the Sustaining Engineering Organization, Maintenance Engineers and off-site facilities (EDF, DAACs and EOC).

4. Baseline Manager — Record, report and maintain system-level changes to the as-built operational baseline of ECS products in the Baseline Manager (XRP-II) tool. Generate the Configuration Status Accounting Records (CSAR) with coordinated change histories from the operational sites (SMC, DAACs and EOC). Maintain inventory of control items and version control of ECS Configuration Items.

5. Trouble Ticket Review Board — Generate status reports as required for the Trouble Ticket Review Board. Support the system-level implementation of resolutions provided by the Trouble Ticket Review Board. Provide implementing instructions and monitor progress in implementing change/problem resolutions as directed by the TT Review Board.

6. Configuration Control Board (CCB) — Generate status reports as required for the SMC Configuration Control Board. Support the system-level implementation of resolutions provided by the SMC CCB. Provide implementing instructions and monitor progress in implementing change/problem resolutions as directed by the SMC CCB.

7. Track, status and facilitate the implementation of system-wide changes.

3.1.5 SMC Network Analyst

Provide performance monitoring of networks. Support and maintain the high-level network event schedule. Provide reports on all network operations functions.

3.1.5.1 Interfaces

See Figure 3.1.5-1.

3.1.5.2 Roles and Responsibilities

1. Provide performance monitoring of networks [e.g., EBnet, NSI, GSFC DAAC User Network]

   NSI will provide the SMC with data reflecting the performance of the NSI network, to include link utilization and transmission errors. NSI will provide monthly reports, but can provide greater frequency or granularity as necessary. NSI will provide notification

by e-mail of estimated time of restoration; changes in the estimate will be propagated to ECS in the same fashion as faults.

EBnet -review and forward Trouble Tickets, every 8 hours receives summary stats from EBnet NOC. Review operations-initiated Trouble Tickets for network issues and assess user impacts. Notify users, if appropriate. (Uses Remedy Trouble Ticket and/or CCR Query Tools.)

2. Provide focal point (in cooperation with affected sites) for inter-ECS network problems. Coordinate with external network operations organizations [e.g., EBnet, NSI, GSFC DAAC User Network,] for:

    a) configuration scheduling/compatibility

    b) fault isolation and resolution

    c) change planning

    d) performance reporting.

    (can use following to contact the above by e-mail, fax, mail, Internet and WWW tools (Mosaic, TCP Connect, etc.), telephone.)

3. Interact with external systems on inter-system problems [EBnet] (Uses HPOV)

4. Support and maintain the high-level network event schedule.

5. Provide reports on all network operations functions, reports on network performance to management. (daily, weekly, monthly) (Uses Database Query Tools and/or MSS Reports.)

6. Analyze soft and hard copy reports on network effectiveness, productivity, capacity and performance. [e.g., LAN errors and faults] (Uses Trouble Tickets and HPOV.)

7. Perform fault analyses including isolation, location, identification and characterization using HPOV.

8. Support fault diagnosis testing for hardware, software and resource-to-resource connectivity.

9. Monitor network security and respond to security alarms and events.

10. Maintain knowledge of network protocol standards, WAN [EBnet, NSI] and LAN topology.

11. Review and provide assessment of proposed network changes.

12. Maintain SMC LAN network inventory database identifying network components, comm links and their characteristics. (HW list, Drawings, Documents)

13. Exercise control and/or monitoring over configuration, parameters and resources of the SMC LAN and over information collected. Store the configuration information collected

and display the configuration for reporting purposes. [Uses SW CM Manager (ClearCase (TM))]

14. Provide other statistical reports [e.g., network performance, effectiveness, productivity, capacity], as needed, to the Fault Manager. (Uses Database Query Tools and/or MSS Reports.)

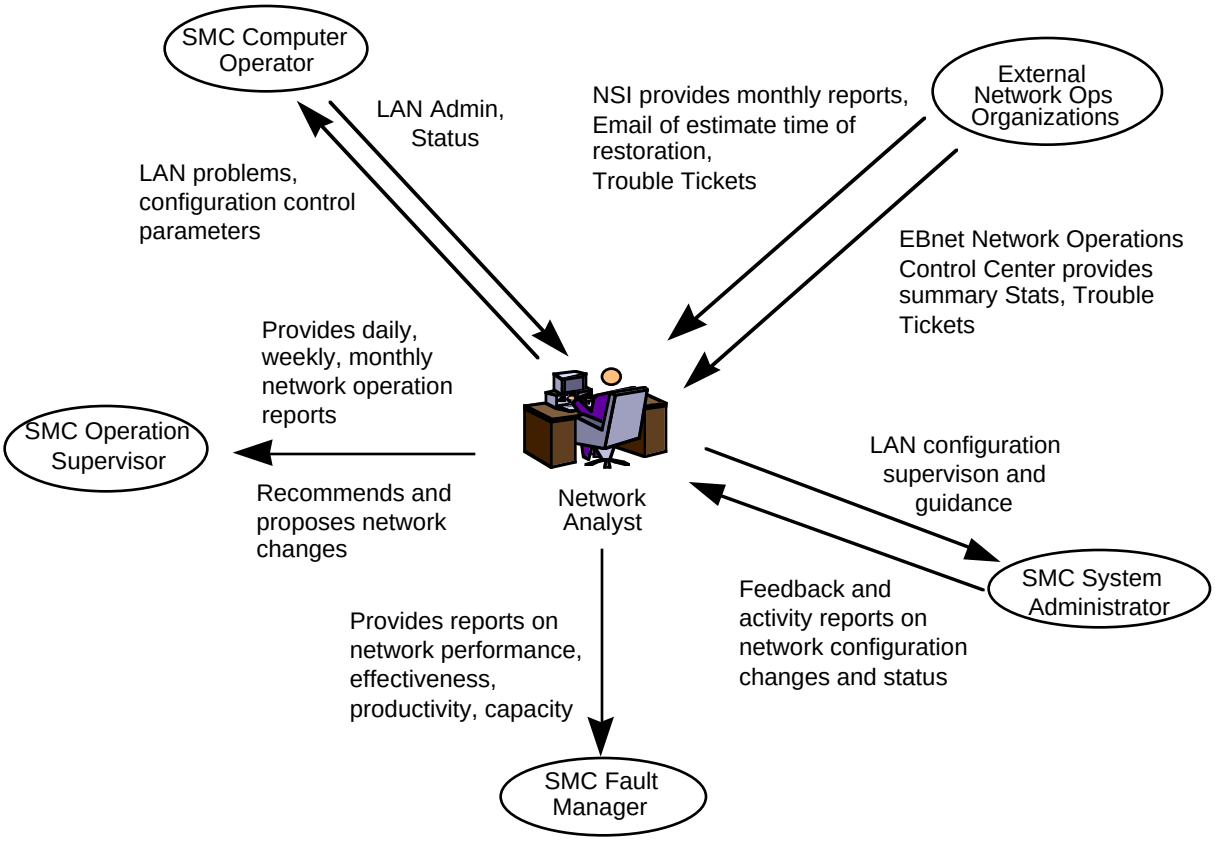

Figure 3.1.5-1. SMC Network Analyst Interfaces

3.1.6 SMC ECS User Services Working Group (USWG) Liaison

The SMC ECS USWG Liaison, working with the User Service Working Group (USWG), provides education information and assistance on the ECS global system, including working directly with user groups/organizations in helping access the system, describing DAACs' data and services, providing or researching users' access complaints until resolved, working with DAACs' User Services in solving systematic user problems and providing feedback. He/she attends Science Team and IWG meetings pertaining to products to learn more about the products and to keep up on user activities. Also, reads papers, attends seminars, etc. to learn more about products.

3.1.6.1 Interfaces

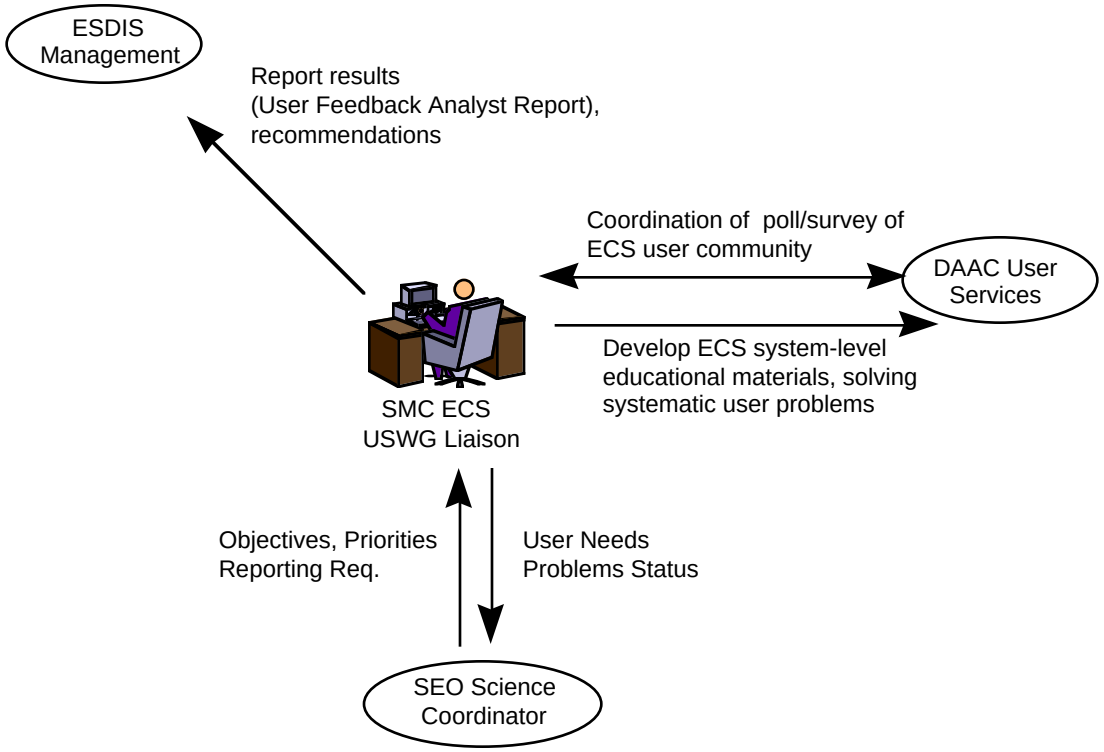

Figure 3.1.6-1 SMC ECS User Services Working Group (USWG) Liaison Interfaces

3.1.6.2 Roles and Responsibilities

1. Assist the USWG to develop ECS system-level educational materials to support DAAC User Services and broad ECS User groups and organizations.
2. Assist the USWG to develop EOSDIS-related catalog, search and order systems, bulletin boards, tool kits, services, etc.
3. Provide understanding of priorities and policies, as relates to the global User community.
4. Poll/survey the ECS user community to assess users' satisfaction and global requirements. Report results and recommendations to ESDIS management. Generate User Feedback Analysis reports. (Uses Database Query Tools and/or MSS Reports.)
5. Assist the USWG to develop and provide presentations of system views for ECS user groups/organizations and education including working directly with the user groups/organizations in helping access the system, providing general information on the ECS project.
6. Report USWG recommendations and concerns to SMC/ESDIS management.

3.1.7 SMC/EOC Maintenance Coordinator

The SMC/EOC Maintenance Coordinator is responsible for commercial off-the-shelf (COTS) hardware (HW) and software (SW) maintenance at the SMC and the EOC. This individual functions as the site's maintenance engineer in cases where a failed component is to be repaired using a self-maintenance approach. If outside maintenance support from a contracted maintenance vendor or the OEM is to be used, the SMC/EOC Maintenance Coordinator coordinates the maintenance action. Prior to, during and upon completion of any maintenance action, the SMC/EOC Maintenance Coordinator will interface with the Management Subsystem (MSS) for recording and monitoring maintenance actions.

3.1.7.1 Interfaces

Interfaces for the SMC/EOC Maintenance Coordinator are identified in Figure 3.1.7-1. These interfaces are described in Section 3.1.7.2.

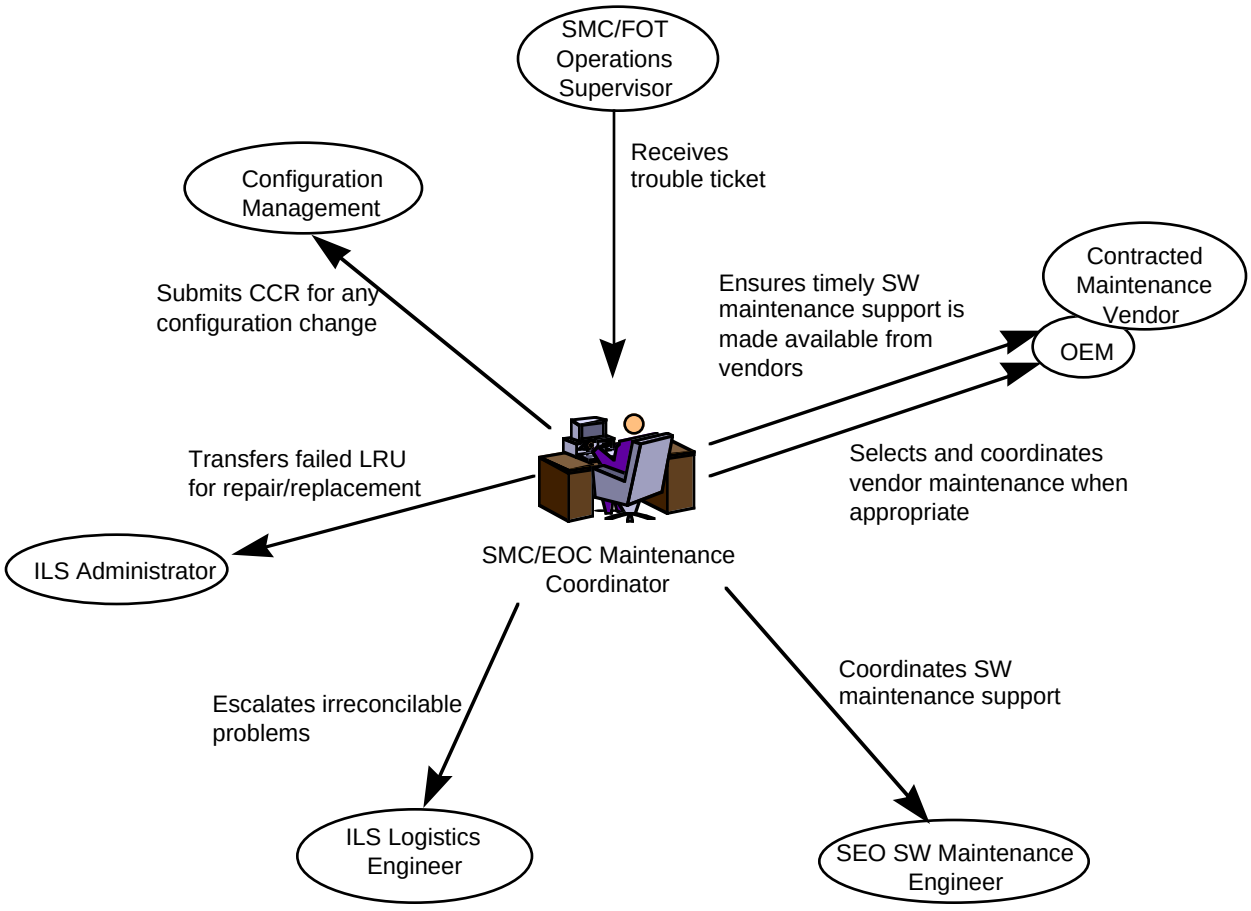

Figure 3.1.7-1 SMC/EOC Maintenance Coordinator Interfaces

3.1.7.2 Roles and Responsibilities

The roles and responsibilities of the SMC/EOC Maintenance Coordinator are listed below.

1. Receive trouble tickets for COTS HW problems from the SMC and FOT Operations Supervisors through Remedy ARS (MSS; trouble ticketing tool).
2. For COTS SW, coordinate the actions of COTS vendors regarding resolution of SW problems and upgrades; coordinate with the SEO SW Maintenance Engineer to ensure that adequate and timely assistance is provided.
3. For COTS HW problems, may conduct initial fault diagnosis to isolate problem to the component or LRU.
4. Interface with the Inventory, Logistics and Maintenance Management SW (MSS) to analyze previous maintenance actions taken; interface with HTG XRP-2 (Baseline Manager, MSS) to determine present configuration.
5. Identify source of HW maintenance support based on contracted maintenance support agreements; choices for support include the Maintenance Coordinator, a contracted maintenance vendor or the OEM.
6. If the SMC/EOC Maintenance Coordinator is the maintenance source: isolate failure to the LRU level; replace the LRU with an on-site spare; give the failed component to the SEO ILS Administrator to be shipped to the COTS vendor for repair or replacement.
7. If a contracted maintenance vendor or the OEM is the maintenance source: place service call, escort maintenance personnel through facility and ensure maintenance action is completed satisfactorily.
8. Escalate irreconcilable COTS HW and SW problems to the ILS Logistics Engineer.
9. Provide trouble ticket resolutions following repair of COTS HW or SW using Remedy ARS (MSS).
10. Record details of maintenance action using the Inventory, Logistics and Maintenance Management SW (MSS).
11. Use HTG XRP-2 to determine if a configuration change has resulted from the maintenance action; record configuration changes using PureSoft DDTS (MSS; default tracking system SW).
12. Prepare and submit Configuration Change Request (CCR) to configuration management for review and forwarding to the Configuration Control Board (CCB) for approval of any configuration change.

3.2 SMC Operator Roles

3.2.3 SMC Operations Supervisor

3.2.4 SMC Performance Analyst

3.2.5 SMC Resource Controller

3.2.6 SMC Security Controller

3.2.1 SMC Computer Operator

Operate SMC host processors, supporting restarts, reboots and shutdowns. Monitor system status and respond to console messages, documenting all operations problems and actions. Provide support to SMC maintenance staff and vendor problem investigation, resolution and maintenance. Support SMC Resource Controller configuration control and problem status reporting.

3.2.1.1 Interfaces

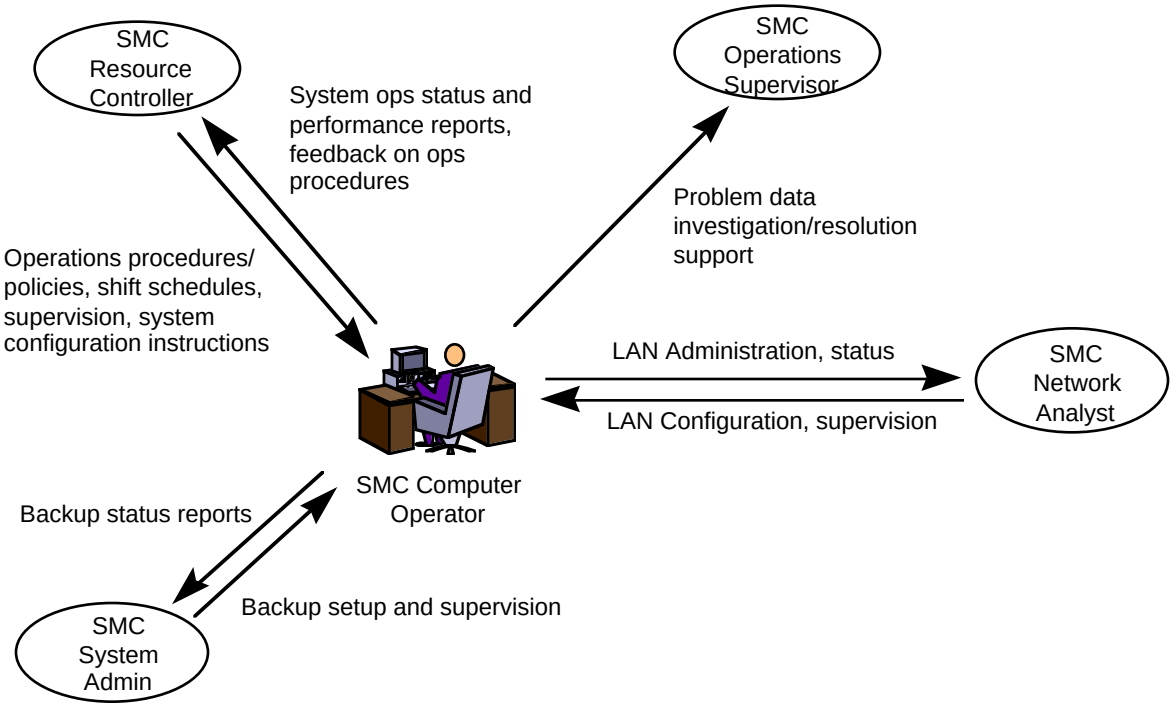

Figure 3.2.1-1 SMC Computer Operator Interfaces

3.2.1.2 Roles and Responsibilities

1. Monitor and operate SMC hosts, peripherals and workstations. (HPOV)
2. Restart/reboot, shutdown and status monitoring of SMC hosts and workstations. (HPOV)

3. Maintain logs of all operations activities. (HPOV)
4. Document and support investigation of errors/faults and reconsystem for problem workarounds at the direction of the SMC Resource Controller. (HPOV, Remedy, MSS)
5. Perform on-shift, pre-approved preventative maintenance, problem diagnosis and repair, under the direction of the SMC Resource Controller and in accordance with vendor agreements. (HPOV)
6. Maintain computer ops system consumable stores.
7. Perform routine and on-demand backups and recoveries. (Backup Tool)

3.2.2 SMC Fault Manager

Provide focal point for inter-ECS site problems; perform fault analyses including isolation, location, identification and characterization. Responsible for interacting with external systems regarding inter-system problems. Support fault diagnosis testing for hardware, software, and resource-to-resource connectivity. Support other centers' fault management activities.

3.2.2.1 Interfaces

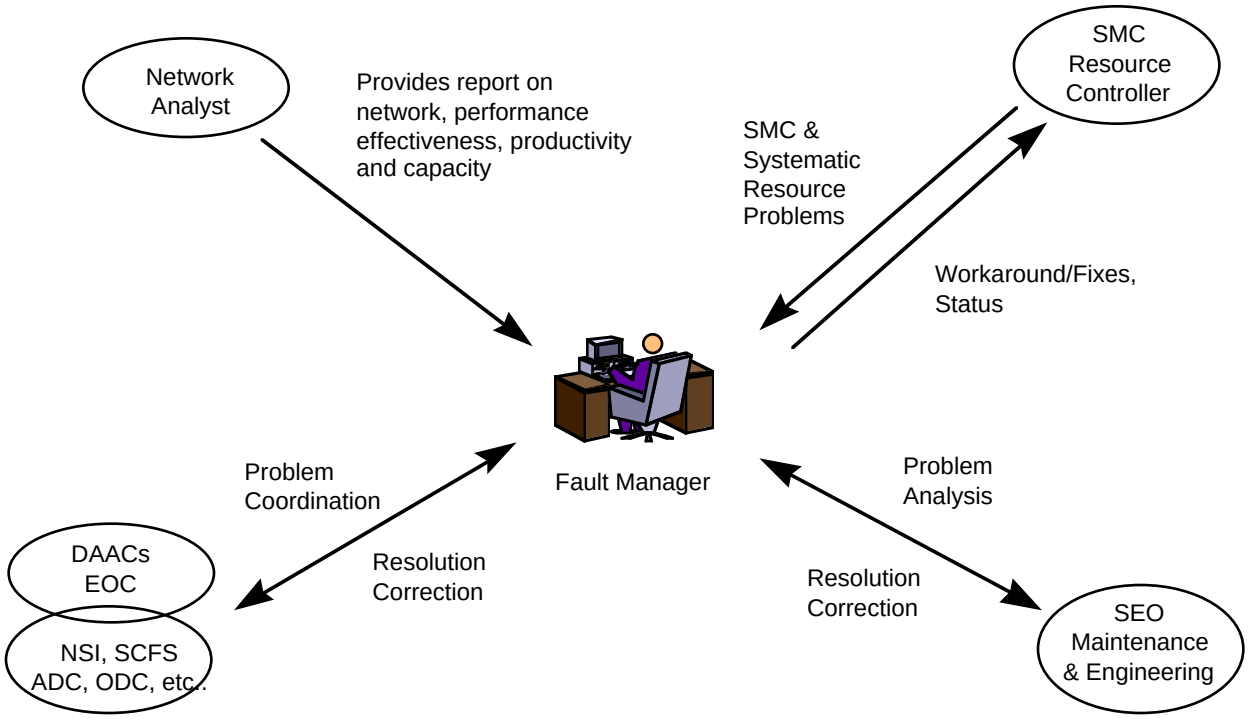

Figure 3.2.2-1 SMC Fault Manager Interfaces

3.2.2.2 Roles and Responsibilities

1. Responsible for remote site monitoring and supporting SMC LAN and EBnet by using HPOV and Tivoli.
    - View error and fault notifications through HPOV notifier
    - View resource status via HPOV maps and collections
    - View history log via log browser
    - Run diagnostics and view results
2. Responsible for requesting time for maintenance on SMC hardware and software which includes updates, preventive maintenance, upgrades and integration.
3. Responsible for real-time support fault isolation, diagnosis, analysis and recovery coordination.
    - Support sites in fault isolation by:
        - Evaluating fault data from multiple sources
        - Running network analysis tools as required
        - Providing common point of contact to external systems
        - Evaluating cross site incident reports
    - Resolve Trouble Tickets escalated from sites
    - Correlate with Trouble Tickets/status data from external providers
    - Coordinate and distribute common problem resolution to all sites
4. Responsible for system-wide fault data collection, trending, long-term fault analysis, planning and information distribution across multiple LSMs and networks.
    - Sites provide periodic reports (daily, weekly, monthly)
    - Sites provide details via Sybase data extract which is imported by SMC
    - SMC can “QUERY” Site databases for details when necessary
    - SMC can request site logs, selected events from logs and selected periods
    - Common definition at sites provides for:
        - Trend analysis across common hw/sw components
        - Aggregation of data into SMC Sybase database
        - Statistical analysis on site and system wide views

5. Receive summary report from sites, monitor system wide resources (EBnet) and perform fault trend analysis.

3.2.3 SMC Operations Supervisor

Responsible for the performance of all SMC "on-line" operations personnel and resources in accordance with approved SMC and company policies, plans, procedures, schedules and priorities. Provide direction and assistance to "on-line" operations staff. Provide reports to management as required. Serve as the focal point for all operations related problems and assign and prioritize all problem investigation and resolution activities in consultation with management.

3.2.3.1 Interfaces

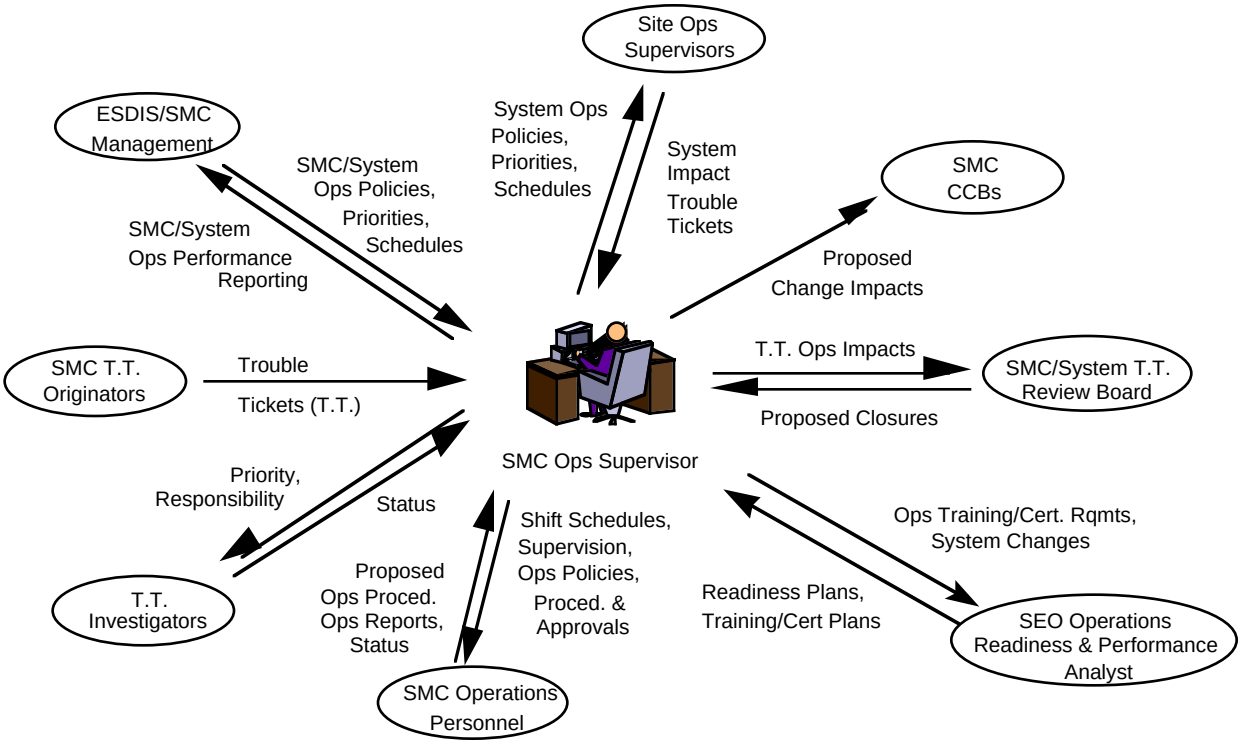

Figure 3.2.3-1 SMC Operations Supervisor Interfaces

3.2.3.2 Roles and Responsibilities

1. Provide assistance in coordinating system-wide activities.
2. Responsible for the scheduling and supervision of all SMC "on-line" operations personnel.

3. Provide the focal point for all SMC and system impact Ops Trouble Tickets - assess the impact to SMC/system operations, assign work-off priority and assign investigative responsibility. (Remedy)
4. Responsible for periodic (daily, weekly, monthly, etc.) SMC and system mission operations performance reporting/briefing to SMC/ESDIS government and contractor management.
5. Responsible for Ops impact assessment of all SMC/system proposed Trouble Ticket closures. (Remedy)
6. Responsible for Ops impact assessment of all SMC/system proposed site engineering changes and participation in SMC/system CCBs.
7. Responsible for SMC/system Ops readiness and installation planning for all Ops system changes. (HPOV)
8. Responsible for development of SMC and system Ops policies and review/approval of all SMC operations procedures.
9. Responsible for training, readiness and certification of all SMC Ops personnel.

3.2.4 SMC Performance Analyst

The SMC Performance Analyst maintains and modifies the SMC hardware characteristics database, monitors system utilization, recommends and tracks implementation of changes to system control parameters to improve system performance and participates in monitoring of overall ECS system-wide performance. The Analyst alerts DAACs to potential performance issues and problems and SMC, ECS M&O Office and/or Project management to circumstances that may require coordination between DAACs with Project (ESDIS) participation.

3.2.4.1 Interfaces

See Figure 3.2.4-1.

3.2.4.2 Roles and Responsibilities

1. Review DAAC performance, resource utilization problems and trend reports.
2. Responsible for end-to-end performance analysis, evaluation, trending and short-term planning.
    - Sites provide periodic performance metrics to SMC (via standard reports)
    - SMC can “Query” site databases to retrieve detailed information
    - SMC builds consolidated database to provide end-to-end view of ECS Operations
    - Identify bottlenecks in the end-to-end product generation and distribution
    - Resolve short-term capacity or band-width problems

3. Responsible for establishing, maintaining and distributing Performance Management policies and procedures
    - Establish site level performance reporting criteria
4. Coordination with external systems
    - SMC receives performance metrics from external systems (e.g., EBnet)
    - SMC coordinates with external systems on temporary service change requests (such as extra bandwidth from EBnet)

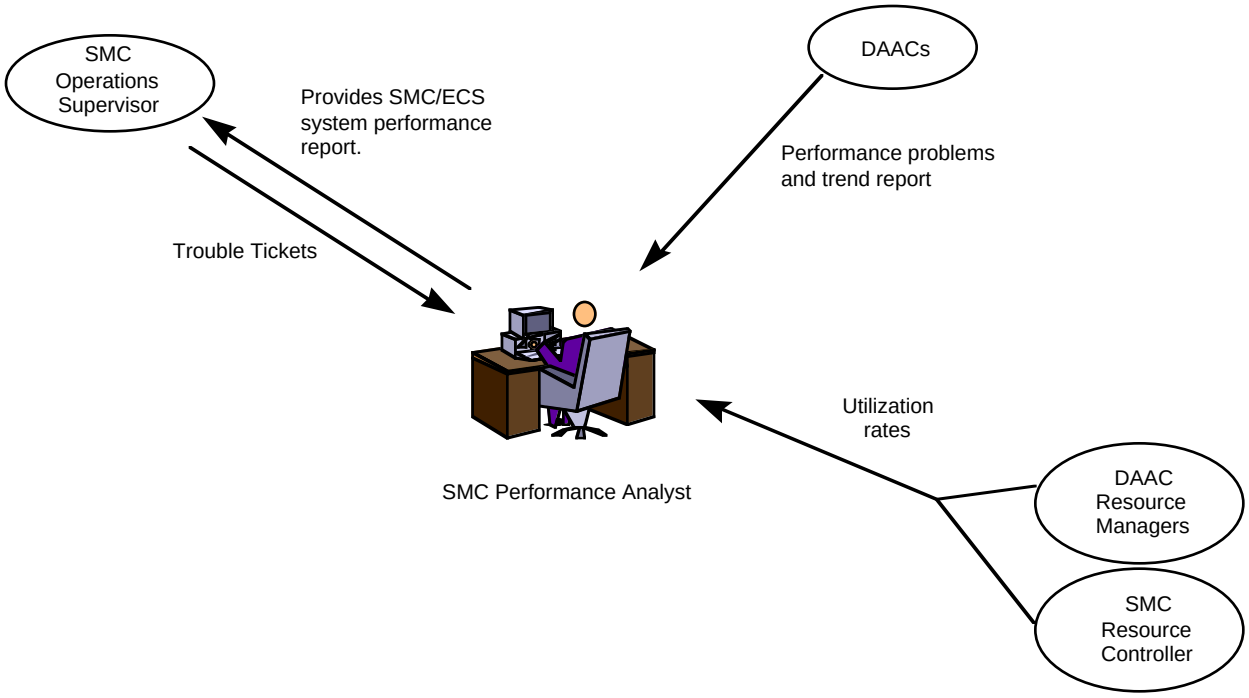

Figure 3.2.4-1 SMC Performance Analyst Interfaces

3.2.5 SMC Resource Controller

Responsible for all SMC hardware utilization, performance and configuration. Develop plans and coordinate scheduling for system-wide events and activities. Provide impact assessment for SMC and system-wide configuration changes. Provide on-line leadership, direction and coordination to DAAC Resource Managers for ECS system level resource problem resolution, prioritization and configuration and cross-DAAC production planning adjudication.

3.2.5.1 Interfaces

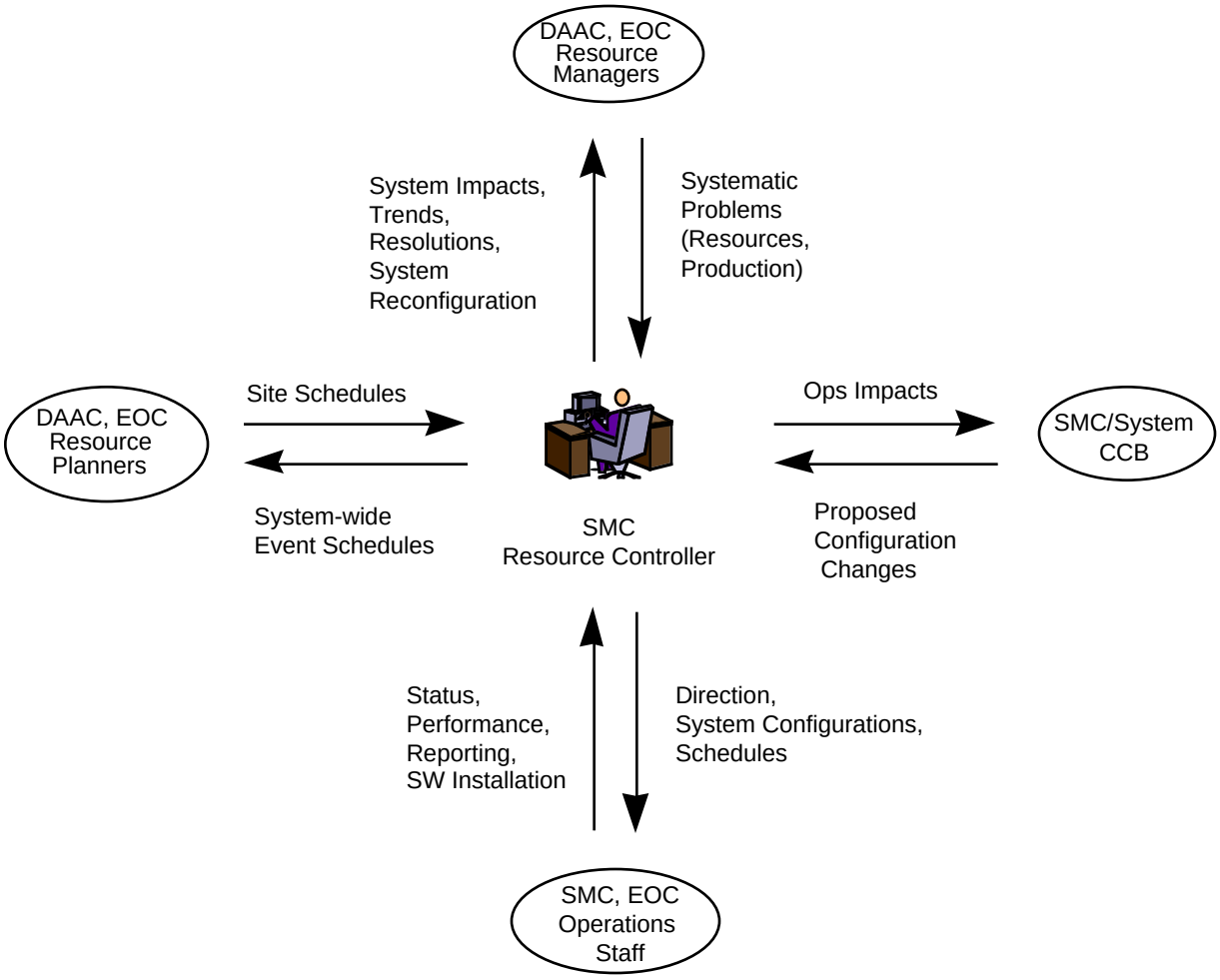

Figure 3.2.5-1 SMC Resource Controller Interfaces

3.2.5.2 Roles and Responsibilities

1. Responsible for SMC hardware, software, LAN and ECS DCE cell configuration, allocation and utilization performance in accordance with SMC and system approved resource baselines and schedules. (HP OpenView, Autosys, DCE, Tivoli, Planning Workbench)
2. Document and oversee investigations of SMC hardware, software and LAN errors/faults. Monitor/review system-wide errors/faults for systematic trends and impacts. (Remedy, HPOV)
3. Provide plan and direct SMC and system reconfiguration in response to operations anomalies. (DCE, HPOV)

4. Perform (LSM) remote problem monitoring during unattended shifts at DAACs. (HPOV)

5. Populate and maintain the SMC resource profiles describing characteristics of all processing resources (e.g., processor class, speed, storage capacity, etc.). (Planning Workbench, SQL)

6. Monitor, analyze and report ops utilization and performance of SMC hardware/software. Develop and provide reports on system-wide resources utilization and performance. (HPOV)

7. Review and provide impact assessment for all proposed SMC and system-wide configuration changes.

8. Develop SMC resource schedules. Develop plans and coordinate scheduling for system-wide events/activities. (Planning Workbench)

9. Review and resolve/adjudicate, as required, production planning problems and conflicts between DAACs.

10. Provide impact assessment of all CCRs.

11. Review CCB materials.

3.2.6 SMC Security Controller

Support development of ECS System security policies and procedures, coordinate implementation and provide monitoring/auditing and reporting. Lead ECS system level security problem investigation and resolution.

3.2.6.1 Interfaces

See Figure 3.2.6-1.

3.2.6.2 Roles and Responsibilities

1. Support development of ECS system-level and SMC specific ops security policies for the protection of facilities, personnel, equipment, communications and data. Coordinate, review, monitor progress and report sites' implementation of security plans and procedures. Develop, implement and report progress for SMC specific implementation.

2. Identify ops personnel and user security training and awareness education requirements. Monitor and report progress on site-specific implementation.

3. Ensure SMC and system-wide awareness and adherence to government and company personnel health and safety policies, practices and procedures.

4. Maintain SMC and system-level portions and verify maintenance by other organizations for their portions of the Security Management Plan, Security Risk Assessment document, Security Sensitive Items List and Security Risk Management Plan.

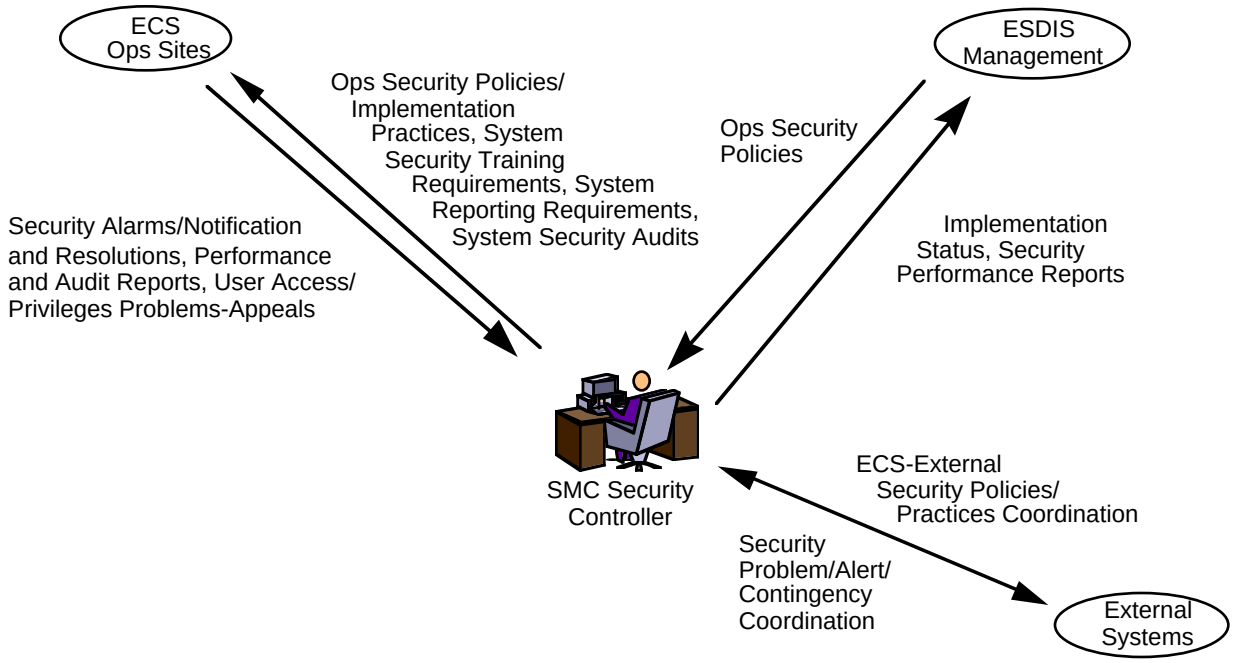

Figure 3.2.6-1 SMC Security Controller Interfaces

5. Monitor, audit and report system-wide adherence to information security practices, including access protection, configuration management, software and data backup, physical access, network access, contingency and disaster recovery plans, material destruction and protective storage.

6. Manage SMC system-level security authorization and authentication databases controlling privileges and access to system devices, data and services. Monitor, audit and report sites' compliance to management of their databases.

7. Monitor SMC and system-wide security alarms/notifications. Support system-level and support site investigation and resolution. Provide system-level performance reports.

4. Distributed Active Archive Center (DAAC) Roles

This section describes the primary interfaces and roles and responsibilities for the following DAAC operations positions supporting ECS Release-B mission operations:

4.1 DAAC Support and Engineering Roles

4.1.1 DAAC Administrative Assistant

Perform secretarial and administrative functions for all DAAC ECS personnel and administer the DAAC ECS technical library. This position includes providing typing support, filing, processing expense reports, time cards, briefing material preparation, maintenance of company personnel files, preparing travel arrangements, serving as the Database Administrator responsible for maintaining the DAAC ECS Technical Library (both database listing and technical documents), access coordination and site badging, and monitoring security policies and procedures.

4.1.1.1 Interfaces

See Figure 4.1.1-1.

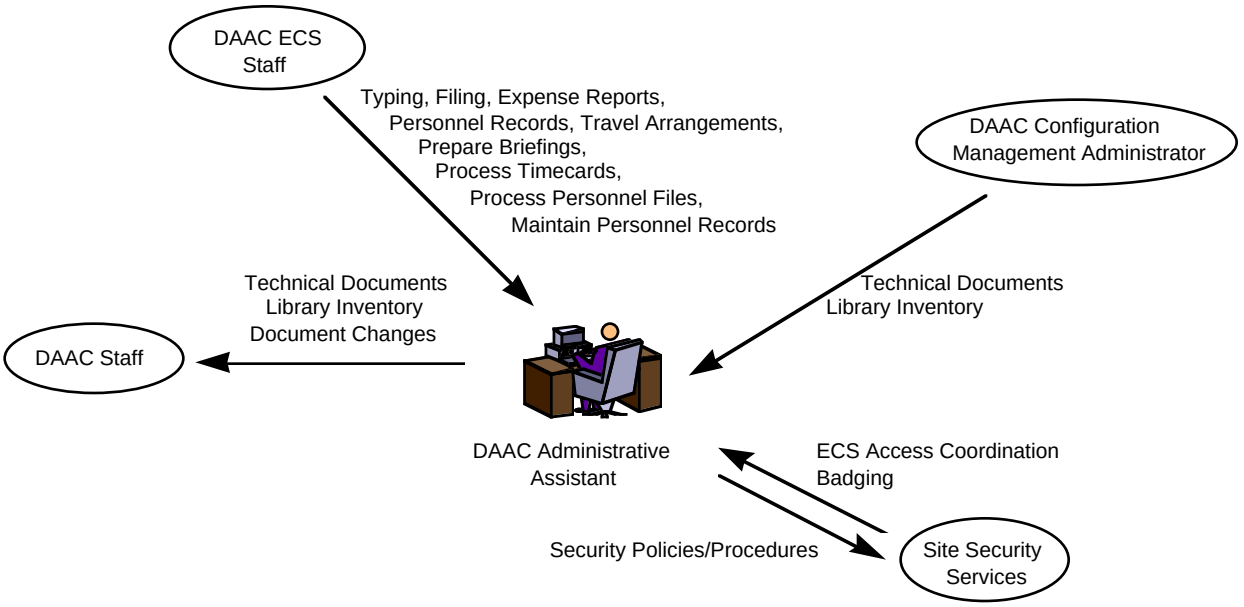

Figure 4.1.1-1 DAAC Administrative Assistant Interfaces

4.1.1.2 Roles and Responsibilities

1. Provide typing and preparation of briefing material support for DAAC ECS personnel using a PC with standard OS and TCP connection.
2. Perform filing for DAAC ECS personnel.
3. Prepare expense reports for DAAC ECS personnel using a PC with standard OS and TCP connection.
4. Process time cards and personnel files for DAAC ECS personnel using a PC with standard OS and TCP connection.
5. Maintain personnel records for all DAAC ECS personnel using a PC with standard OS and TCP connection.
6. Prepare travel arrangements for DAAC ECS personnel using a PC with standard OS and TCP connection.
7. Maintain technical documents in the DAAC ECS Technical Library (both hard and soft copies) and serve as the Database Administrator using a PC with standard OS and TCP connection.
8. Maintain the DAAC ECS Technical Library database listing using the Baseline Manager tool (XRP-II) database system and e-mail.

9. Perform updates to post current revisions and changes to the Baseline Manager document inventory and links to product CIs in coordination with the Configuration Management Administrator.

10. Provide copies of technical documents for DAAC personnel.

11. Support site (GFE) security services to include coordinating ECS site access, badging and monitoring site security policies/procedures.

4.1.2 DAAC Archive Manager

The DAAC Archive Manager monitors the archival of data to ensure that it is properly logged into and out of the ECS system. He/she maintains the catalog of data and monitors distribution of data that is made available for use by science and the operations community on demand. He/she ensures the viability and safety of storage media and replaces and repairs media as necessary.

The DAAC Archive Manager will monitor the performance of the archives from a workstation console using both ingest and data server subsystem supplied graphical user interface (GUI) tools.

4.1.2.1 Interfaces

The role interfaces associated with the DAAC Archive Manager functions are shown in Figure 4.1.2-1 and defined in Section 4.1.2.2.

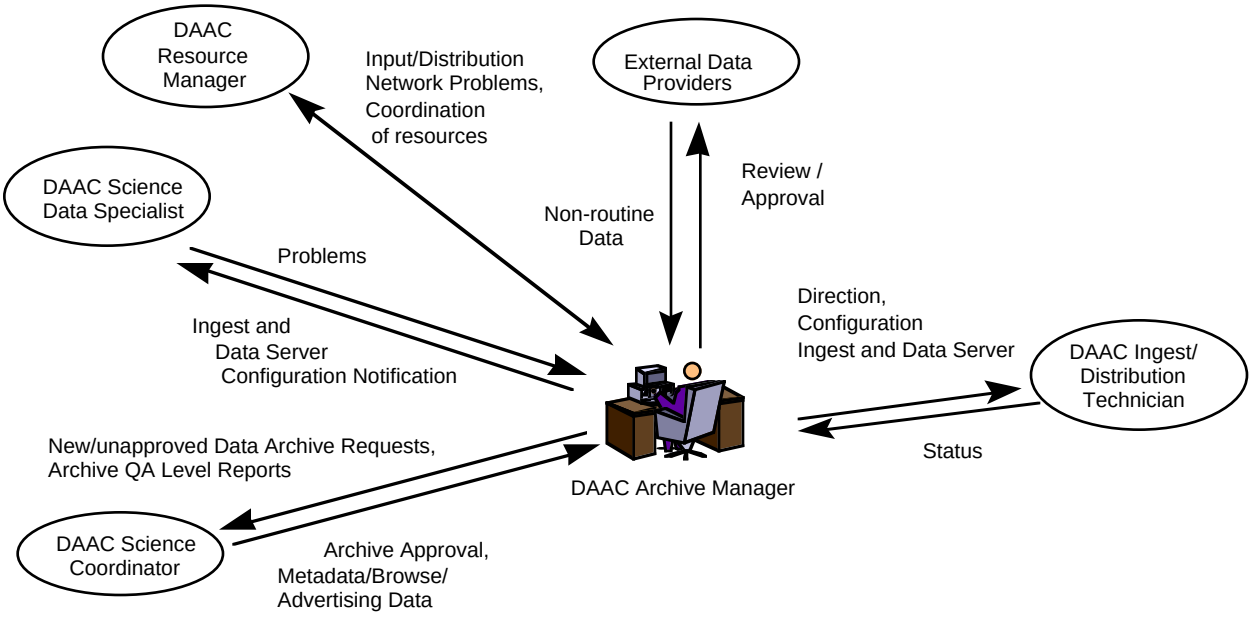

Figure 4.1.2-1 DAAC Archive Manager Interfaces

4.1.2.2 Roles and Responsibilities

The roles and responsibilities of the DAAC Archive Manager are defined as follows:

1. Responsible for site approved science data ingest, archival, and distribution operations performance. (Uses Ingest and Data Server GUIs.)
2. Establish and maintain configuration of peripherals and associated data servers. (Uses Data Server GUIs.)
3. Document and support investigation of archive errors and faults.
4. Maintain site data catalogue and data directory.
5. Supervise the DAAC Ingest/Distribution Technicians.
6. Manage ingest, distribution and archival data servers.
7. Manage archive processing queue (order, priority, data content, approval status).
8. Manage archive content and capacity. Perform approved data deletions, archive backups and restorations. Perform periodic data sampling to ensure data integrity.
9. Submit new data archive requests to the DAAC Science Coordinator for review/approval processing and review/creation of metadata, browse and advertising data.
10. Report performance of ingest, archive, distribution operations.
11. Monitor/review and report QA levels of archived data.

4.1.3 DAAC System Administrator

Administer and maintain all DAAC office and operations support computer hosts, peripherals and workstations, including troubleshooting, preventive and general system maintenance. Complete initial program loads for all system upgrades. Provide configuration, security and access administration.

4.1.3.1 Interfaces

See Figure 4.1.3-1.

4.1.3.2 Roles and Responsibilities

1. Create, modify, delete and maintain DAAC user accounts.
2. Initialize and conDAAC hosts and workstations.
3. Perform preventive maintenance for all DAAC office staff and operations support hosts and workstations. (HPOV)
4. Diagnose and correct system problems on-demand. (MSS, HPOV, Remedy)

5. Document, investigate and resolve errors, faults and observations for site hosts, peripherals and workstations. (MSS, HPOV, Remedy)
6. Coordinate system maintenance scheduling with other DAACs and SMC.
7. Monitor DAAC workstation performance - tuning when applicable. (HPOV)
8. LAN and local DCE configuration at the DAAC.
9. Provide system-level management of directory services at the DAAC.
10. Perform backups and recoveries. (Backup Tool)
11. Install latest version of ECS and COTS software on DAAC hosts and workstations.

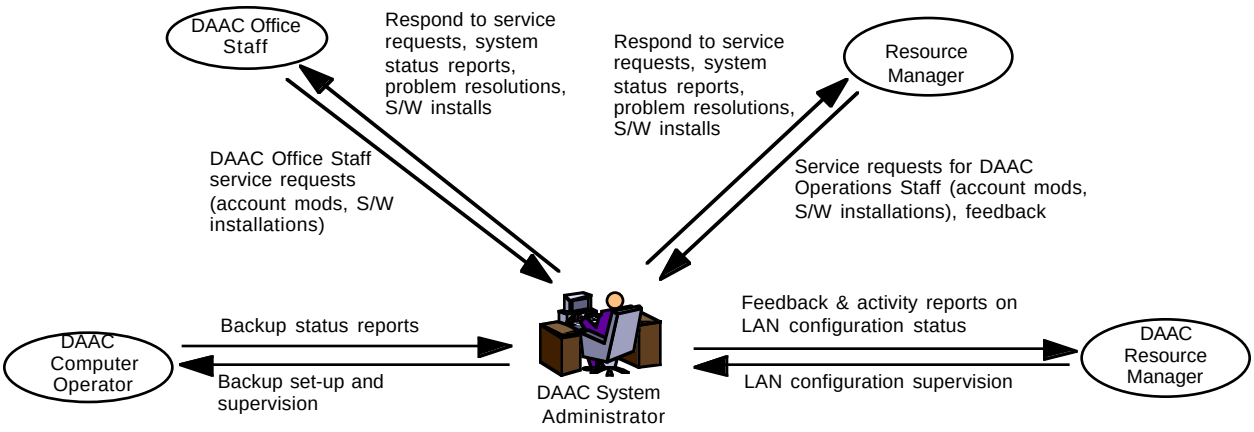

Figure 4.1.3-1 DAAC System Administrator Interfaces

4.1.4 DAAC Configuration Management (CM) Administrator

Coordinate usage of approved configuration management procedures with elements and external configuration management organizations. Ensure that changes to the DAAC ECS hardware, software, databases and procedures are properly documented and coordinated. Maintain control of all DAAC configured documents, databases, hardware and software. Assist in the development and administration of the library with respect to configuration management procedures. Provide recording secretarial tasks for DAAC Change Control Board (CCB) (if requested by DAAC management). Coordinate Review Item Discrepancy (RID) requests generated during M&O reviews. Generate CCB monthly reports. Prepare agendas and schedule for CCB meetings.

4.1.4.1 Interfaces

The figure shows the role interfaces of the CM Administrator who acts as database administrator of several tools known as the Change Request Manager (DDTS), SW Change Manager

(ClearCase) and Baseline Manager (XRP-II) in support of the DAAC Change Control Board. Site-to-site transfer of software changes will be accomplished with the use of a utility tool called Tivoli Courier.

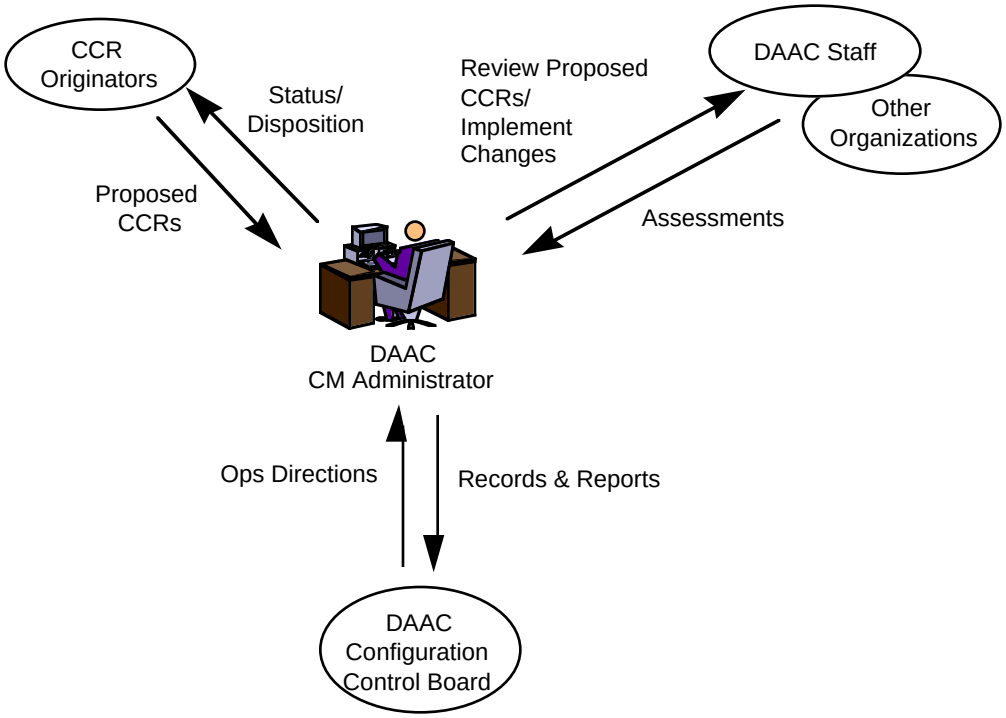

Figure 4.1.4-1 DAAC Configuration Management (CM) Administrator Interfaces

4.1.4.2 Roles and Responsibilities

The following list of roles and responsibilities correspond to the interfaces in Section 4.1.4.1.

1. Change Request Manager — Record and manage proposed and approved Configuration Change Requests (CCRs) in the Change Request Manager (Distributed Defect Tracking System--DDTS). Act as the Change Request Manager database administrator at DAAC. Responsible for the coordination of all DAAC CCRs with external interfaces, coordination of impact assessments and propagating system CCR resolutions to the site-level. Support for the deliberations of the DAAC Configuration Control Board.

2. SW CM Manager — Record, report, manage and distribute changes to custom ECS SW, science SW and database control files in the ClearCase tool. Maintain privileged access to the ECS SW library at the DAAC for the Sustaining Engineering Organization, Maintenance Engineers and off-site facilities (EDF, DAACs and EOC).

3. Baseline Manager — Record, report and maintain system-level changes to the as-built operational baseline of ECS products in the Baseline Manager (XRP-II) tool. Generate

the Configuration Status Accounting Records (CSAR). Maintain inventory of control items and version control of ECS Configuration Items.

4. Configuration Control Board — Generate status reports as required for the DAAC Configuration Control Board. Support the system-level implementation of resolutions provided by the DAAC Configuration Control Board. Provide implementing instructions and monitor progress in implementing change/problem resolutions as directed by the DAAC CCB.

5. Track, status and facilitate the implementation of changes at the DAAC.

4.1.5 DAAC Database Administrator

Maintain the databases and structure management for the integrated SDPS and local (LIM) and system management (DIM) functions, provide the operations interface to perform the database administration utilities, such as database backup and recovery, performance monitoring and tuning. Administer user access control (ACLs) and daily database synchronization.

4.1.5.1 Interfaces

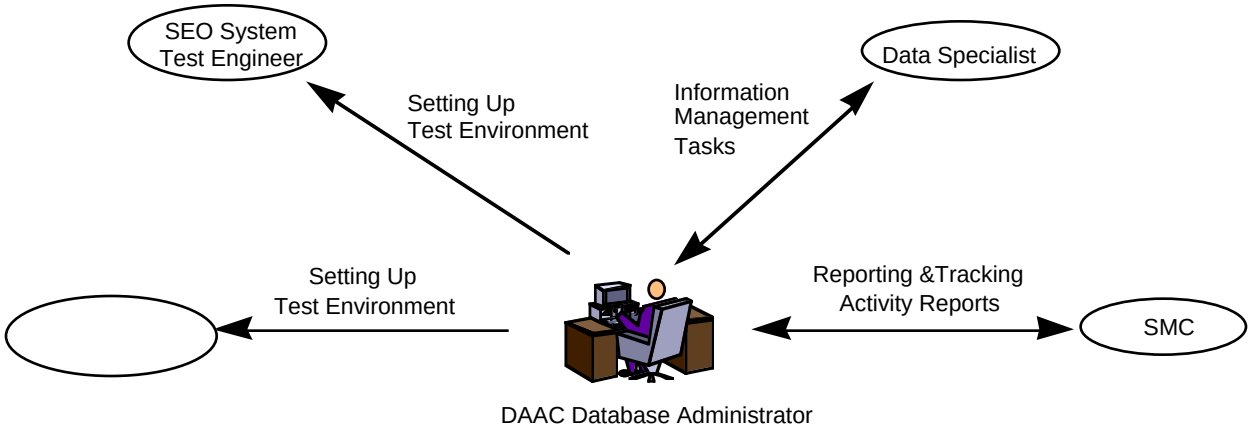

Figure 4.1.5-1 DAAC Database Administrator Interfaces

4.1.5.2 Roles and Responsibilities

Sybase and Illustra database administration and reporting writing tools are utilized by the Database Administrator.

1. Perform the database administration utilities, such as database backup, Database Transaction Logs maintenance and database recovery due to Database access error, Sybase read/write errors.

2. Perform monitoring and tuning, for example, the physical allocation of database resources information are reported directly by the Database Management System for use by a database administrator.

3. Maintain user accounts for the users from the external system in both the DCE and Kerberos Security databases. DAAC Database Administrator creates user registration and account access control permissions in the Security databases.

4. Create standard and ad hoc security management reports of stored security management data utilizing the Sybase report generator.

5. Work with SEO and DAAC System Test Engineers to set up a test environment as needed.

6. Work with Data Specialist in information management tasks involving databases, data sets and metadata management.

7. On a regular basis, the event reports are consolidated into a site event history database for reporting and tracking of activities to the SMC.

8. Perform daily database synchronization.

4.1.6 DAAC ECS Contractor Manager

Responsible to the DAAC Manager and Scientist for contractor/sub-contractor ECS system operations and maintenance. Organize and manage M&O staffing, training, procedures and performance reporting to plan and execute operations and maintenance in accordance with DAAC Management objectives, priorities and policies.

4.1.6.1 Interfaces

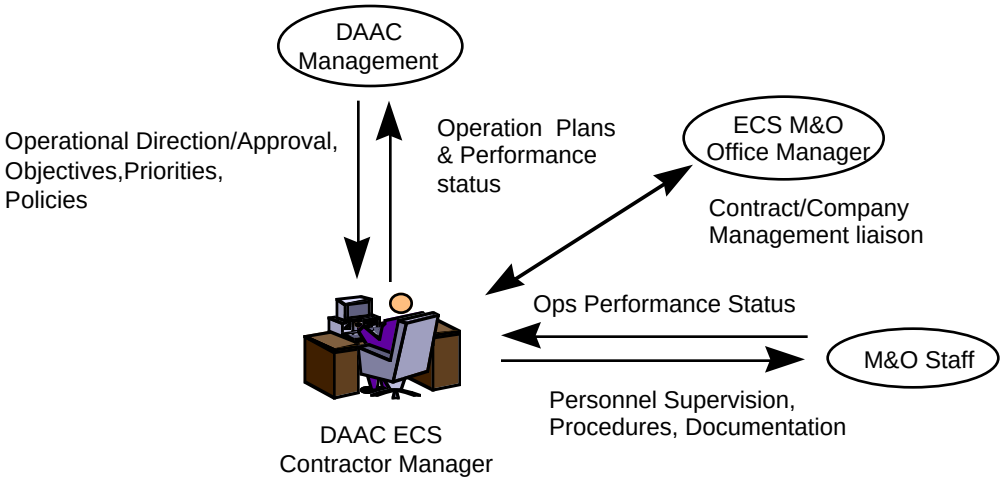

Figure 4.1.6-1 DAAC ECS Contractor Manager Interfaces

4.1.6.2 Roles and Responsibilities

1. Provide, organize and manage a trained and certified M&O staff using a PC with standard OS and TCP connection.
2. Provide contract time keeping and financial management and reporting using a PC with standard OS and TCP connection.
3. Perform management liaison with the DAAC and ECS M&O Management using a PC with standard OS and TCP connection and ZMail.
4. Provide personnel supervision in accordance with site and company policies.
5. Establish contractor management system, controls, functions, policies, procedures and documentation using a PC with standard OS and TCP connection and ZMail.
6. Plan and manage ECS system Ops and maintenance in accordance with ECS system specifications and DAAC management objectives and priorities.
7. Receive from M&O staff ops performance status.

4.1.7 DAAC Maintenance Coordinator

The DAAC Maintenance Coordinator is responsible for commercial off-the-shelf (COTS) hardware (HW) and software (SW) maintenance at the DAAC. This individual functions as the site's maintenance engineer in cases where a failed component is to be repaired using a self-maintenance approach. If outside maintenance support from a contracted maintenance vendor or the original equipment manufacturer (OEM) is to be used, the DAAC Maintenance Coordinator coordinates the maintenance action. Prior to, during and upon completion of any maintenance action, the DAAC Maintenance Coordinator will interface with the Management Subsystem (MSS) for recording and monitoring maintenance actions.

4.1.7.1 Interfaces

Interfaces for the DAAC Maintenance Coordinator are identified in Figure 4.1.7-1. These interfaces are described in Section 4.1.7.2.

4.1.7.2 Roles and Responsibilities

The roles and responsibilities of the DAAC Maintenance Coordinator are listed below.

1. Receive trouble tickets for COTS HW problems from the Operations Supervisor through Remedy ARS (MSS; trouble ticketing tool).
2. For COTS SW, coordinate the actions of COTS vendors regarding resolution of SW problems and upgrades; coordinate with the DAAC SW Maintenance Engineer to ensure that adequate and timely assistance is provided.
3. For COTS HW problems, may conduct initial fault diagnosis to isolate problem to the component or line replaceable unit (LRU).

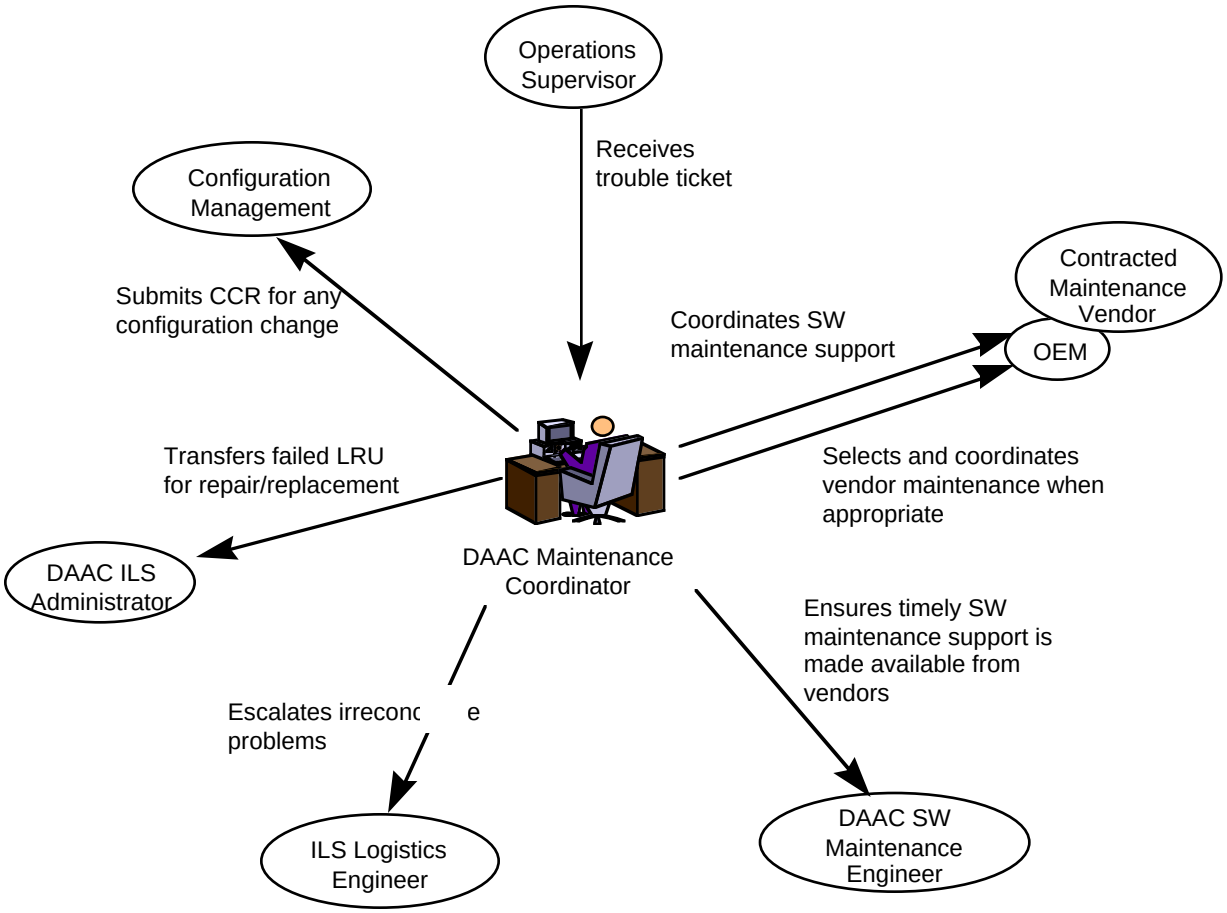

Figure 4.1.7-1 DAAC Maintenance Coordinator Interfaces

4. Interface with the Inventory, Logistics and Maintenance Management SW (MSS) to analyze previous maintenance actions taken; interface with HTG XRP-2 (Baseline Manager, MSS) to determine present configuration.

5. Identify source of HW maintenance support based on contracted maintenance support agreements; choices for support include the Maintenance Coordinator, a contracted maintenance vendor or the OEM.

6. If the DAAC Maintenance Coordinator is the maintenance source: isolate failure to the LRU level; replace the LRU with an on-site spare; give the failed component to the DAAC Integrated Logistics Support (ILS) Administrator to be shipped to the COTS vendor for repair or replacement.

7. If a contracted maintenance vendor or the OEM is the maintenance source: place service call, escort maintenance personnel through facility and ensures maintenance action is completed satisfactorily.

8. Escalate irreconcilable COTS HW and SW problems to the ILS Logistics Engineer.

9. Provide trouble ticket resolutions following repair of COTS HW or SW using Remedy ARS (MSS).

10. Record details of maintenance action using the Inventory, Logistics and Maintenance Management SW (MSS).

11. Use HTG XRP-2 to determine if a configuration change has resulted from the maintenance action; record configuration changes using PureSoft DDTS (MSS; default tracking system SW).

12. Prepare and submit Configuration Change Request (CCR) to configuration management for review and forwarding to the Configuration Control Board (CCB) for approval of any configuration change.

4.1.8 DAAC Integrated Logistics Support (ILS) Administrator

The DAAC ILS Administrator provides control of contractor and government ECS property at the DAAC and maintains a continuous audit trail from receipt of a COTS item until transfer of accountability. This individual maintains accountability for all ECS equipment at the DAAC until it is accepted by CO/COTR, and for all equipment for which the contractor has M&O responsibility.

4.1.8.1 Interfaces

Interfaces for the DAAC ILS Administrator are identified in Figure 4.1.8-1. These interfaces are described in Section 4.1.8.2.

4.1.8.2 Roles and Responsibilities

The roles and responsibilities of the DAAC ILS Administrator are listed below.

1. Receive, inventory, store, issue and replenish spares, consumables, tools and test equipment (if any), and end items stocked at the DAAC using the Inventory, Logistics and Maintenance Manager (MSS).

2. Receive failed ECS HW from the DAAC Maintenance Coordinator and ship it to appropriate maintenance vendor for repair or replacement using vendor supplied RMA number.

3. Monitor vendor repair actions and the return of the repaired or replaced item to the DAAC.

4. Notify DAAC Maintenance Coordinator of receipt of repaired or replaced item; update the record of spares using the Inventory, Logistics and Maintenance Manager (MSS).

5. Conduct periodic inventories of ECS equipment and maintain records through the Inventory, Logistics and Maintenance Manager (MSS).

6. Report loss or damage to ECS property to ECS Property Administrator.
7. Support conduct of the annual property audit using inventory data in the Inventory, Logistics and Maintenance Manager (MSS).
8. Receive upgrades of ECS COTS SW and enter them into the Inventory, Logistics and Maintenance Manager (MSS).
9. Notify the DAAC CM Administrator of receipt of SW upgrades.

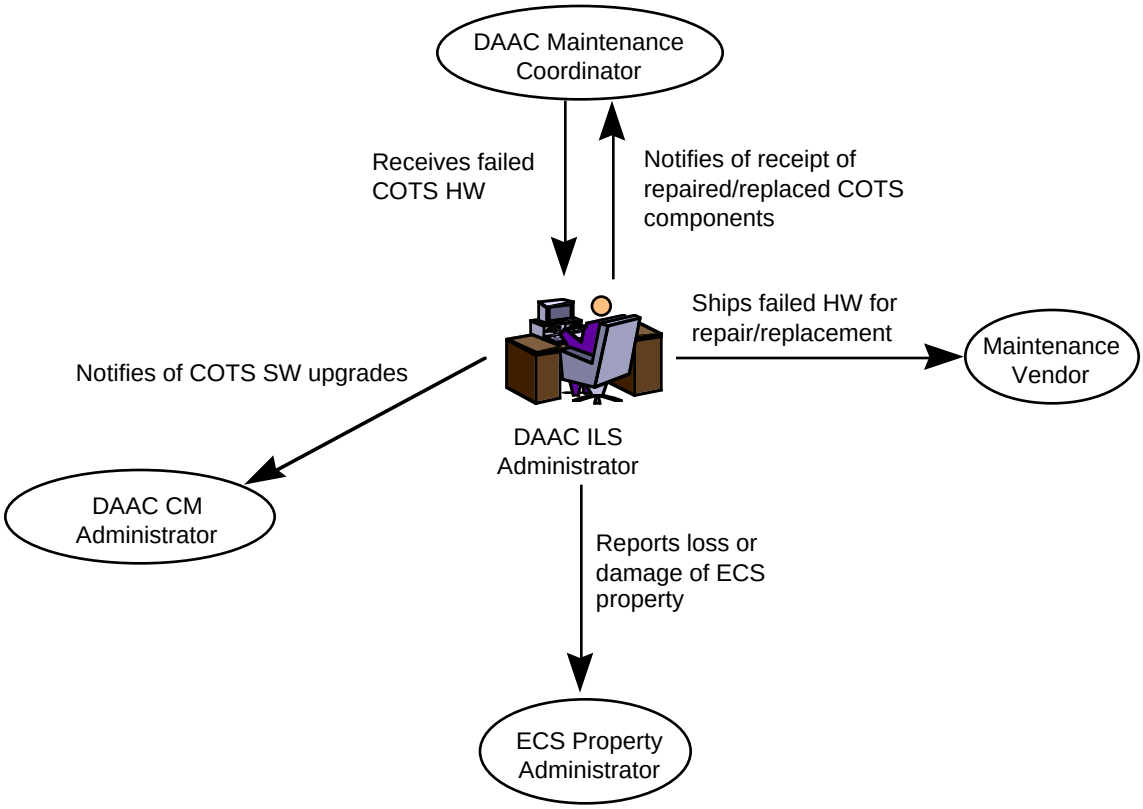

Figure 4.1.8-1 DAAC Integrated Logistics Support (ILS) Administrator Interfaces

4.1.9 DAAC Science Coordinator

The DAAC Science Coordinator is responsible to DAAC Manager/Scientist for science software integration, operational quality assurance of the science products and for services to the DAAC's users. The DAAC Science Coordinator interfaces with the DAAC Scientist, Instrument Teams, ECS Science Office and DAAC user community to define the DAAC's science operation objectives, priorities, performance metrics/satisfaction criteria and performance reporting.

4.1.9.1 Interfaces

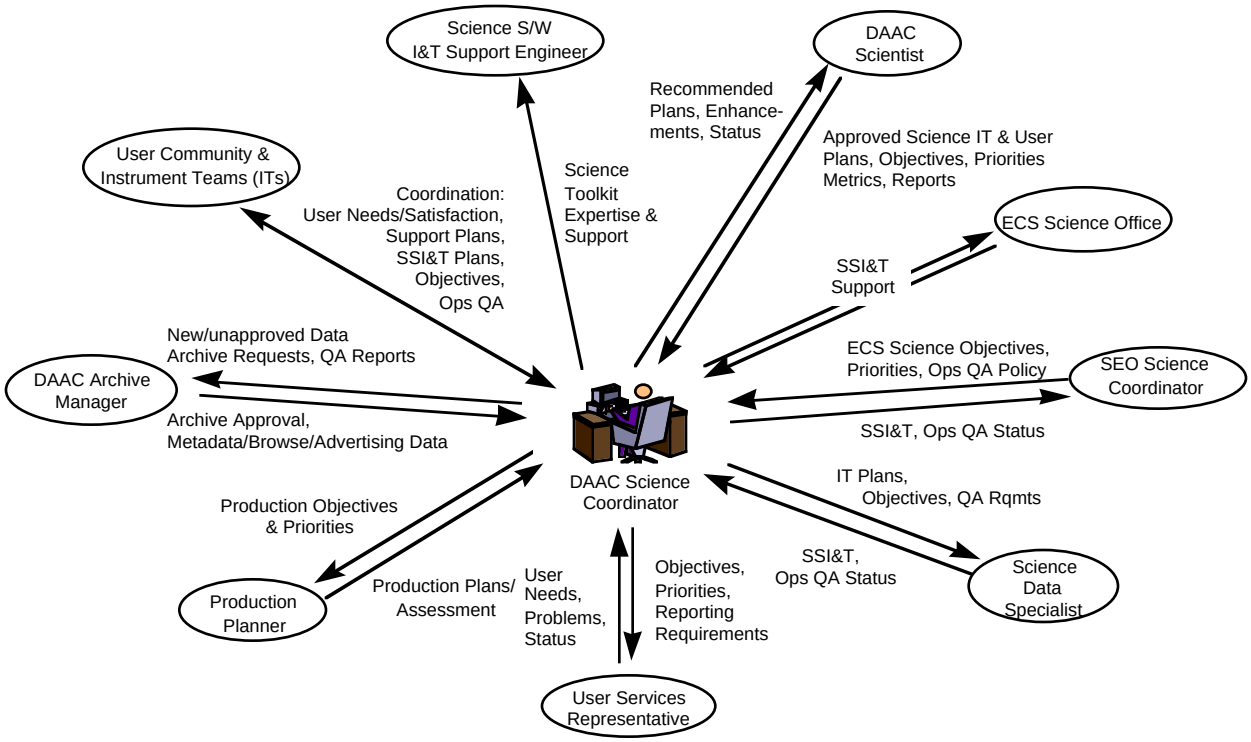

Figure 4.1.9-1 DAAC Science Coordinator Interfaces

4.1.9.2 Roles and Responsibilities

1. Identify and define
   - DAAC science mission objectives
   - science data processing/reprocessing requirements
   - success criteria
   - satisfaction evaluation and reporting methodology
2. Develop and maintain
   - DAAC user needs and priorities
   - operations satisfaction metrics
   - user satisfaction evaluation and reporting requirements

3. Develop plans and provide operations oversight for DAAC science software integration and test, product operational quality assurance and coordination with the Instrument Teams.

4. Provide operational leadership for satisfaction of users' needs for DAAC data and services.

5. Propose and evaluate proposed operational system enhancements for science processing and user services.

4.1.10 DAAC Science Software I&T Support Engineer

Provide DAAC SSI&T execution support, ECS tool and system expertise and science S/W processing problem support. Provide support to scientists in the development and integration of science software for both updates and new science software into the DAAC ECS system.

4.1.10.1 Interfaces

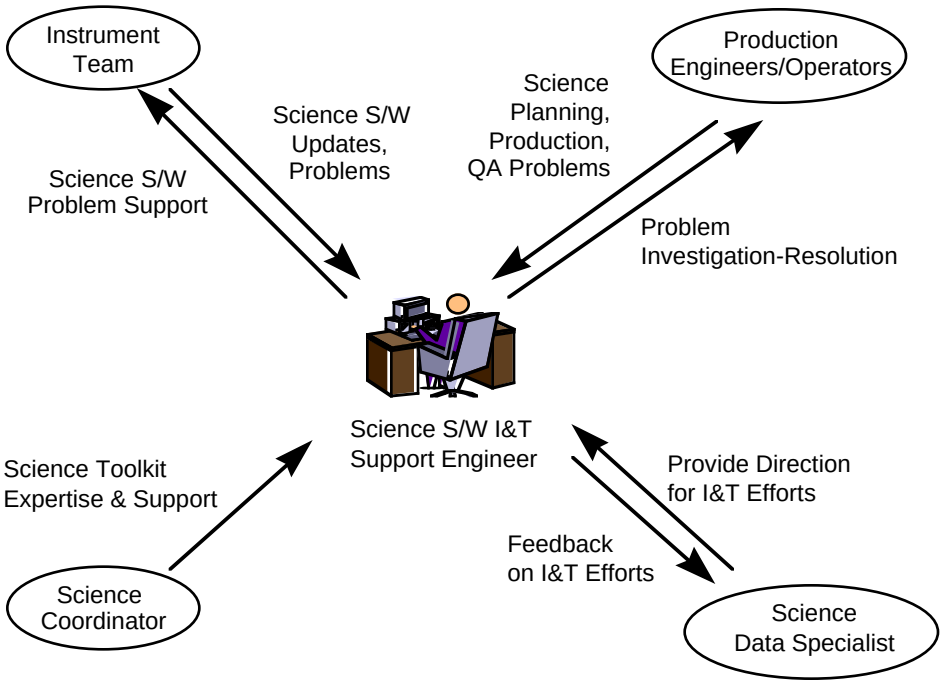

Figure 4.1.10-1 DAAC Science Software I&T Support Engineer Interfaces

4.1.10.2 Roles and Responsibilities

1. Provide support to Instrument Teams for the development and integration of science software into the DAAC ECS system.

2. Perform standards checking on all delivered software, including source code, scripts, process control files and related documentation.
3. Provide support for metadata updates and additions for science data products.
4. Support science processing problem investigation and resolution.
5. Recommend - assess, develop, implement changes to science toolkit software.
6. Provide support for integration and test of new and modified toolkit functions into the science software.
7. Support and track configuration of delta changes to science software, calibration coefficient files, relevant input files and documentation.
8. Facilitate migration and integration of major and minor modified versions of the science software into production versions.
9. Assess impacts and support integration and test for production planning and processing software changes. (Planning Workbench GUI)
10. Provide feedback and receive direction on I&T efforts.
11. Recommend-assess improvements for automated tools for SSI&T activities, such as file comparison and viewing data.
12. Write and implement procedures to examine non-standard auxiliary files and files not in HDF EOS format.

4.1.11 DAAC Software (S/W) Maintenance Engineer

The DAAC S/W Maintenance Engineer produces, delivers and documents the corrections, modifications and enhancements to ECS software (including COTS), and/or adapts or incorporates COTS software for ECS use.

The role interfaces associated with DAAC S/W Maintenance Engineer functions are shown in Section 4.1.11.1.

4.1.11.1 Interfaces

See Figure 4.1.11-1.

4.1.11.2 Roles and Responsibilities

1. Perform S/W builds and compiles, and make ECS custom S/W available for distribution (via library function). Supply test cases and input test data and expected test output to the DAAC in order to verify that the software runs correctly in the operational environment. Use ClearCase (TM) to make changes to custom ECS S/W and database controls files. (ClearCase provides version control of objects including source code, binaries, executables, documentation, test suites and libraries in heterogeneous UNIX development environments.)

2. Provide traceability to previous configurations. This includes all source files, documentation, test information and other files associated with the science software that might change during test/install of software.

3. Provide input to CM Administrator of any operational baseline document that might be changed during test/install including requirements, design, product documents and baselined operations plans and procedures. (Baselined ECS documents will be entered into and controlled at sites and at the system-level using word processors.)

4. Use Trouble Ticket System (TTS) to record and report problems. This includes records of events, work-off assignments, and actions taken that affect the controlled-baseline configuration.

5. Participate in the operations integration and test of the software at the DAAC, in particular the evaluation of the results of integration and test to verify that the software will run safely, i.e., will not interfere with other software or DAAC operations.

6. Provide Delivery memos describing the purpose and contents of each delivery. [e.g., an initial release, modification, etc.]

7. Confirm that the SDPS/W design meets the EOSDIS requirements with regard to metadata generation and formats, browse product generation and formats, standard product generation and formats, quality assessment on ingest of external ancillary data, quality assessment for output products, product dependencies and SDP Toolkit interfaces.

8. Use the mandatory tools of the SDP Toolkit for all SDPS/W and PDPS interfaces. Use the optional tools of the SDP Toolkit as applicable. Check SDPS/W source code and scripts comply with EOS coding standards. Use code checking tools. Use code checkers to check code for software standards compliance of final deliverable.

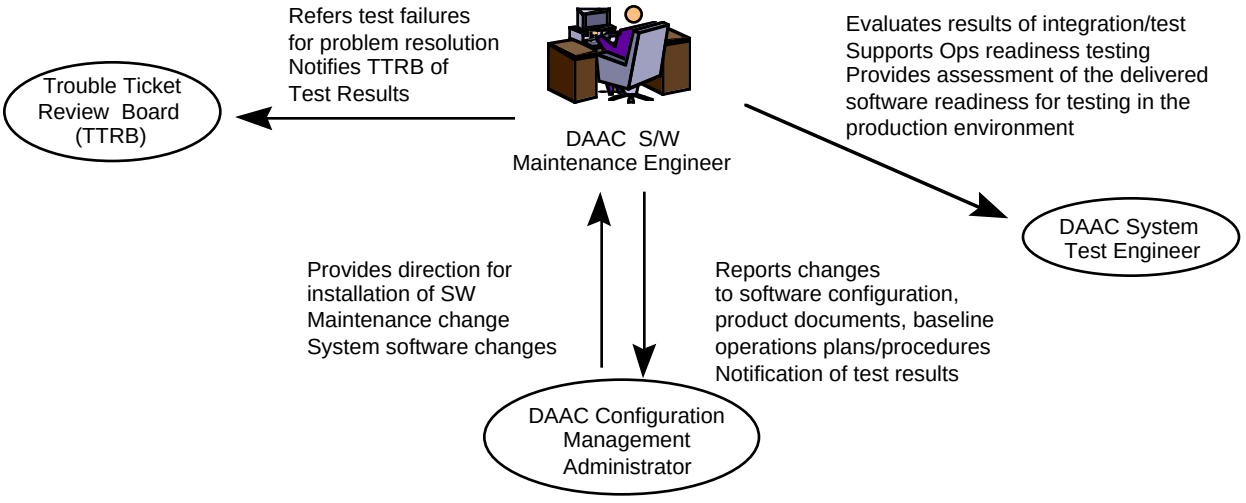

Figure 4.1.11-1 DAAC Software (S/W) Maintenance Engineer Interfaces

9. Assist in defining Test Plans and Acceptance Test Specifications with the DAAC/ECS science software support group.

10. Perform stand-alone testing at the DAAC to verify rehosting. Organize resources for verifying of acceptance test results. Support DAAC operational readiness testing and activities. Participate in Reviews related to the SSI&T.

11. Have knowledge of scripts invoking binary executables to include the Perl, C Shell, Korn Shell and POSIX Shell script languages. Have knowledge of FORTRAN or "C", since they are ANSI standards for these languages.

12. Provide support to ECS Functional Configuration Audits (FCAs) and Physical Configuration Audits (PCAs).

13. Distribute source files, documentation, test information and other files associated with the science software to authorized users.

14. Hold software reviews as needed.

4.1.12 DAAC System Engineer

Analyze and identify ways to accommodate needed improvements, new technologies and new concepts, manage system upgrades and evolution, control and maintain ECS updates, and perform the activities necessary to assure ECS reliability, maintainability and availability. Work with TAG (Technical Assistance Group) to evaluate user inputs and monitor system performance to tune the system for optimum response and support.

4.1.12.1 Interfaces

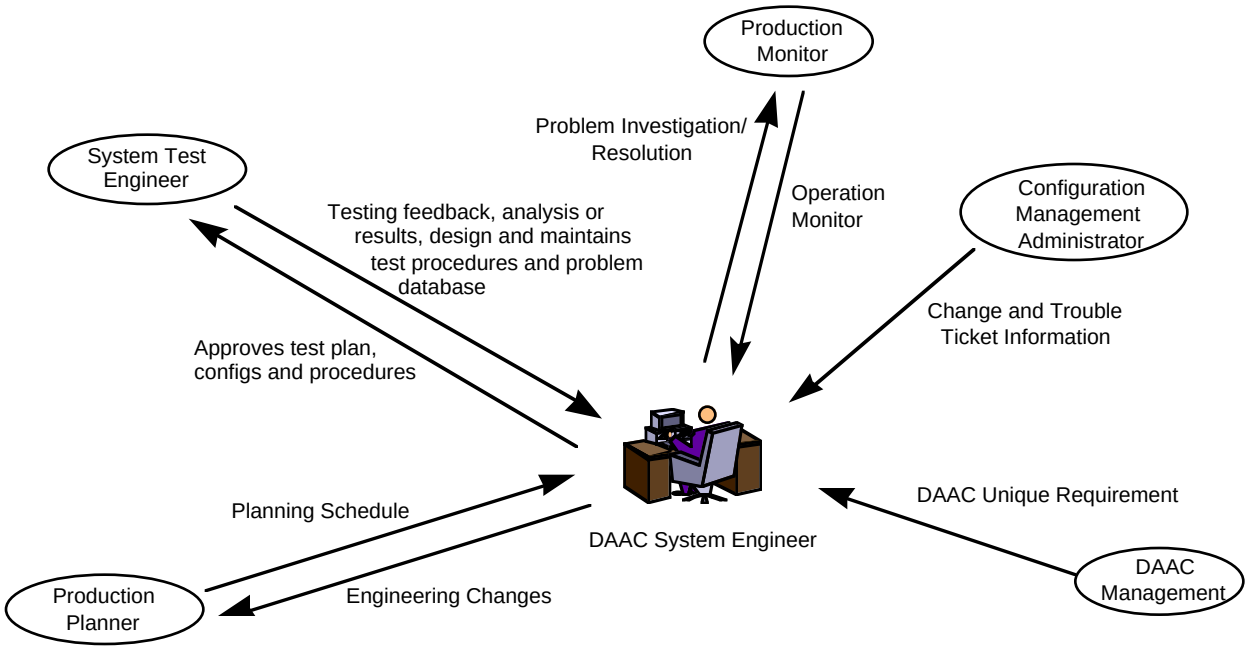

Figure 4.1.12-1 DAAC System Engineer Interfaces

4.1.12.2 Roles and Responsibilities

1. Respond to system problems in a responsive manner. Based upon inputs from the sites on problems, impacts, priorities, etc., the SEO is allocated problems and enhancements that are system-wide in nature. Upon approval by the ESDIS CCB, these M&O modifications are distributed to the centers as well as to the development organizations.
2. Identify and, when directed and approved by the Government CCB, implement needed improvements to the current operational version of the hardware, software and firmware.
3. Analyze and identify of ways to accommodate new technologies and new concepts, manage system upgrades and evolution, control and maintain ECS interfaces, and perform the activities necessary to ensure ECS reliability, maintainability and availability.
4. Work with DAAC personnel in analysis of requirements, problems, anomalies and formulation of recommended solutions.
5. Perform the activities necessary to assure maintainability and availability; support/provide evaluation of user inputs and monitor system performance to tune the system for optimum response and support; support operational readiness and performance assurance.
6. Review proposed engineering changes (CCRs), evaluate solutions and assess DAAC impacts.

4.1.13 DAAC System Test Engineer

Provide plans, configurations, test environments, training environments and test procedures for DAAC software upgrade testing exercises. Execute formal and impromptu testing at the DAAC, reporting and analyzing findings.

4.1.13.1 Interfaces

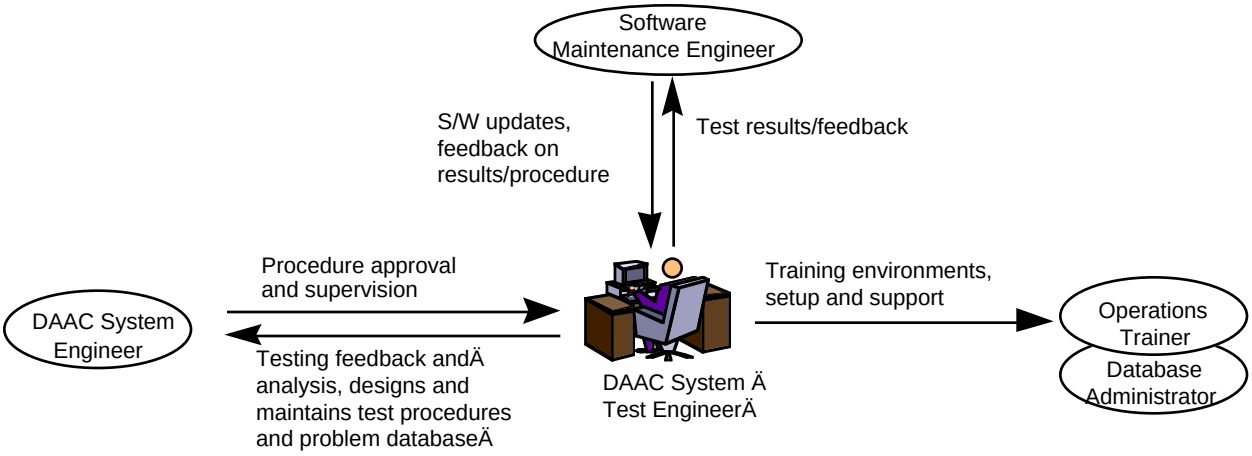

Figure 4.1.13-1 DAAC System Test Engineer Interfaces

4.1.13.2 Roles and Responsibilities

1. Test DAAC ECS software upgrades at the DAAC via formal test procedures.
2. Analyze results of version upgrade testing, document findings in report(s).
3. Investigate all bugs, glitches and performance problems discovered. Document potential causes and resolutions where possible for all issues arising during testing. (HPOV, Remedy, MSS)
4. Impromptu testing of ECS software upgrades in various theoretical operational environments.
5. Design, maintain and update test procedures for DAAC site.
6. Maintain and update problem database. (HPOV, Remedy, MSS)
7. Provide training exercise environments, support training execution and problem resolution. (Sybase Query Tool)

4.1.14 DAAC User Services Representative

The DAAC User Services Representative provides services and expertise necessary to facilitate access to and use of EOSDIS-related systems, data, software, tools, services and products by the user community. Users can contact the User Services Representative by e-mail, fax, mail, Internet and WWW tools (Mosaic, TCP Connect, etc.), telephone or by walking into a DAAC. The User Services Organization also assists with the data ingest/advertising efforts of the DAAC, and provides local DAAC Management with routine and on-demand reports on various User Services-related topics.

It is envisioned that User Services Representatives will operate in ECS as a type of super-user who will have available to them the same tools available to the general user (the ESST, the Results tool, EOSVIEW, etc.), but will also be provided with tools and privileges to act on the ECS system in support of the user community. The role interfaces associated with User Services functions are shown in Section 4.1.14.1.

4.1.14.1 Interfaces

The majority of tasks performed by the DAAC User Services Representative will involve using one of the following four system services/tools: the User Contact Log, the User Registration Service, the Data Search and Order Services (Earth Science Search Tool and Advertising Service), and/or the Order Tracking Service. The User Services Representative will also use the Advertising Tool when required to review/approve an advertising request; the Network Monitor Tool and/or the Trouble Ticket application when investigating/reporting a problem a user is having with the network or with the system software or hardware; and Database Query tools or MSS Reports when gathering statistical information to support the needs of management. In the process of using the system's services, tools and applications, the User Services Representative interfaces with various operators and organizations. Figure 4.1.14-1 provides a graphical overview of those human interfaces. Additional information is provided in Section 4.1.14.2.

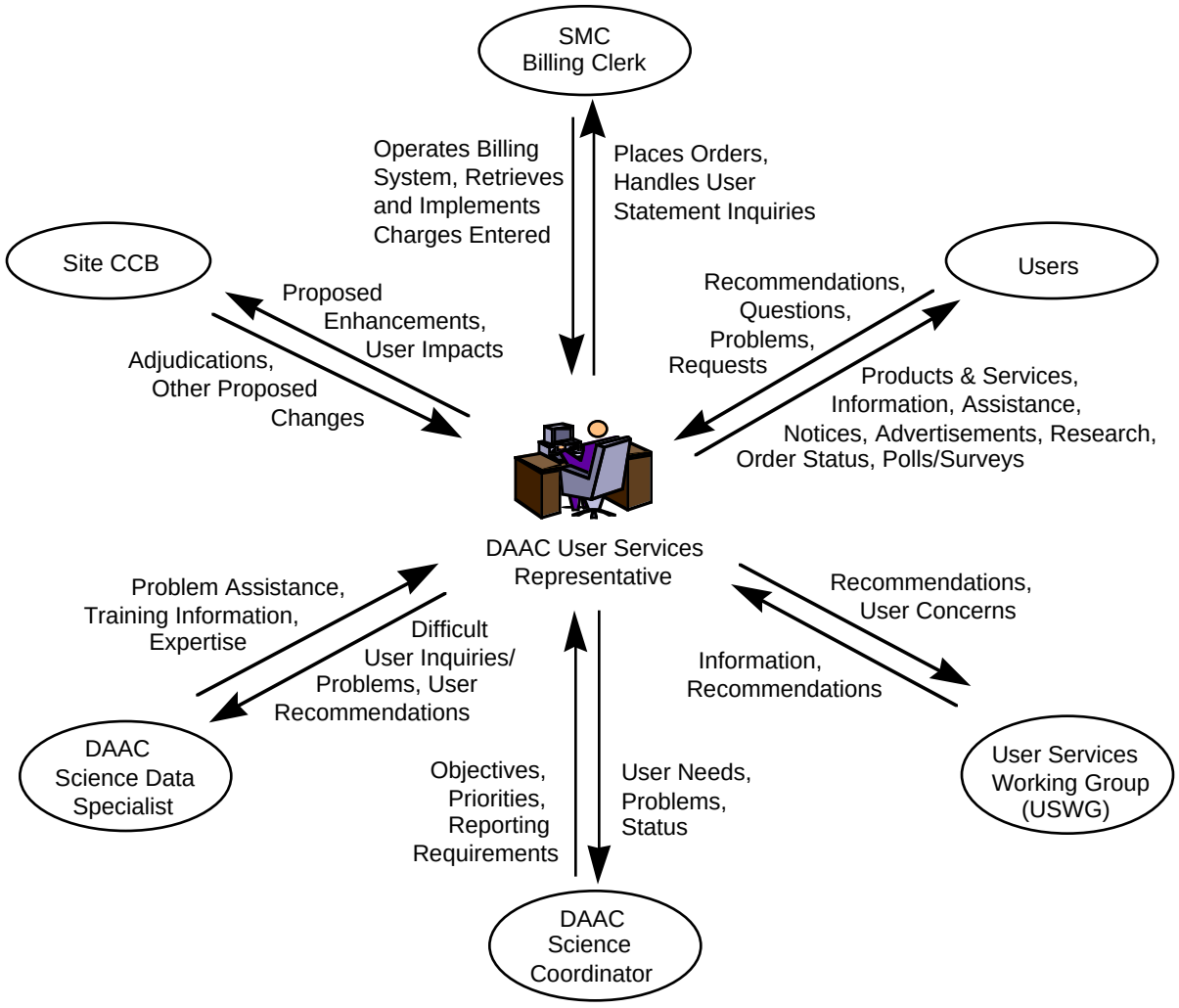

Figure 4.1.14-1 DAAC User Services Representative Interfaces

4.1.14.2 Roles and Responsibilities

The roles and responsibilities of the User Services Representative are listed below.

1. Assist users to locate and access EOSDIS-related data regardless of location. May include referral to non-EOSDIS centers. (ESST and/or Advertising Service, User Contact Log)

2. Assist users with use of EOSDIS-related catalog, search and order systems, bulletin boards, tools kits, services, etc. (ESST and/or Advertising Service, User Contact Log)

3. Provide assistance and/or sources of in-depth expertise to users experiencing difficulties with EOSDIS on-line systems or tool kits, and/or Center-specific data sets, software, on-line systems or tools, including hardware requirements necessary to operate these

systems. (User Contact Log. May also use the ESST and/or Advertising Service, and possibly the Network Monitor and Trouble Ticket applications.)

4. Provide users directly with the necessary information and/or with the sources of in-depth expertise on instruments, data sets, and projects for them to assess the applicability of EOSDIS-related products to their individual studies or research. (ESST and/or Advertising Service, User Contact Log)

5. Provide users with product update information; e.g., processing/validation news, new products. (Advertising Service)

6. Provide users with information on the status of their order. (Order Tracking Tool, User Contact Log)

7. Work with users who have received data, software or documents and who are having difficulties with their orders because their orders were not filled properly, data errors or difficulty in using the products delivered. (User Contact Log, Order Tracking Tool. May use the ESST and/or the Advertising Service.)

8. Provide demonstrations/seminars/workshops to convey information about services and products, dependent upon available resources. (Advertising Service and non-EOSDIS resources)

9. Attend selected scientific conferences and workshops to disseminate information about EOSDIS data sets and systems as funding permits.

10. Ensure that current and potential users are informed as to products and services using currently available resources such as EOSDIS and non-EOSDIS bulletin boards, WWW home pages, newsgroups and other electronic media, journals, magazines, newsletters, brochures, etc.

11. Attend/participate in user community and provider sponsored activities to increase knowledge of user community/products/services and to promote site/system products and services.

12. Periodically poll/survey user community to assess user satisfaction and requirements. Report results and recommendations to DAAC management and the Science Coordinator.

13. Develop/sponsor system changes based on experience/user recommendations.

14. Document user problems, provide impacts and coordinate/support resolution. (Trouble Ticket application, User Contact Log)

15. Review operations-initiated trouble tickets, provide user impacts and notify users as appropriate. (Trouble Ticket application and/or CCR query tools)

16. Attend/participate in User Working Group activities.

17. Develop and distribute informational and educational materials to increase users' awareness and knowledge of products and services. (Advertising Service and non-EOSDIS resources)

18. Promote the enhancement of data archived and data quality by:

    a. Consulting with User Working Groups and user and research communities, where applicable, to target candidate data sets, software, tools, etc.

    b. Assisting in establishing and maintaining guidelines for data ingest, data validation, data quality assurance, system valids and data archival for each data set to be archived. (Science Coordinator and Science Data Specialist lead this effort.)

    c. Assisting in and facilitating the ingest process in coordination with science data processing personnel as appropriate for the individual Centers. (Science Coordinator and Science Data Specialist lead this effort.)

    d. Reporting problems (and all necessary supporting information) with data products to data producers/providers and assisting as needed to re-archive the corrected products.

    e. Reporting corrections of the data products to users. (Advertising Tool and possibly User Contact Log)

19. Establish, maintain, monitor and report on user accounts and profiles in accordance with approved policies and procedures. (User Registration Tool, User Contact Log, Document Data Server Search Tools)

20. Provide account and profile information, status and assistance to users, including billing questions. (User Registration Tool, User Contact Log, User Profile Database query tools)

21. Develop and provide reports on user and provider satisfaction, data and service utilization, system responsiveness and user statistics. (Database query tools and/or MSS Reports)

4.1.15 DAAC Science Data Specialist

The DAAC Science Data Specialist possesses an intimate knowledge of the science data and metadata sets at their particular DAAC, and are expert users of the ECS suite of software tools. The Science Data Specialist is able to answer detailed questions concerning the structure of the discipline data stored at their DAAC, and serves as the DAAC interface to the Instrument Teams for SSI&T, problem resolution and DAAC ops quality assurance analysis. The Science Data Specialist provides technical support to the DAAC User Services Representative when responding to specific user requests; particularly when extensive knowledge of a product is needed. The Science Data Specialist, working closely with the Instrument Teams, provides on-site expertise on the development and use of data and metadata, subsets of data, numerical methods and tools, vector and parallel processing techniques, visualization and graphics tools, analysis tools, expert systems, data formats and computing techniques. The DAAC Science Data Specialist supports initialization and maintenance of data server and production planning databases, develops advertisements for new data sets and services, and works with the Database Administrator in structuring databases, data sets and metadata.

4.1.15.1 Interfaces

The DAAC Science Data Specialist interfaces with several operators and organizations when performing the many and varied tasks associated with that position. Figure 4.1.15-1 provides a graphical overview of those interfaces. Additional information is provided in Section 4.1.15.2.

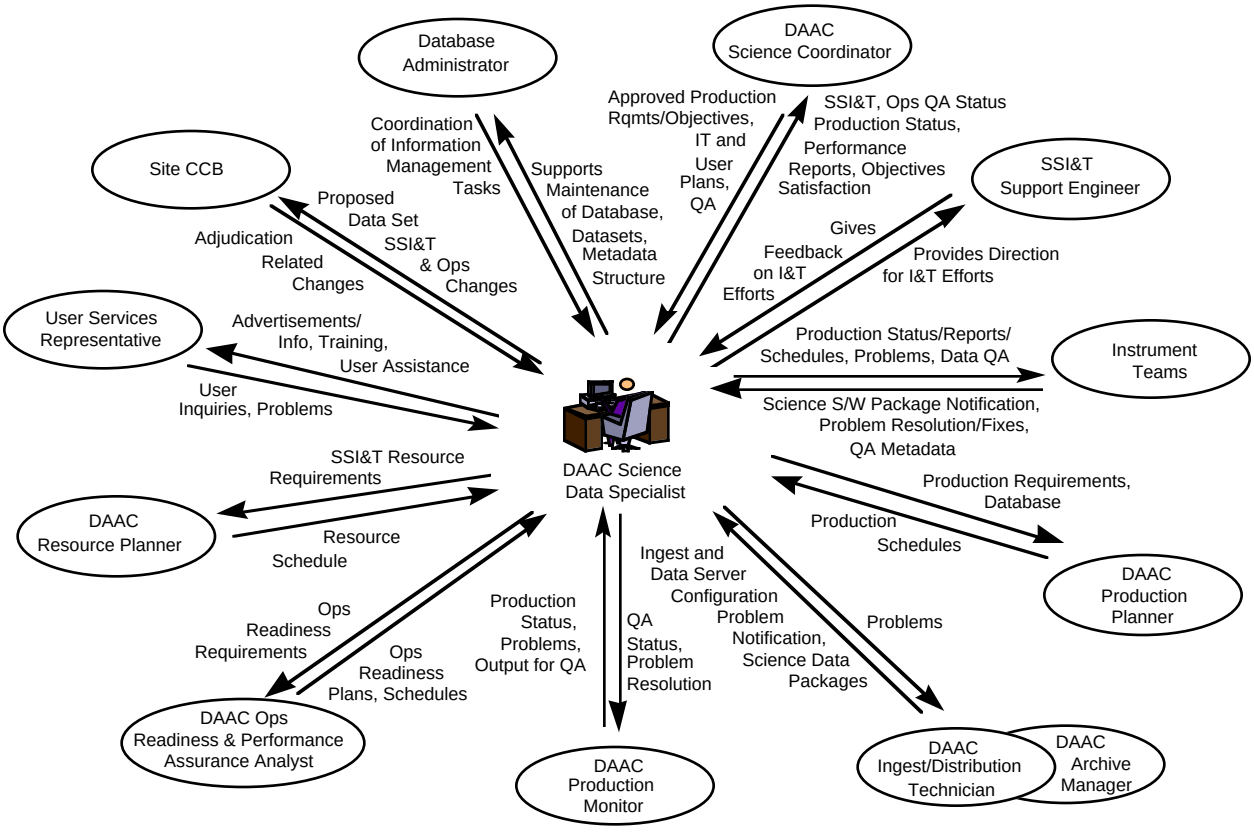

Figure 4.1.15-1 DAAC Science Data Specialist Interfaces

4.1.15.2 Roles and Responsibilities

The roles and responsibilities of the DAAC Science Data Specialist are given below. The Science Data Specialist uses standard office automation tools to perform most of his/her planning, scheduling and reporting functions.

1. Prior to SSI&T

   - Interface with the ECS Science office, DAAC and IT and lead ECS-related long-range planning and preparations for data set SSI&T.

2. During SSI&T

- Sponsor IT requests for DAAC testing resources, receive IT delivery and lead DAAC review and feedback, lead DAAC SSI&T team, including problem resolution management, provide progress reports to DAAC management and conduct the acceptance reviews to DAAC management.

3. Operations Readiness

   - Assist DAAC Ops Readiness and Performance Assurance Analyst with development of ops readiness plans for ops training and certification exercises and conduct of Ops Readiness Review.

   - Work with the Database Administrator in structuring databases, data sets and metadata.

   - Assist user services and ops team with ops readiness tasks.

   - Sponsor and coordinate required site engineering changes.

4. Production Planning, Operations and Distribution

   - Lead development of and maintain the approved production-distribution objective and satisfaction criteria. Develop the reporting process and provide level-of-satisfaction reports to DAAC management and the IT with the assistance of DAAC ops and user services staff.

   - Perform IT assigned on-site product QA analysis and coordinate IT off-site QA.

   - Monitor production and distribution ops and perform as on-site lead for problem resolution.

   - Assist user services with responses to user questions and problems.

   - Sponsor and coordinate changes to science software, operations and reprocessing requirements. Review and provide assessment of other engineering changes impacting assigned data set ops.

   - Lead development of data and services advertisements.

   - Support initialization and maintenance of data server and production planning databases, develop advertisements for new data sets and services.

   - Work with the Database Administrator in maintaining/modifying databases, data sets and metadata.

   - Review product/collection advertisements for completeness and compliance.

4.2 DAAC Operations Roles

4.2.1 DAAC Computer Operator

4.2.2 DAAC Ingest/Distribution Technician

4.2.3 DAAC Operations Readiness and Performance Assurance Analyst

4.2.4 DAAC Operations Supervisor

4.2.5 DAAC Production Monitor

4.2.6 DAAC Production Planner

4.2.7 DAAC Resource Manager

4.2.8 DAAC Resource Planner

4.2.1 DAAC Computer Operator

Operate DAAC host processors, supporting restarts, reboots and shutdowns. Monitor system status and respond to console messages, documenting all operations problems and actions. Provide support to DAAC maintenance staff and vendor problem investigation, resolution and maintenance. Support DAAC Resource Manager in configuration control and problem status reporting.

4.2.1.1 Interfaces

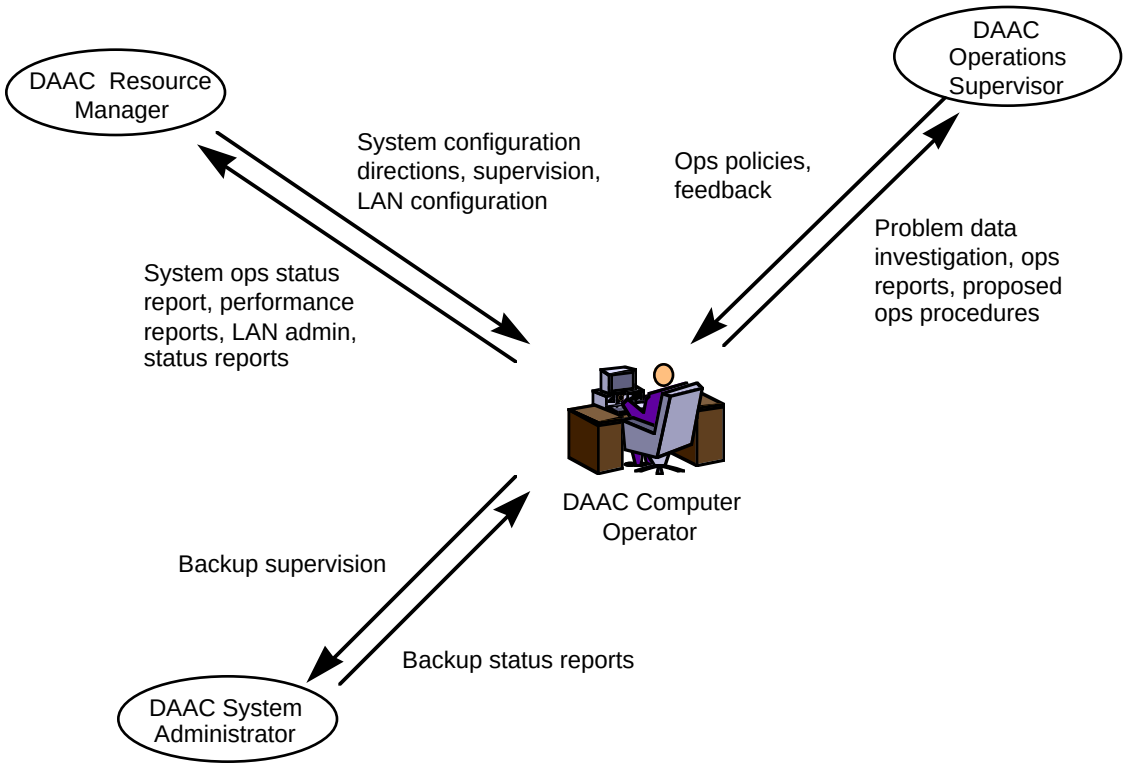

Figure 4.2.1-1 DAAC Computer Operator Interfaces

4.2.1.2 Roles and Responsibilities

1. Initialize, conand operate site hardware and software under the direction of the DAAC Resource Manager. (HPOV)
2. Monitor site hosts and workstation performance, document and support investigation of errors/faults, reconfiguring system(s) for problem work-arounds. (MSS, HPOV, Remedy)
3. Perform on-shift, pre-approved preventative maintenance, problem diagnosis and repair. (HPOV)
4. Maintain computer operations system consumable stores.
5. Restart/reboot, shutdown and status monitoring of DAAC hosts and workstations. (HPOV)
6. Maintain logs of all operations activities. (HPOV)
7. Perform routine and on-demand backups and recoveries. (Backup Tool)

4.2.2 DAAC Ingest/Distribution Technician

The DAAC Ingest/Distribution Technician receives, logs and marks all non-electronic media for processing and storage in the ECS system. He/she returns original media to sender, and/or files and stores it. The Technician coordinates with sender to resolve any ingest problems and receives, opens and routes incoming mail to appropriate action department. He/she packages, labels and ships output to science users, and follows up and traces undelivered output. The Technician controls the flow of DAAC input and output by managing the ingest and distribution processing queues.

The DAAC Ingest/Distribution Technician will assist the DAAC Archive Manager in monitoring the performance of the ingest, archival and distribution function from a workstation console using both ingest and data server subsystem supplied graphical user interface (GUI) tools.

4.2.2.1 Interfaces

The role interfaces associated with the DAAC Ingest/Distribution Technician functions are shown in Figure 4.2.2-1. and defined in Section 4.2.2.2.

4.2.2.2 Roles and Responsibilities

The roles and responsibilities of the DAAC Ingest/Distribution Technician are defined as follows:

1. Monitor and report performance of data requests, data arrival and delivery schedules.
2. Monitor receipt, validation and internal distribution of incoming data and metadata. Manage ingest data queue (hold, suspend, resume, priority).

3. Ingest approved hard media data and metadata including mounting, monitoring quality assessment, logging, metadata creation and archiving. (Uses the Ingest Subsystem Media Ingest GUI.)

4. Coordinate input data schedules and quality problems with external data providers and DAAC Production Monitor.

5. Document and support investigation of ingest subsystem errors and faults. (Uses the Ingest Subsystem GUIs.)

6. Perform approved data transfer to hard media, logging, data validation monitoring, labeling and shipping.

7. Monitor non-electronic output data schedules, status and data quality. Manage output data queue (delete, suspend, resume, change priority).

8. Support the DAAC Archive Manager for archive data quality problems.

9. Document and support investigation of data archival and distribution errors and faults. (Uses the Data Server Subsystem GUIs.)

10. Manage hard copy output consumable and supplies.

11. Provide mail distribution.

12. Report status and performance of data ingest and data distribution operations to DAAC Archive Manager.

13. Review and monitor data output subscription status.

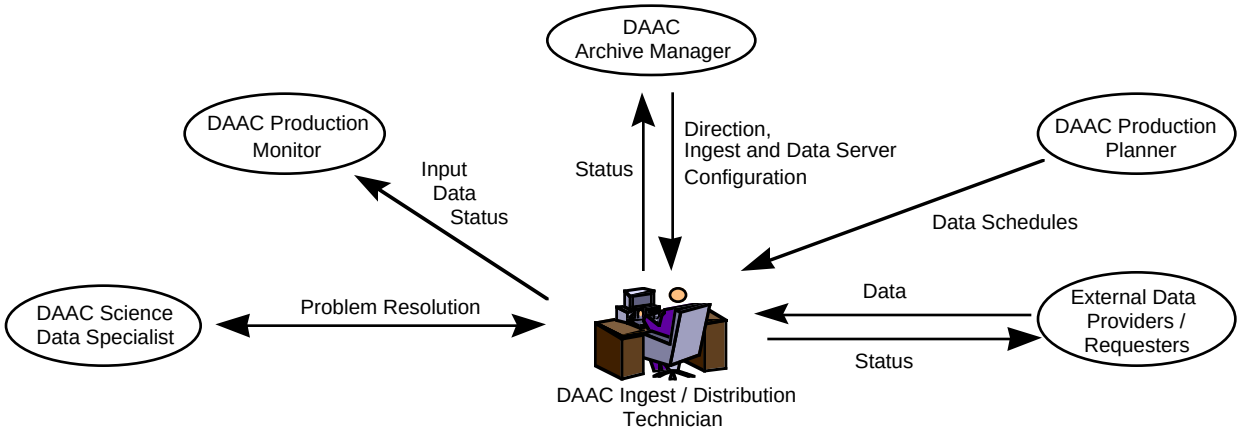

Figure 4.2.2-1 DAAC Ingest/Distribution Technician Interfaces

4.2.3 DAAC Operations Readiness and Performance Assurance Analyst

Responsible for ensuring DAAC staff, hardware, software, documents and databases are in a state of operational readiness at all times including requisite DAAC system changes and launch preparations. Responsible for the regular monitoring of M&O activities, providing visibility to DAAC management. Responsible for planning, verification and reporting of operational readiness activities including witnessing system tests, coordinating training exercises and operator certification. Provide coverage of operational phase activities in PAIP (DID 501/PA1). Continue the tasks of the RMA program throughout the operational phase.

4.2.3.1 Interfaces

The figure shows the role interfaces of the DAAC Operations Readiness and Performance Assurance Analyst who acts as database administrator of the tool known as the Trouble Ticket System (Remedy) in support of the Trouble Ticket Review Board.

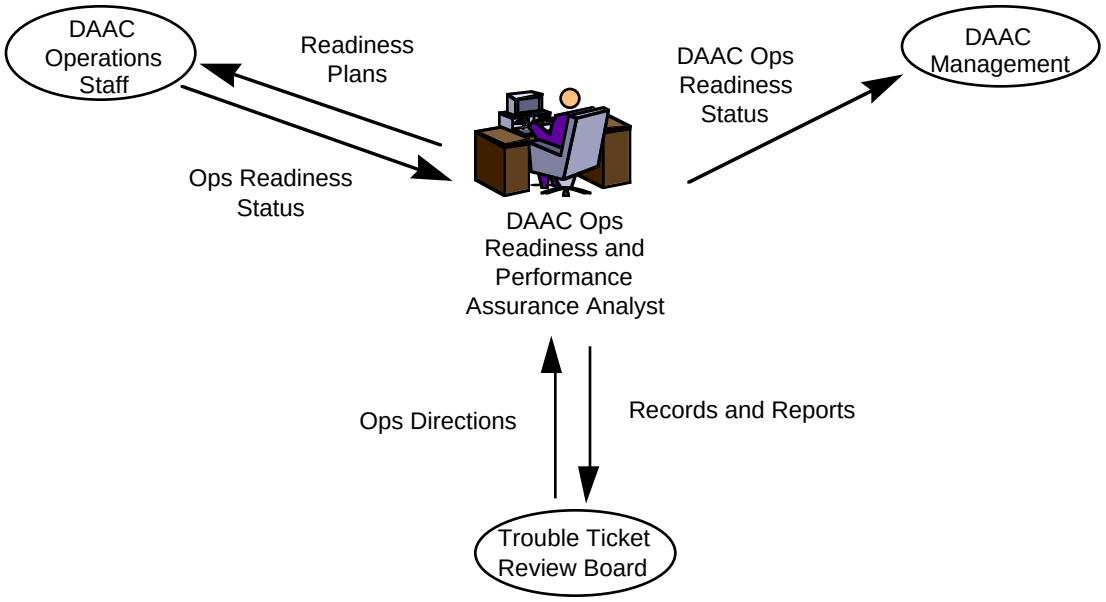

Figure 4.2.3-1 DAAC Operations Readiness and Performance Assurance Analyst Interfaces

4.2.3.2 Roles and Responsibilities

The following list of roles and responsibilities correspond to the interfaces in Section 4.2.3.1.

1. Record, report and track DAAC site problems recorded in the Trouble Ticket System Database (Remedy). Act as the Trouble Ticket database administrator at the DAAC. Responsible for the forwarding of ECS system-level issues discovered at the DAAC site

and propagating system problem resolutions to the site-level. Support for the deliberations of the Trouble Ticket Review Board.

2. Generate status reports as required for the Trouble Ticket Review Board.
3. Support the DAAC site-level implementation of resolutions provided by the Trouble Ticket Review Board. Provide implementing instructions and monitor progress in implementing change/problem resolutions as directed by the TT Review Board.
4. Plan, coordinate and verify testing and training for DAAC ECS system changes. Conduct Operations Readiness Reviews.
5. Plan and verify DAAC M&O team training activities. Review and audit operator certification records.

4.2.4 DAAC Operations Supervisor

Ensure all operations staff adhere to established policies, procedures and schedules. Provide direction and assistance to "on-line" operations staff as needed. Provide reports to management as required. Responsible for overall performance and utilization of both operations staff and resources. Serve as the focal point for all operations related problems and assign and prioritize all problem investigation and resolution activities in consultation with management.

4.2.4.1 Interfaces

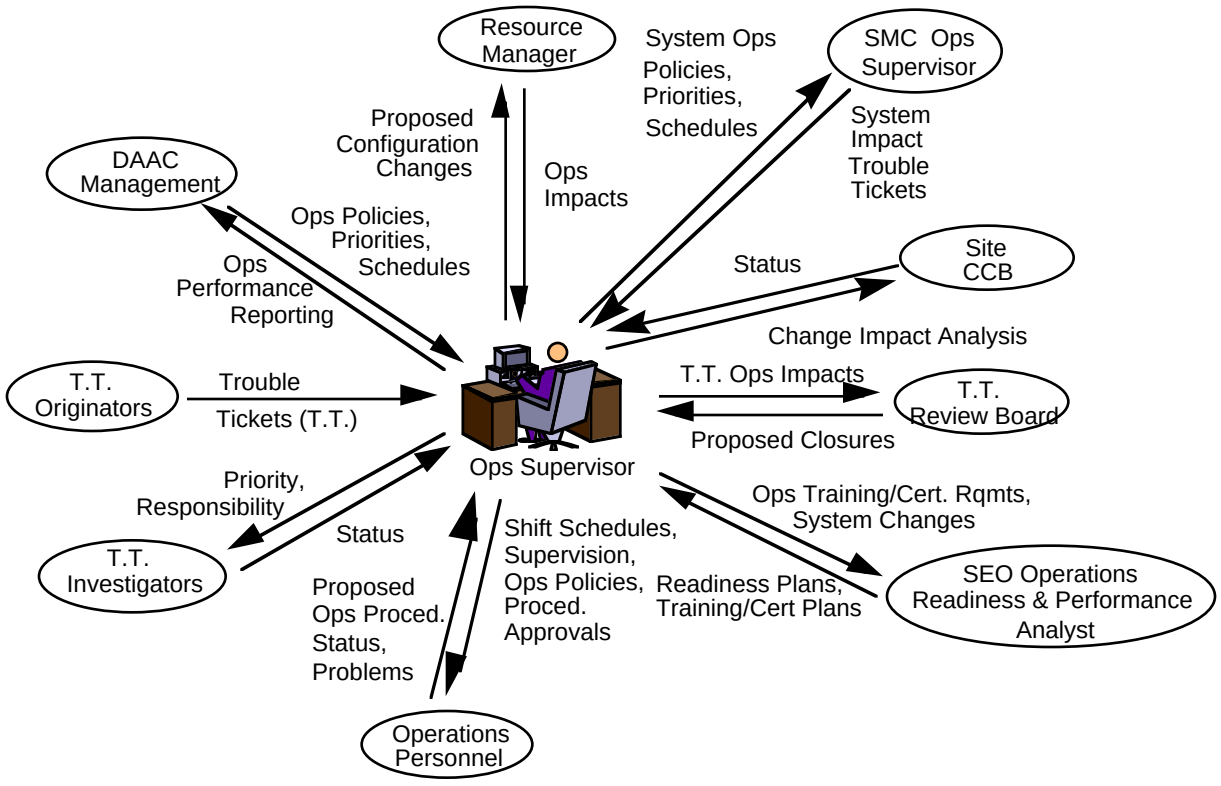

Figure 4.2.4-1 DAAC Operations Supervisor Interfaces

4.2.4.2 Roles and Responsibilities

1. Perform delegated On-site Contractor Manager responsibilities during the Manager's absence.
2. Responsible for the performance of all "on-line" operations personnel and resources in accordance with approved DAAC and company policies, plans, procedures, schedules and priorities.
3. Responsible for the scheduling and supervision of all "on-line" operations personnel.
4. Provide the focal point for all ops related Trouble Tickets - assess the impact to operations, assign work-off priority and assign investigative responsibility. (Remedy)
5. Responsible for periodic (daily, weekly, monthly, etc.) mission operations performance reporting/briefing to DAAC government and contractor management.
6. Responsible for ops impact assessment of all proposed Trouble Ticket closures. (Remedy)
7. Responsible for ops impact assessment of all proposed site engineering changes and participation in site CCBs.
8. Responsible for ops readiness and installation planning for all ops system changes.
9. Responsible for development of ops policies and review/approval of all operations procedures.
10. Responsible for training, readiness and certification of all ops personnel.

4.2.5 DAAC Production Monitor

Monitor science software execution via automated tools. Manage On-Demand and planned processing schedules and requests, document and support problem resolution and report performance status.

4.2.5.1 Interfaces

See Figure 4.2.5-1.

4.2.5.2 Roles and Responsibilities

1. Monitor On-Demand and planned Data Processing Request (DPR) validation.
2. Monitor/manage On-Demand thresholds processing queues to optimize resource utilization. Modify DPR priorities and inputs as required. Transfer/delete/suspend-resume DPRs as required (e.g., requests, resource problems, input data schedule problems, special events, schedules replans, etc.). (AutoSys GUIs)
3. Monitor/provide processing status upon request. (AutoSys GUIs)

4. Monitor/review input and output data. (Planning Workbench GUI and AutoSys GUIs)
5. Provide real-time science product QA support. (Product QA GUI)
6. Document and provide investigative support for data, science software and production subsystem errors/faults.
7. Review/update product metadata for processing status, operator actions and QA progress. (Product QA GUI)
8. Report performance of production operations and support assessment and reporting of site production objectives' satisfaction.
9. Implement production system reconfiguration in response to operations anomalies. (Planning Workbench GUI and AutoSys GUIs)
10. Monitor/analyze resource configurations and utilization. Provide feedback to Resource and Production Planners for system optimization. (Planning Workbench GUI)
11. Perform on-line production Replans as required/authorized in response to processing anomalies and On-Demand loading.

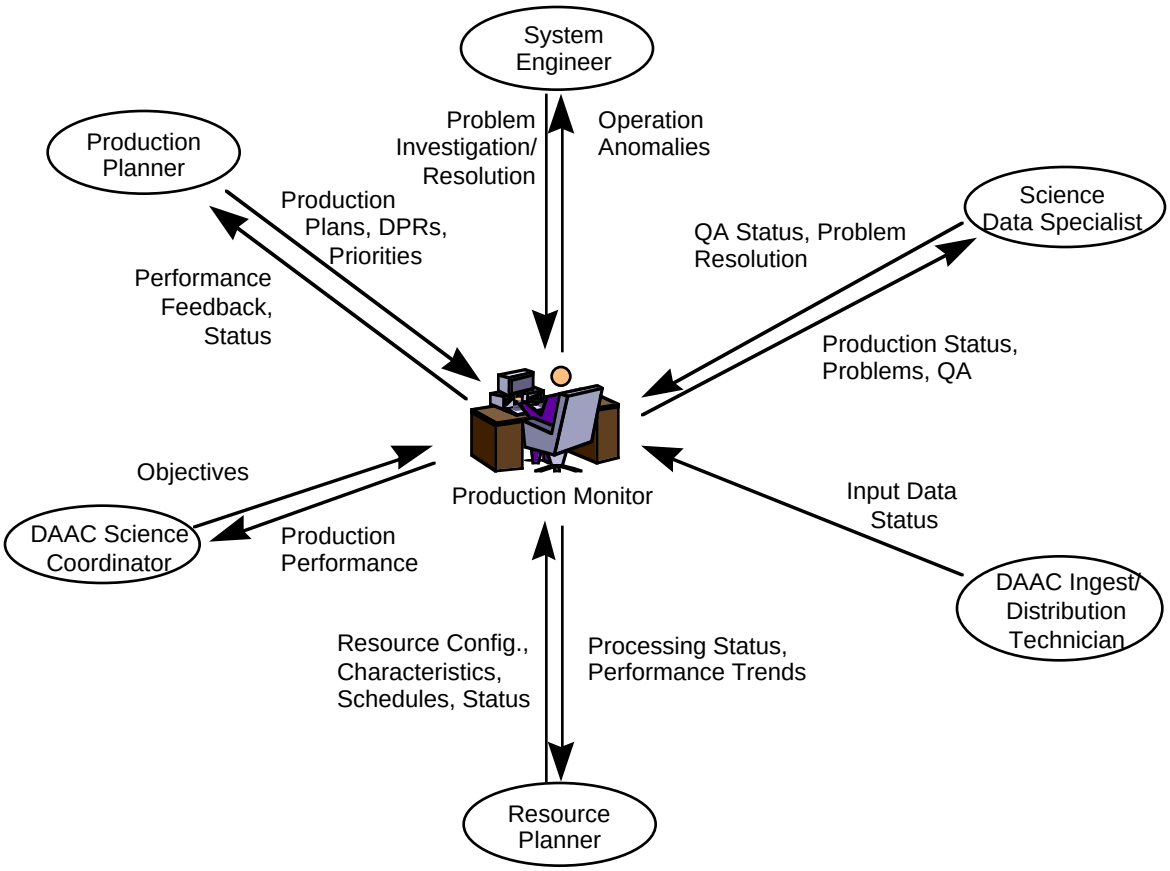

Figure 4.2.5-1 DAAC Production Monitor Interfaces

4.2.6 DAAC Production Planner

Develop daily, weekly and monthly DAAC science production schedules. Populate and maintain production database with science software characteristics, production rules and priorities. Develop and maintain ancillary/input data schedules.

4.2.6.1 Interfaces

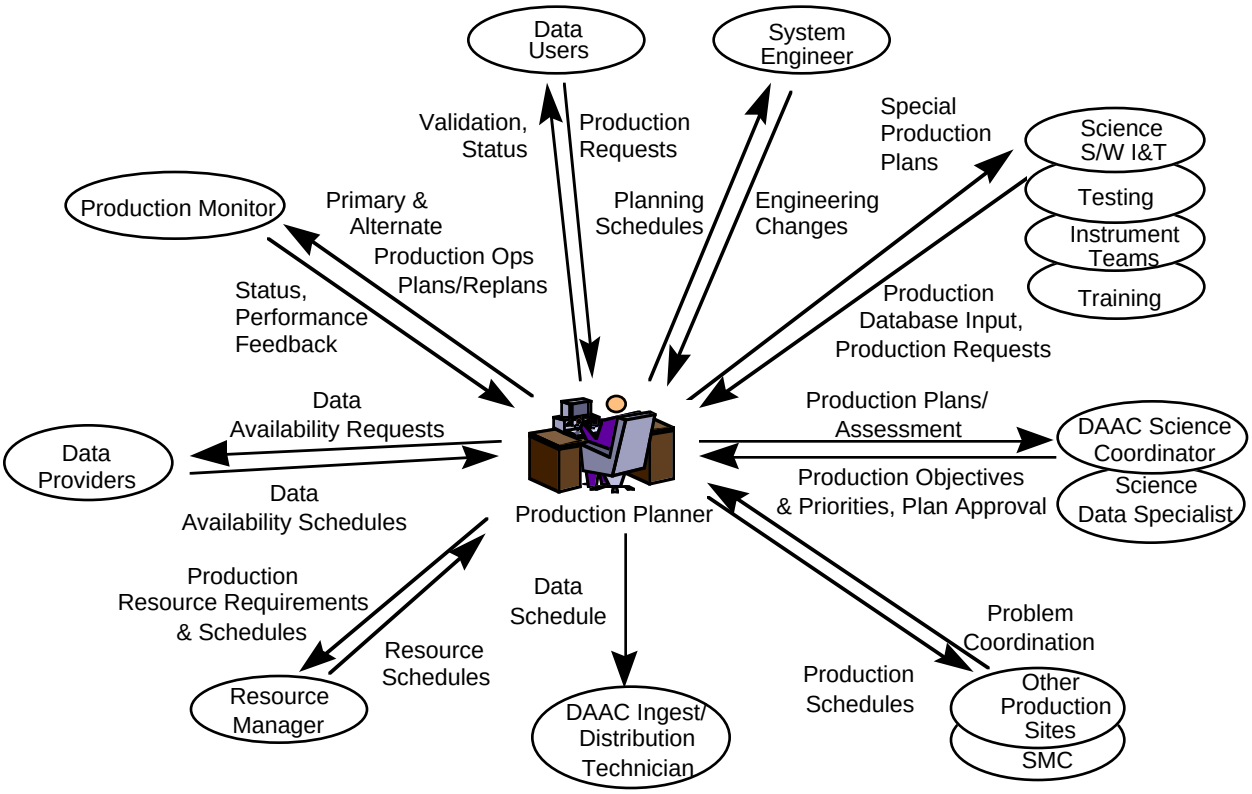

Figure 4.2.6-1 DAAC Production Planner Interfaces

4.2.6.2 Roles and Responsibilities

1. Develop, coordinate and maintain Data Availability Schedules with data providers.
2. Approve, develop, add, delete, modify, review and validate processing requests. (Planning Workbench GUI)
3. Develop daily, weekly and monthly production resource requirements and provide schedules to the Resource Planner. (Planning Workbench GUI)
4. Develop and maintain primary and alternate plans and schedules and their associated Data Production Requests in response to loading/resource changes and anomalies. (Planning Workbench GUI)

5. Populate and maintain the Production Planning Database based on science software I&T, instrument team inputs and DAAC policies. (Planning Workbench GUI)
6. Develop production operations plans/schedules and associated Data Production Requests (DPR). (Planning Workbench GUI)
7. Develop production plans/schedules to support science software I&T and site system testing and training. (Planning Workbench GUI)
8. Review proposed engineering changes and provide production planning impact assessments.
9. Coordinate production schedule interdependencies/problems with other producer-receiver sites and SMC. (Planning Workbench GUI)
10. Report and support investigation of production planning subsystem errors/faults.
11. Support assessment and reporting of site production objectives' satisfaction.

4.2.7 DAAC Resource Manager

Coordinate with SMC for network problems and DAAC reconfigurations in response to ECS system anomalies. Responsible for site hardware, software, LAN and local DCE cell configuration, allocation and utilization performance in accordance with site and system approved resource baselines and schedules. Document and oversee investigations of hardware, software and LAN errors/faults.

4.2.7.1 Interfaces

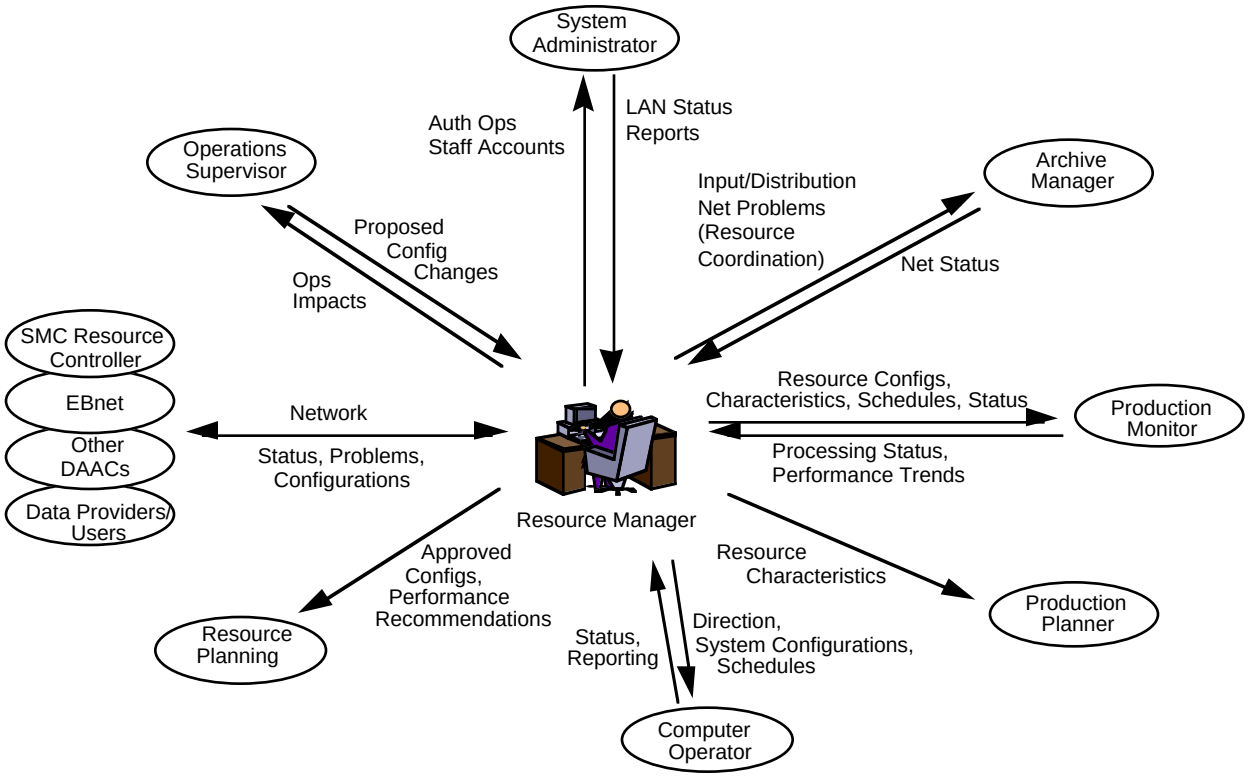

Figure 4.2.7-1 DAAC Resource Manager Interfaces

4.2.7.2 Roles and Responsibilities

1. Provide plan and direct/implement system reconfiguration in response to operations anomalies.
2. Populate and maintain the site resource profiles describing characteristics of all processing resources (e.g., processor class, speed, storage capacity, etc.). (Baseline Manager)
3. Monitor, analyze and report ops utilization and performance of site hardware/software. (HPOV)
4. Coordinate local network activities with other network management centers (e.g., SMC, NSI, other DAACs, etc.).
5. Review and provide impact assessment for all proposed ops system configuration changes.
6. Participate in site resource scheduling activities/meetings.

4.2.8 DAAC Resource Planner

Responsible for reviewing and integrating all resource requests for DAAC system resources into daily, weekly and monthly DAAC resource schedules. Conduct DAAC Resource scheduling meetings for DAAC management review and approval of resource schedules.

4.2.8.1 Interfaces

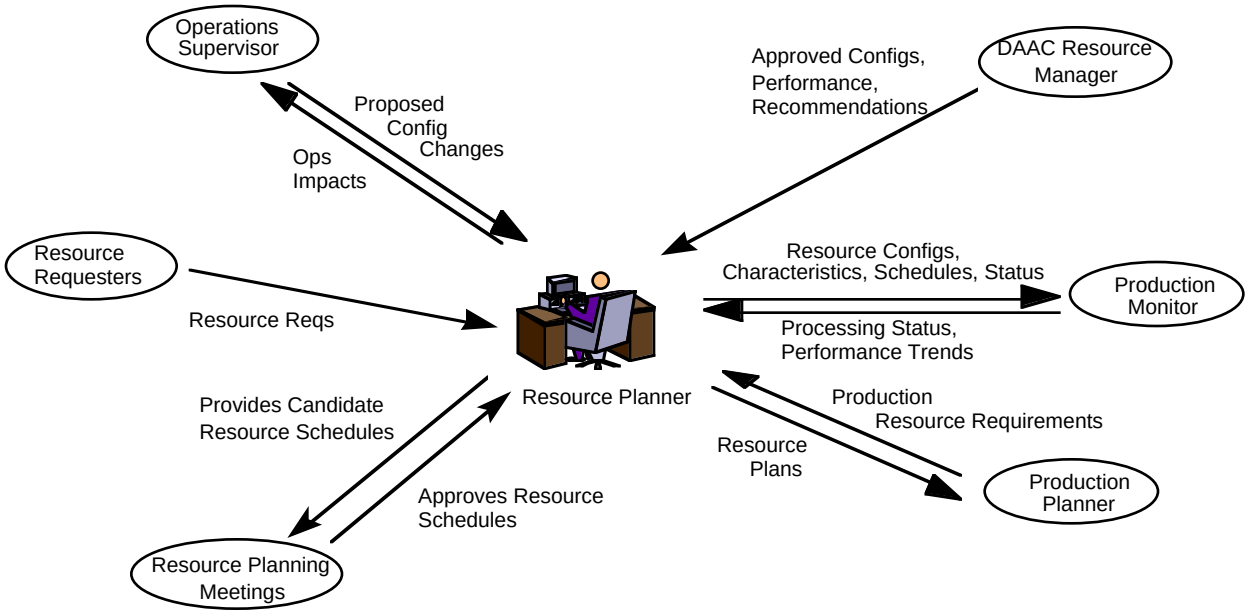

Figure 4.2.8-1 DAAC Resource Planner Interfaces

4.2.8.2 Roles and Responsibilities≠

1. Responsible for ensuring that all resource requests are validated and approved. (Planning Workbench)
2. Schedule all resources on a daily, weekly and monthly basis. (Planning Workbench)
3. Provide assistance to users/staff for resource scheduling.
4. Assist Resource Manager in all configuration related activities. (HPOV, Autosys)
5. Distribute proposed resource schedules for review. Conduct schedule meetings for coordination and DAAC management approval of resource schedules. (Planning Workbench)
6. Publish/distribute approved DAAC resource schedules. (Planning Workbench)
7. Assist Resource Manager in all configuration related activities. (HPOV, Autosys)

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5. Sustaining Engineering Organization (SEO) Roles

5.1 ECS M&O Office Manager

The ECS M&O Office Manager is responsible for the personnel, technical and financial performance of all ECS M&O activities. The M&O Office Manager reports to the ECS Program Manager and provides programmatic supervision of all ECS M&O organizations. The M&O Office Manager also provides personnel supervision (in concert with or through ECS Subcontractors) of all ECS personnel.

5.1.1 Interfaces

The majority of the tasks performed by this manager involve the use of:

- Face-to-face meetings with the ESDIS, ECS Program Management, other ECS Office Managers, and SMC, SEO, ECS Contractor Managers at each DAAC, and ECS M&O personnel;
- Use of office automation tools for development and publication of policies, procedures, presentations and reports; and
- Use of the telephone and e-mail to collect and disseminate information, policies, procedures, requests for information, etc. to science coordinators at the DAACs.

Figure 5.1-1 shows a graphical overview of those interfaces.

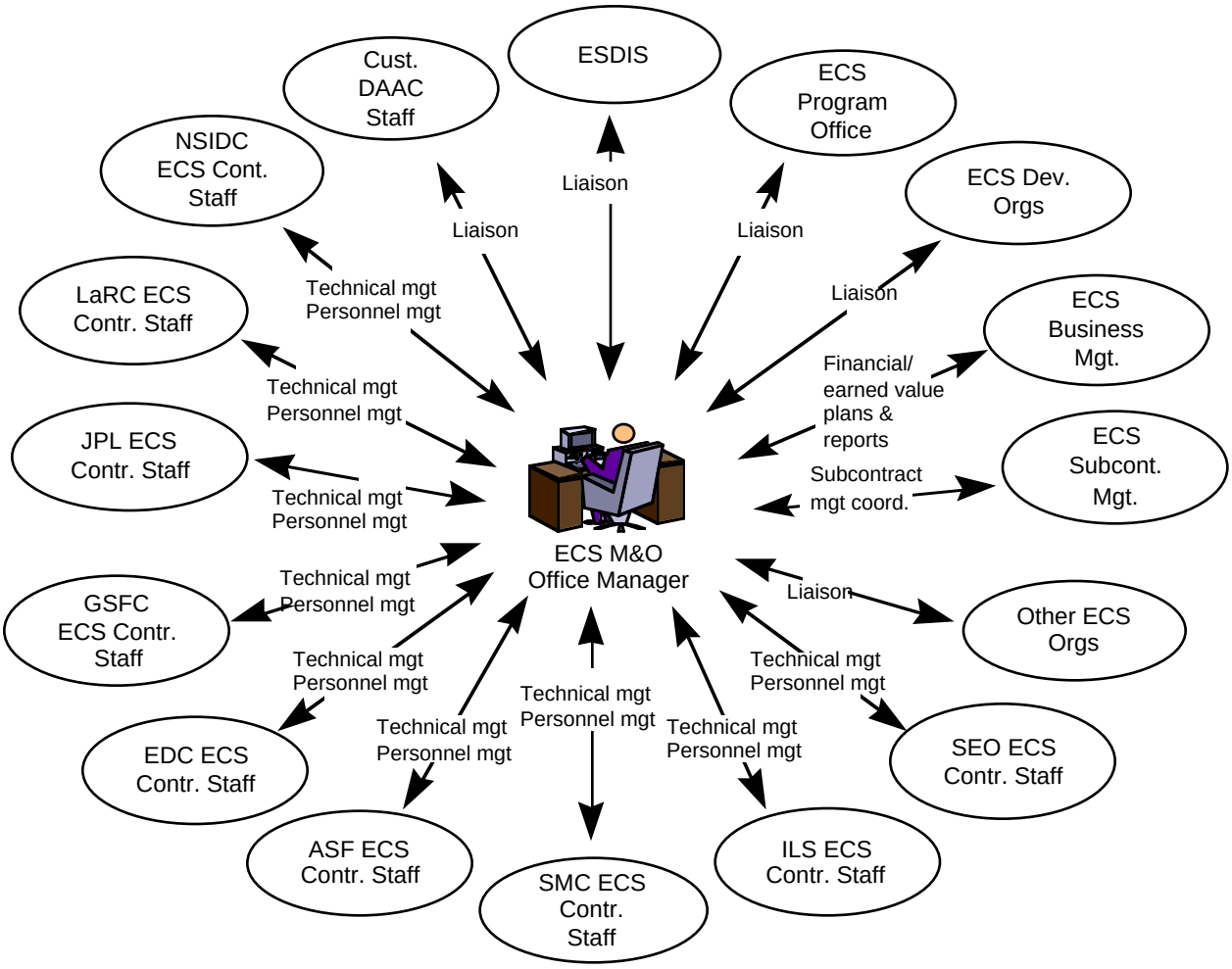

Figure 5.1-1 ECS M&O Office Manager Interfaces

5.1.2 Roles and Responsibilities

The roles and responsibilities of the ECS SEO Manager have been divided into the following broad categories:

1. Provide liaison with ESDIS management and other customer organizations on ECS M&O organization activities. Receive prioritization and tasking instructions, develop and present management and technical action plans and status via briefings and reports. Use face-to-face meetings, office automation tools and telephone/e-mail to promote discussions and coordination.

2. Provide liaison with all ECS M&O Office staff including ECS management and technical staff at the DAACs, the SMC, the EOC, other ECS Offices, ECS Program Management.

Use face-to-face meetings, office automation tools and telephone/e-mail to promote discussions and coordination.

3. Provide technical management. In concert with ECS M&O staff, identify issues, problems, trends, etc. Coordinate corrective/preventative action plans. Collect and report on the status of the action plans. Use face-to-face meetings, office automation tools and telephone/e-mail to promote discussions and coordination.

4. Provide financial management of ECS Contract WBS 8. Use Business Operations Office supplied tools and reports to report and measure ECS activities. Coordinate subcontractor management with subcontractor and ECS Subcontract management organization.

5. Provide personnel management. Ensure ECS contractor personnel properly follow all site and company-specific policies, rules and procedures. For subcontractor personnel, coordinate with subcontractor management on subcontractor personnel activities. For ECS prime contractor personnel, provide hiring, termination, time keeping, promotions, performance appraisals, salary adjustments, discipline, etc. for M&O Office personnel including senior ECS M&O management personnel. Review and approve personnel management actions by ECS M&O management personnel. Use face-to-face meetings, office automation tools and telephone/e-mail to promote discussions and coordination.

5.2 ECS SEO Manager

The ECS Sustaining Engineering Organization (SEO), housed at GSFC Building 32, provides a system-wide M&O function that is responsive to the ESDIS Project Office and the Project Scientist. Where the ECS DAAC, ECS SMC and ECS EOC M&O organizations are focused on the issues, tasks and priorities of the individual centers, the ECS SEO provides a system perspective on maintenance, sustaining engineering and training. Supported by the other M&O organizations, the ECS SEO organization also provides the focus for development organization interactions and assuring that ECS Science goals are met. The ECS SEO Manager has overall responsibility for the performance of all SEO personnel in the accomplishment of this mission.

5.2.1 Interfaces

See Figure 5.2-1.

5.2.2 Roles and Responsibilities

The roles and responsibilities of the ECS SEO Manager have been divided into the following broad categories:

1. Provide liaison with ESDIS management on SEO M&O organization activities. Receive prioritization and tasking instructions, develop and present management and technical action plans and status via briefings and reports using face-to-face meetings, office automation tools and telephone/e-mail to promote discussions and coordination.

2. Provide liaison with ECS M&O Office staff including ECS staff at the DAACs, the SMC, the EOC, the parent ECS M&O organization, and development and support

organizations. Coordinate SEO activities with other organizations' activities using face-to-face meetings, office automation tools and telephone/e-mail.

3. Develop, coordinate and implement action plans using SEO personnel or computational resources. Task SEO personnel in accordance with plans and priorities. Report on action plan status and develop, as needed, plan revisions using office automation tools and telephone/e-mail.

4. Provide hiring, termination, time keeping, promotions, performance appraisals, salary adjustments, discipline, etc. for SEO personnel.

5. Ensure that ECS, SEO and/or Building 32 policies and procedures are properly followed by using face-to-face meetings and office automation tools.

6. Provide SEO-specific planning, budgeting, accounting, resource management, scheduling and subcontract management by using the telephone and e-mail systems.

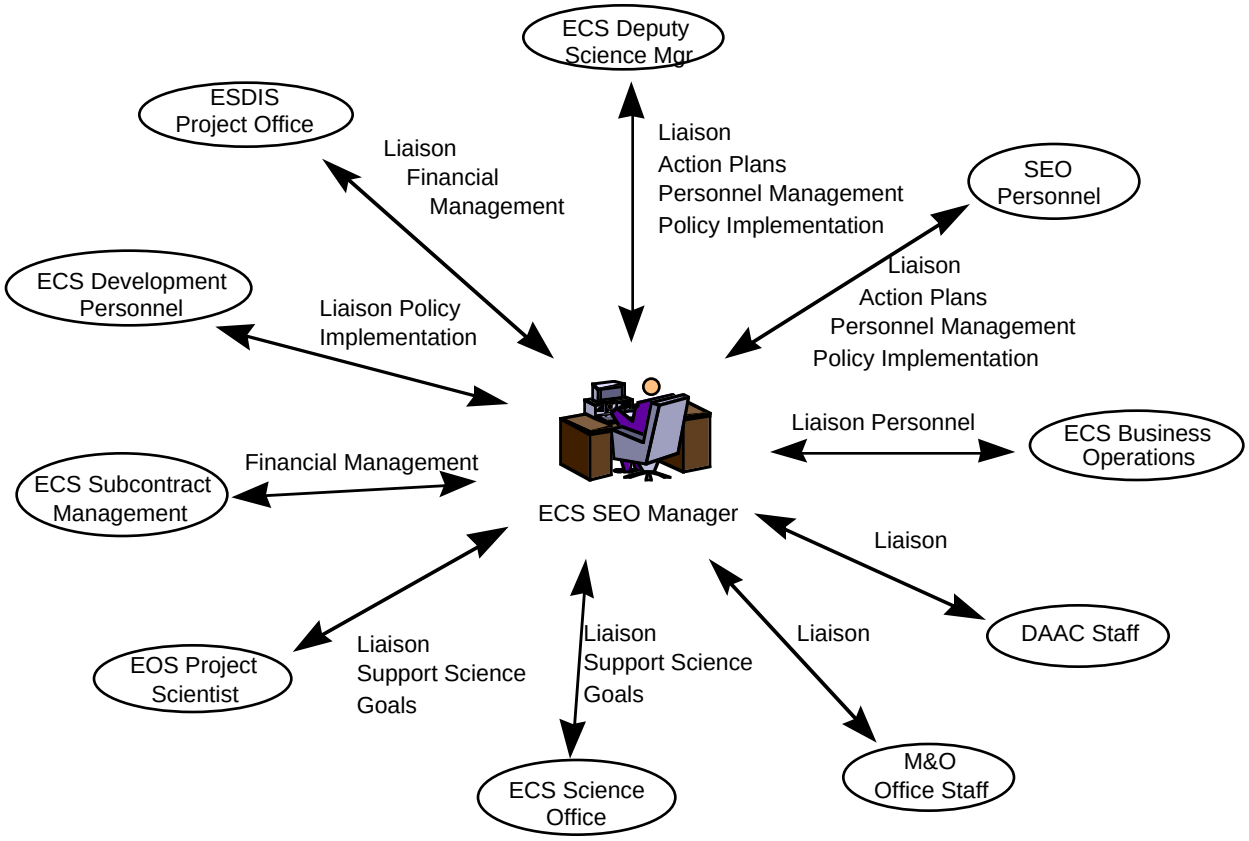

Figure 5.2-1 ECS SEO Manager Interfaces

5.3 SEO Administrative Assistant

Perform secretarial and administrative functions for all SEO and ILS personnel. This position includes providing typing support, filing, processing expense reports, time keeping, briefing material preparation, maintenance of company personnel files, preparing travel arrangements, access coordination and site badging, and monitoring security policies and procedures.

5.3.1 Interfaces

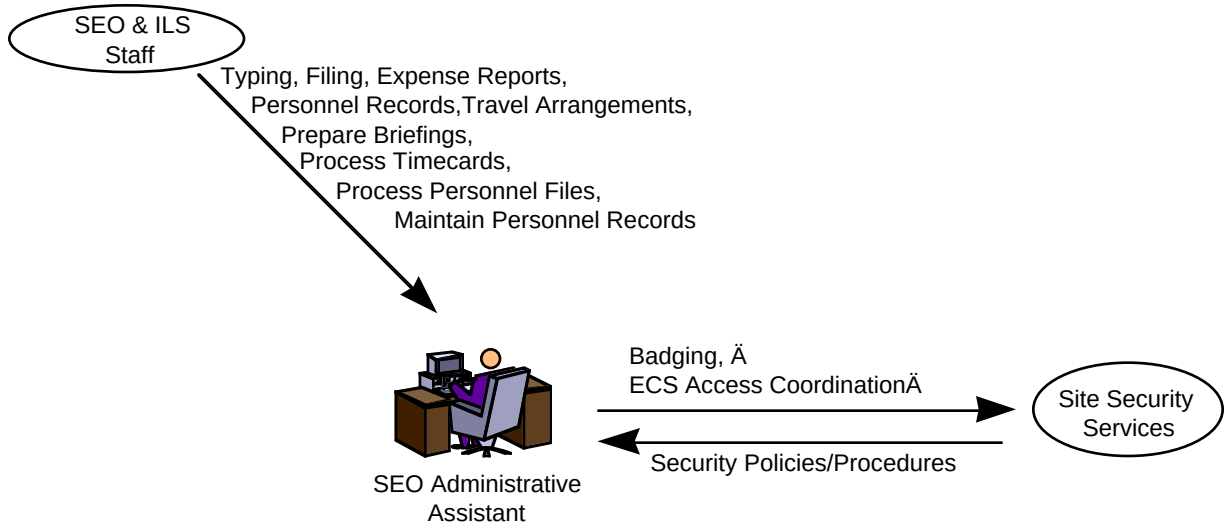

Figure 5.3-1 SEO Administrative Assistant Interfaces

5.3.2 Roles and Responsibilities

1. Provide typing and preparation of briefing material support for SEO and ILS personnel using a PC with standard OS and TCP connection.
2. Perform filing for SEO and ILS personnel.
3. Prepare expense reports for SEO and ILS personnel using a PC with standard OS and TCP connection.
4. Process time cards and personnel files for SEO and ILS personnel using a PC with standard OS and TCP connection.
5. Maintain personnel records for all SEO and ILS personnel using a PC with standard OS and TCP connection.
6. Prepare travel arrangements for SEO and ILS personnel using a PC with standard OS and TCP connection.

7. Support site (GFE) security services to include coordinating ECS badging, site access and monitoring site security policies/procedures.

5.4 SEO System Administrator

Administer and maintain all SEO office and operations support computer hosts, peripherals and workstations, including troubleshooting, preventive and general system maintenance. Complete initial program loads for all system upgrades. Provide configuration, security and access administration.

5.4.1 Interfaces

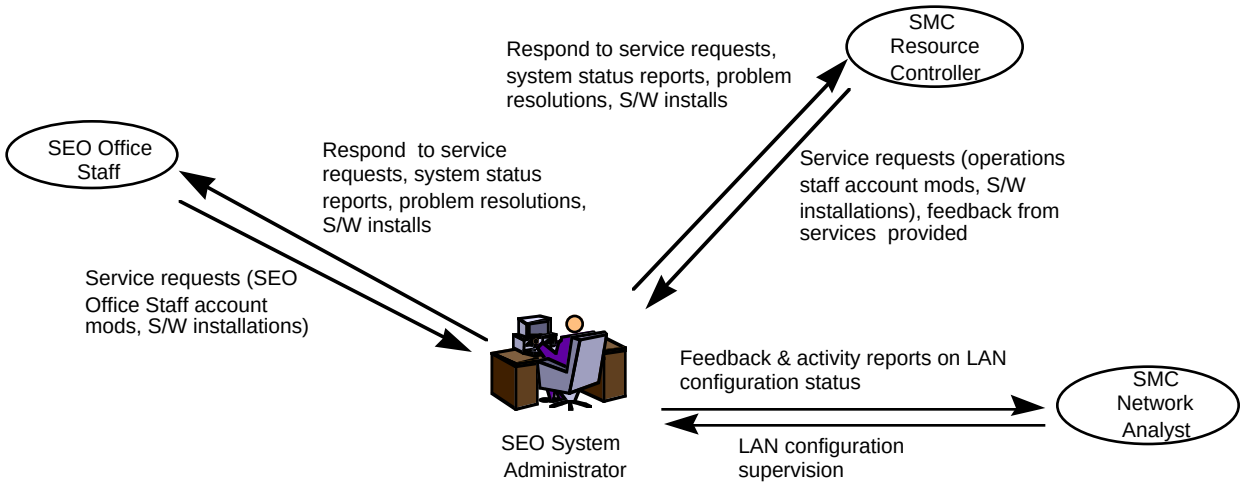

Figure 5.4-1 SEO System Administrator Interfaces

5.4.2 Roles and Responsibilities

1. Create, modify, delete and maintain SEO office staff user accounts.
2. Initialize and conSEO office site hosts and workstations.
3. Perform preventive maintenance on SEO office staff hosts and workstations.
4. Diagnose and correct system problems on-demand.
5. Document, investigate and resolve errors, faults and observations on site hosts and workstations.
6. Monitor SEO staff workstation performance - tuning when applicable.
7. LAN and local DCE configuration for the SEO office.
8. Provide system-level management of directory services.

9. Perform backups and recoveries for SEO office hosts and workstations.

10. Install latest version of ECS and COTS software on SEO hosts and workstations.

5.5 SEO Configuration Management (CM) Administrator

Coordinate usage of approved configuration management procedures with elements and external configuration management organizations. Ensure that changes to the ECS system hardware, databases, software and procedures are properly documented and coordinated. Maintain control of ECS baseline configured hardware, documents, databases and software. Assist in the development and administration of the SEO ECS library with respect to configuration management procedures. Provide recording secretarial tasks for ESDIS CCB (if requested by ESDIS CCB). Coordinate RID requests generated during M&O reviews. Generate CCB monthly reports. Prepare agendas for and schedule of CCB meetings.

5.5.1 Interfaces

The figure shows the role interfaces of the SEO CM Administrator who acts as database administrator of several tools known as the Change Request Manager (DDTS), SW Change Manager (ClearCase) and Baseline Manager (XRP-II) in support of the ESDIS Change Control Board.

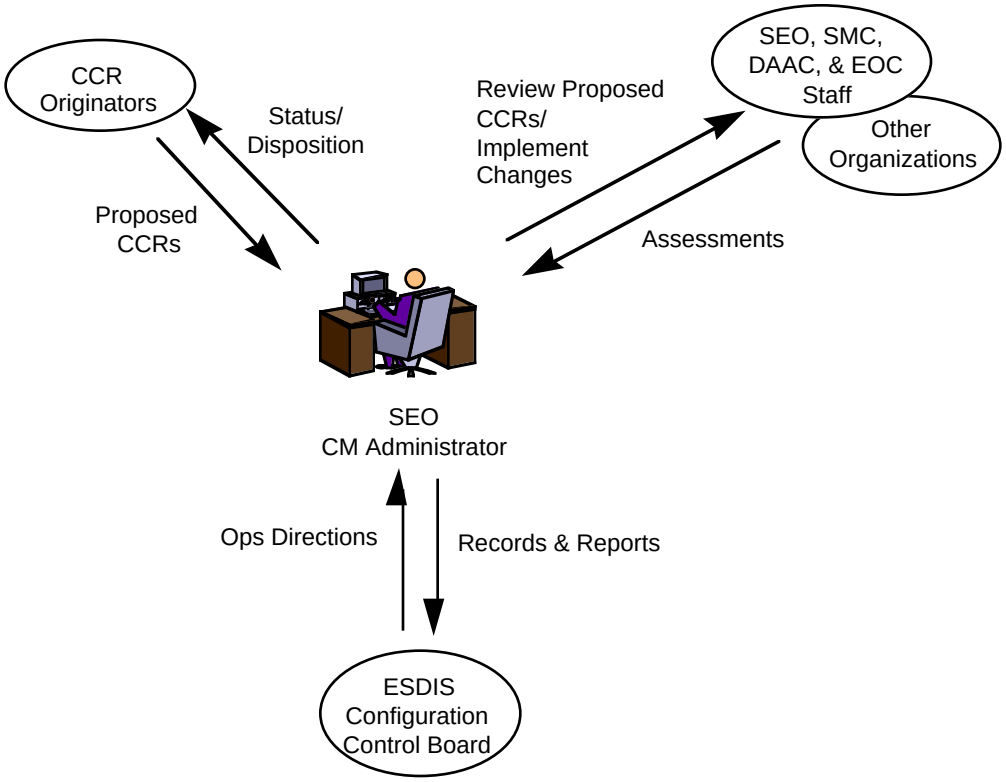

Figure 5.5-1 SEO Configuration Management (CM) Administrator Interfaces

5.5.2 Roles and Responsibilities

The following list of roles and responsibilities correspond to the interfaces in Section 5.5.1.

1. Change Request Manager — Record and manage proposed and approved Configuration Change Requests (CCRs) in the Change Request Manager (Distributed Defect Tracking System--DDTS). Act as the Change Request Manager database administrator for ESDIS CCB. Responsible for the tracking of ECS Class I and system-level CCRs proposed at the sites, coordination of impact assessments and propagating system CCR resolutions to the site-level. Support for the deliberations of the ESDIS Configuration Control Board.

2. SW Change Manager — Coordinate activities to record, report, manage and distribute changes to custom ECS SW, science SW and database control files in the ClearCase tool. Coordinate privileged access to the ECS SW library at the SMC for the Sustaining Engineering Organization, Maintenance Engineers and off-site facilities (EDF, DAACs and EOC).

3. Baseline Manager — Coordinate activities to record, report and maintain system-level changes to the as-built operational baseline of ECS products in the Baseline Manager (XRP-II) tool. Maintain the Configuration Status Accounting Records (CSAR) with coordinated change histories from the operational sites (SMC, DAACs and EOC). Maintain inventory of control items and version control of ECS Configuration Items.

4. Configuration Control Board — Generate status reports as required for the ESDIS Configuration Control Board. Support the system-level implementation of resolutions provided by the ESDIS Configuration Control Board. Provide implementing instructions and monitor progress in implementing change/problem resolutions as directed by the ESDIS CCB.

5. Track, status and facilitate the implementation of system-wide changes.

5.6 SEO Librarian

The SEO Librarian will maintain the ECS system-level technical library. This position includes serving as the Database Administrator for the Document Data Server Subsystem which is used to manage documents related to the operational baseline, including system requirements, design, interfaces and baselined operations plans. Baselined ECS documents will be entered into the Document Data Server and controlled at sites and at the system-level using word processors. Change packages will be processed to the user community by the Librarian who also will be responsible for maintaining and updating the controlled master (gold) copy of all documents. The document inventory and links to the ECS Configuration Items will be maintained by the Librarian in the Baseline Manager tool (XRP-II) with support and coordination of the SMC Configuration Management Administrator.

5.6.1 Interfaces

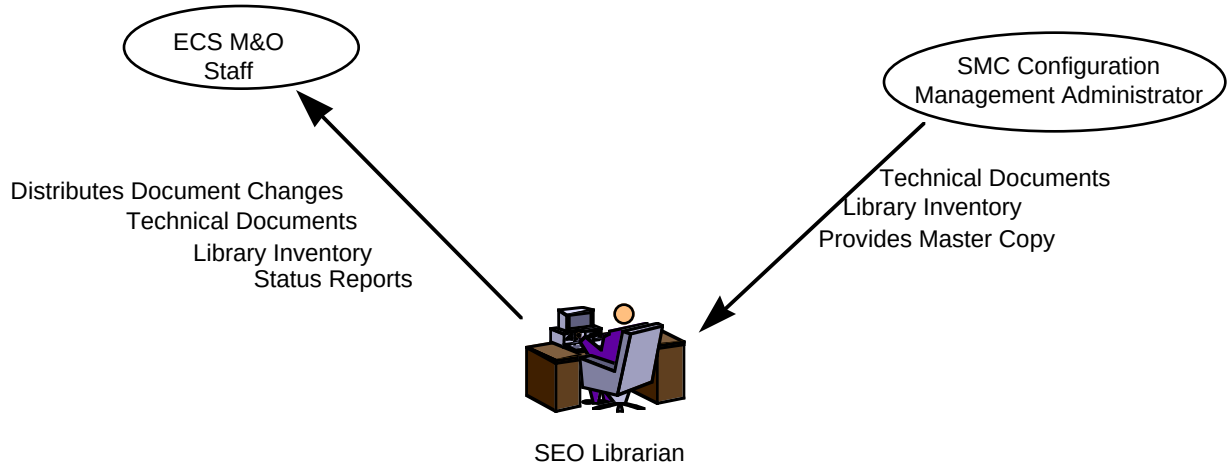

Figure 5.6-1 SEO Librarian Interfaces

5.6.2 Roles and Responsibilities

1. Maintain controlled master copies of technical documents for the ECS Technical Library by serving as the administrator of the Document Data Server and providing privileged access to users and ECS Maintenance personnel at multiple sites for posting current revisions of product documents, procedures, COTS manuals and data items by using the Data Server.
2. Perform updates to post current revisions and changes to the Baseline Manager document inventory and links to product CIs in coordination with the Configuration Management Administrator by using e-mail and the Baseline Manager Tool.
3. Provide status reports and updates to the ECS M&O staff by using e-mail.
4. Respond to queries, directions and priorities for document publication and postings by using e-mail.
5. Receive, incorporate and distribute change packages on all controlled documents by using e-mail and the Data Server.

5.7 SEO Operations Readiness and Performance Assurance Analyst

Generate and maintain Operational Readiness Plan (DID 603/OP1) and update prior to each RRR. Responsible for ensuring ECS staff, hardware, software, document and databases are in a state of operational readiness at all times including system changes and launch preparations. Responsible for conducting Segment Operational Readiness Reviews (SORRs) and the regular monitoring of M&O activities, providing visibility to program management. Responsible for

planning, verification and reporting of system-level operational readiness activities including witnessing system tests, coordinating system-level training exercises and operational certification. Provide coverage of operational phase activities in PAIP (DID 501/PA1). Continue the tasks of the RMA program throughout the operational phase. Coordinate with DAAC, SMC and EOC personnel responsible for Operational Readiness. Coordinate the resolution of ECS system Trouble Tickets, support for overall Trouble Ticket System, and administrative support of the Trouble Ticket Review Board.

5.7.1 Interfaces

The figure shows the role interfaces of the SEO Operations Readiness and Performance Assurance Analyst who acts as database administrator of the tool known as the Trouble Ticket System (Remedy) in support of the Trouble Ticket Review Board.

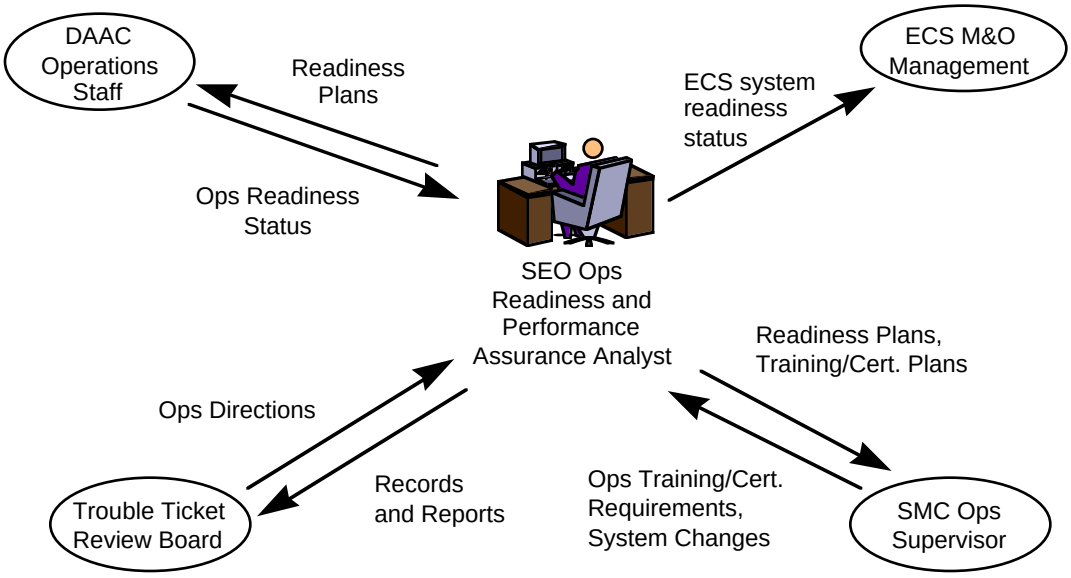

Figure 5.7-1 SEO Operations Readiness and Performance Assurance Analyst Interfaces

5.7.2 Roles and Responsibilities

The following list of roles and responsibilities correspond to the interfaces in Section 5.7.1.

1. Record, report and track ECS system problems recorded in the Trouble Ticket System Database (Remedy). Act as the Trouble Ticket Database Administrator. Responsible for the coordinating of ECS system-level issues discovered at all sites and propagating system problem resolutions to the site-level. Support for the deliberations of the Trouble Ticket Review Board.

2. Generate status reports as required for the Trouble Ticket Review Board.

3. Support the system-wide implementation of resolutions provided by the Trouble Ticket Review Board. Provide implementing instructions and monitor progress in implementing change/problem resolutions as directed by the TT Review Board.

4. Plan, coordinate and verify system-level testing and training for ECS system changes. Conduct system-level Operations Readiness Reviews.

5. Plan and review ECS M&O team training activities. Review and audit operator certification records.

6. Receive from the SMC Ops Supervisor Ops training and certification requirements as well as system changes. Send to the SMC Ops Supervisor training and certification plans for the M&O staff.

5.8 SEO ECS Operations Trainer

The Operations Trainer is responsible for the management of the ECS M&O training program. This effort includes planning, scheduling and conducting all ECS training courses, developing curriculum to support the training courses, supervising the training staff, coordinating all training activities with the FOT, DAAC and SMC training management, developing and maintaining the certification skills plan, and managing the COTS training program. The ECS Operations Trainer also coordinates implementation of ongoing training and certification through each sites' Operations Readiness and Performance Assurance Analysts (ORPA).

5.8.1 Interfaces

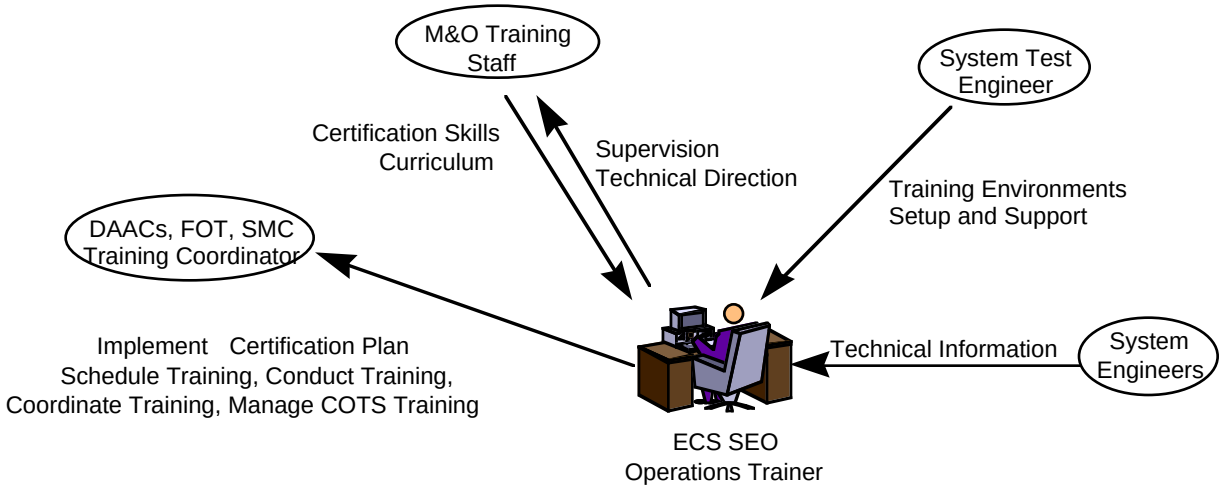

Figure 5.8-1 SEO ECS Operations Trainer Interfaces

5.8.2 Roles and Responsibilities

1. Develop certification skills documentation and plan using the Training Management SW tool.
2. Implement and manage operator certification as defined in the certification plan using the Training Management SW tool.
3. Develop curriculum using the Training Management SW tool.
4. Interface with system development and operations Engineers to obtain technical information.
5. Schedule training course conduct using the Training Management SW and e-mail tools.
6. Conduct scheduled training courses using the delivered ECS system.
7. Supervise the training staff.
8. Coordinate all training activities with FOT, DAAC ORPAs and SMC management using e-mail and planning coordination meetings.
9. Manage COTS training using the Training Management SW tool.

5.9 SEO Science Coordinator

The SEO Science Coordinator is responsible to ESDIS Management/Project Scientist for planning ECS system integration of science software, operational quality of the ECS science products and for services to the ECS users. The SEO Science Coordinator interfaces with the Project Scientist, Instrument Teams, ECS Science Office, DAAC Science Coordinators and ECS user organizations to define the ECS science operation objectives, priorities, performance metrics/satisfaction criteria and performance reporting.

5.9.1 Interfaces

See Figure 5.9-1.

5.9.2 Roles and Responsibilities

The majority of these tasks will be accomplished by face-to-face meetings, the use of office automation tools, telephone and e-mail.

1. Identify and define
   - ECS science mission objectives
   - science data processing/reprocessing requirements
   - success criteria
   - satisfaction evaluation and reporting methodology

2. Develop and maintain
   - ECS user needs and priorities
   - operations satisfaction metrics
   - user satisfaction evaluation and reporting requirements
3. Develop plans and provide operations oversight for ECS science software integration and test, product operational quality assurance and coordination with the Instrument Teams.
4. Provide ECS system level operational leadership for satisfaction of users' needs for ECS data and services.
5. Propose and evaluate proposed operational system enhancements for science processing and user services.

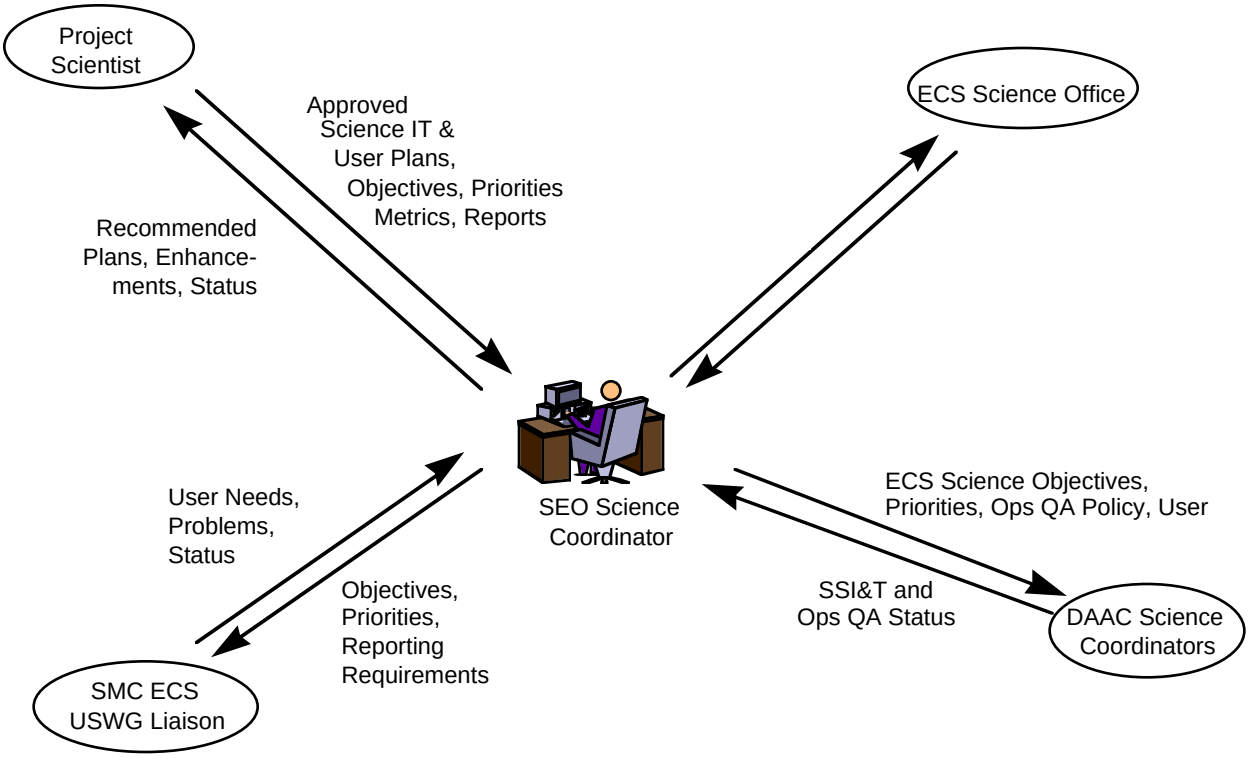

Figure 5.9-1 SEO Science Coordinator Interfaces

5.10 SEO Software Maintenance Engineer

The SEO Software (S/W) Maintenance Engineer produces, delivers and documents the corrections, modifications and enhancements to ECS software (including COTS) and/or adapts or incorporates COTS software for ECS use.

The role interfaces associated with SEO S/W Maintenance Engineer functions are shown in Section 5.10.1.

5.10.1 Interfaces

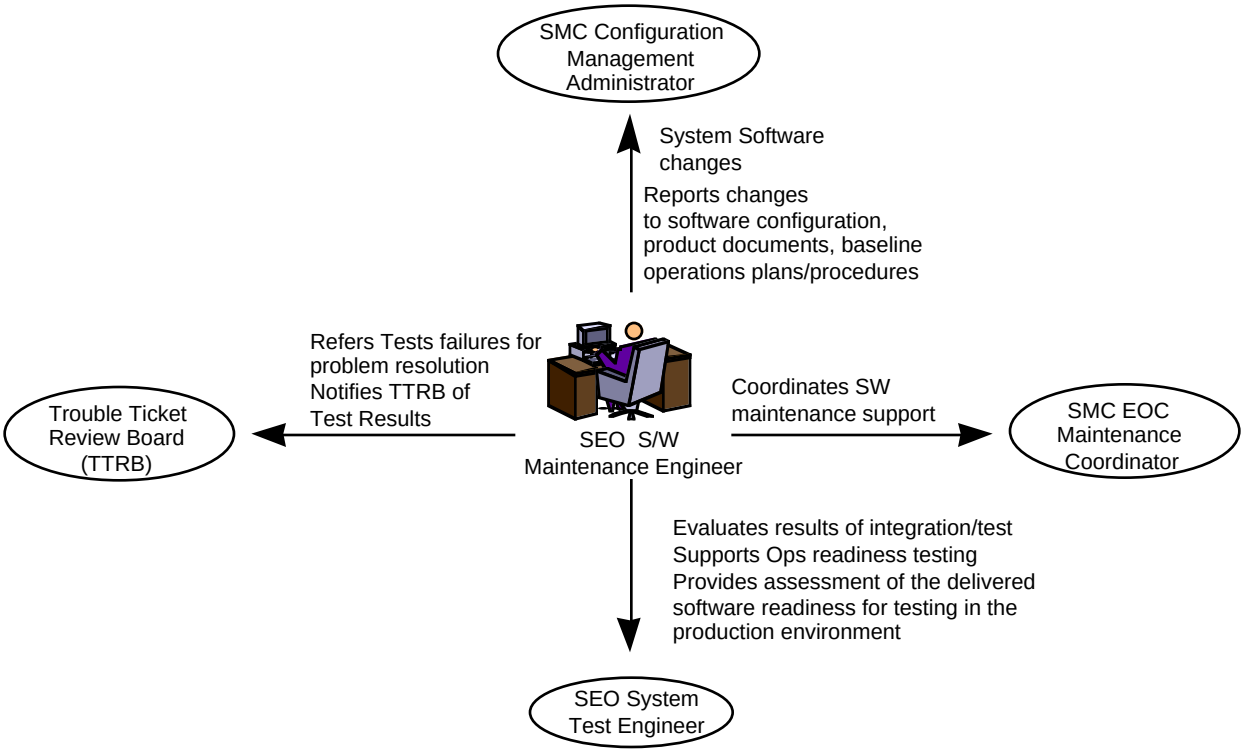

Figure 5.10-1 SEO Software Maintenance Engineer Interfaces

5.10.2 Roles and Responsibilities

1. Perform SW builds and compiles and make ECS custom SW and science SW available for distribution (via library function). Supply test cases and input test data and expected test output to the DAAC in order to verify that the software runs correctly in the operational environment. Use ClearCase (TM) to make changes to custom ECS SW, science SW and database controls files. (ClearCase provides version control of objects including source code, binaries, executables, documentation, test suites and libraries in heterogeneous UNIX development environments.)

2. Provide traceability to previous configurations. This includes all source files, documentation, test information and other files associated with the science software that might change during test/install of software.

3. Provide input to CM Administrator of any operational baseline document that might be changed during test/install including requirements, design, product documents and

baselined operations plans and procedures. (Baselined ECS documents will be entered into and controlled at sites and at the system-level using word processors.)

4. Use Trouble Ticket System (TTS) to record and report problems. This includes records of events, work-off assignments and actions taken that affect the controlled-baseline configuration.

5. Participate in the operations integration and test of the software at the DAAC, in particular the evaluation of the results of integration and test to verify that the software will run safely, i.e., will not interfere with other software or DAAC operations.

6. Provide Delivery memos describing the purpose and contents of each delivery (e.g., an initial release, modification, etc.).

7. Confirm that the SDPS/W design meets the EOSDIS requirements with regard to metadata generation and formats, browse product generation and formats, standard product generation and formats, quality assessment on ingest of external ancillary data, quality assessment for output products, product dependencies and SDP Toolkit interfaces.

8. Use the mandatory tools of the SDP Toolkit for all SDPS/W and PDPS interfaces. Use the optional tools of the SDP Toolkit as applicable. Check SDPS/W source code and scripts comply with EOS coding standards. Use code checking tools. Use code checkers to check code for software standards compliance of final deliverable.

9. Assist in defining Test Plans and Acceptance Test Specifications with the DAAC/ECS science software support group.

10. Perform stand-alone testing at the DAAC to verify rehosting. Organize resources for verifying of acceptance test results. Support DAAC operational readiness testing and activities. Participate in Reviews related to the SSI&T.

11. Have knowledge of scripts invoking binary executables to include the Perl, C Shell, Korn Shell and POSIX Shell script languages. Have knowledge of FORTRAN or “C”, since they are ANSI standards for these languages.

12. Provide support to ECS Functional Configuration Audits (FCAs) and Physical Configuration Audits (PCAs)

13. Distribute source files, documentation, test information and other files associated with the science software to authorized users.

14. Hold software reviews as needed.

5.11 SEO System Engineer

Analyze and identify ways to accommodate needed improvements, new technologies and new concepts, manage system upgrades and evolution, control and maintain ECS updates, and perform the activities necessary to assure ECS reliability, maintainability and availability. Work

with TAG (Technical Assistance Group) to evaluate user inputs and monitor system performance to tune the system for optimum response and support.

5.11.1 Interfaces

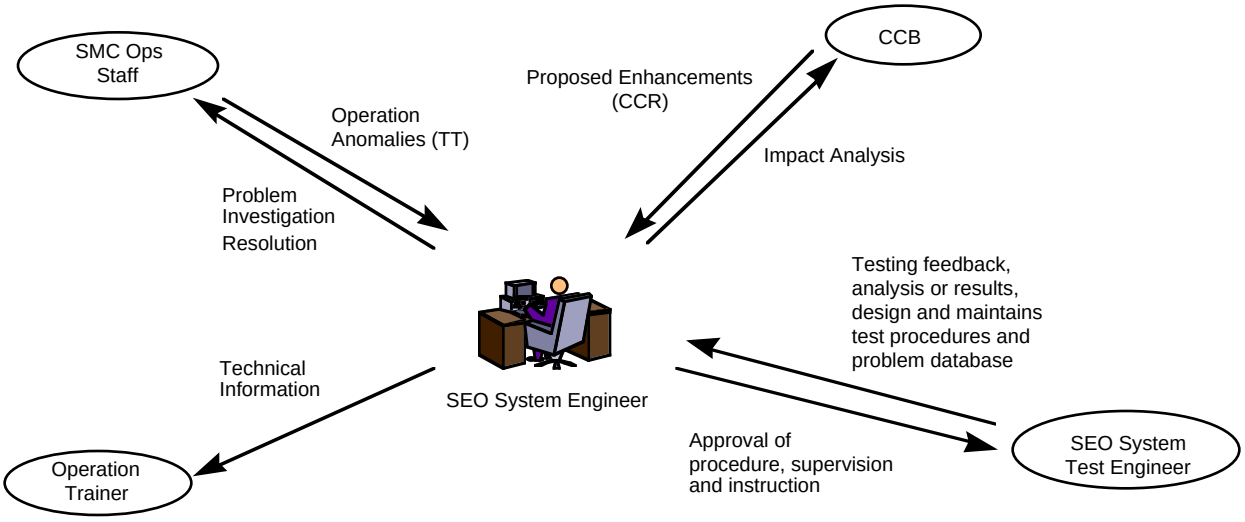

Figure 5.11-1 SEO System Engineer Interfaces

5.11.2 Roles and Responsibilities

1. Respond to system-wide problems in a responsive manner. Based upon inputs from the centers on problems, impacts, priorities, etc., the SEO is allocated problems and enhancements that are system-wide in nature. Upon approval by the ESDIS CCB, these M&O modifications are distributed to the centers as well as to the development organizations.

2. Identify and, when directed and approved by the Government CCB, implement needed improvements to the current operational version of the hardware, software and firmware.

3. Analyze and identify ways to accommodate new technologies and new concepts, manage system upgrades and evolution, control and maintain ECS databases, and perform the activities necessary to ensure ECS reliability, maintainability and availability.

4. Install, conand tune the ECS software, COTS packages, operating systems, compilers, tools, utilities, networks and databases.

5. Work with DAAC personnel in analysis of requirements, problems, anomalies and formulation of recommended solutions.

6. Perform the activities necessary to assure maintainability and availability; support/provide evaluation of user inputs and monitor system performance to tune the

system for optimum response and support; support operational readiness and performance assurance.

5.12 SEO System Test Engineer

Provide plans, configurations, test environments, training environments and test procedures for SEO software upgrade testing exercises. Execute formal and impromptu testing at the SEO, analyzing and reporting findings.

5.12.1 Interfaces

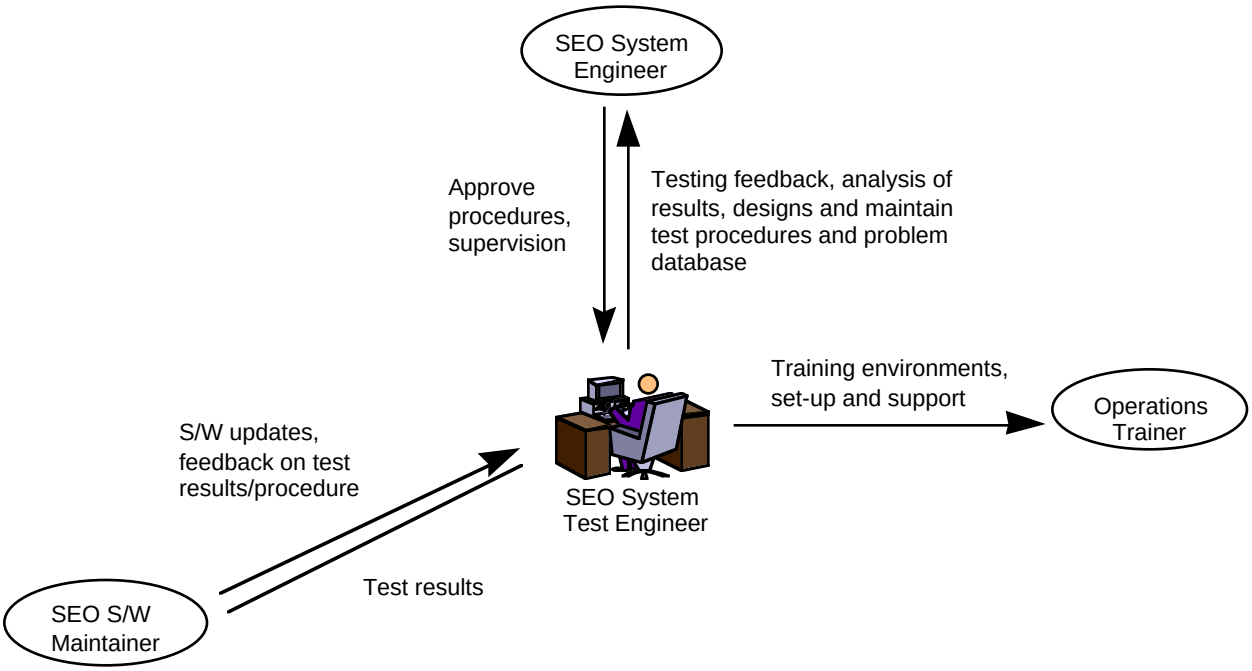

Figure 5.12-1 SEO System Test Engineer Interfaces

5.12.2 Roles and Responsibilities

1. Test ECS software upgrades via formal test procedures.
2. Analyze results of version upgrade testing, document findings in report(s). (MSS, HPOV, Remedy)
3. Investigate all bugs, glitches and performance problems discovered. Document potential causes and resolutions where possible for all issues arising during testing. (MSS, HPOV, Remedy)
4. Impromptu testing of ECS software upgrades in various theoretical operational environments.

5. Design, maintain and update test procedures for SEO.
6. Maintain and update problem database. (MSS, HPOV, Remedy)
7. Provide training environments, support training execution and problem resolution. (Database Tool)

6. Integrated Logistics Support (ILS) Roles

6.1 ILS Contractor Manager

The ILS Contractor Manager has system-wide responsibility for the management of logistics operations in support of ECS objectives and the science support missions. Where the ECS DAACs, the SMC and the EOC are focused on operations of the individual centers, the ILS Contractor Manager provides a systems perspective on logistics support operations and on the installation, maintenance and training of commercial off-the-shelf (COTS) hardware and software.

The ILS Contractor Manager plans and manages ECS logistics operations under the general direction of the ECS M&O Office Manager. He also provides the logistics interface with the ECS development organizations. This interface includes logistics issues related to design supportability, design tradeoffs and system upgrades.

6.1.1 Interfaces

See Figure 6.1-1.

6.1.2 Roles and Responsibilities

The ILS Contractor Manager performs the following functions:

1. Prepares logistics plans and analyses in coordination with the ECS M&O staff, development organizations, DAACs, the SMC, the EOC, and the SEO based on ECS RMA objectives and operations requirements. Supports ESDIS management in the development of plans, policies and procedures required to implement and manage ECS logistics support operations. Provides reports and briefings regarding logistics support to the ECS.

2. Monitors and coordinates the execution of logistics and maintenance operations at the DAACs, SMC, EOC, SEO and the EDF by reviewing information and reports generated from SMC and LSM tools provided by the ECS. Coordinates logistics support operations with the ECS M&O Office staff and ECS staffs at the DAACs, the SMC, the EOC, the

SEO and the EDF. Coordinates logistics activities using face-to-face meetings, office automation tools, telephone and electronic mail.

3. Determines requirements for, procures, and accounts for spares, repair parts and consumables used to support ECS operations using office automation tools and the VCATS property management database.

4. Manages and accounts for ECS contractor-purchased, vendor-loaned, and Government-furnished equipment and SW using the VCATS property management database and office automation tools. Manages COTS SW licenses and SW maintenance contracts.

5. Plans and coordinates vendor-provided training related to COTS equipment and software.

6. Plans, coordinates and manages the installation of ECS COTS hardware and software using office automation tools, AUTOCAD and the VCATS property management database.

7. Accomplishes logistics planning, budgeting, resource management, scheduling and reporting using office automation systems, telephone and electronic mail.

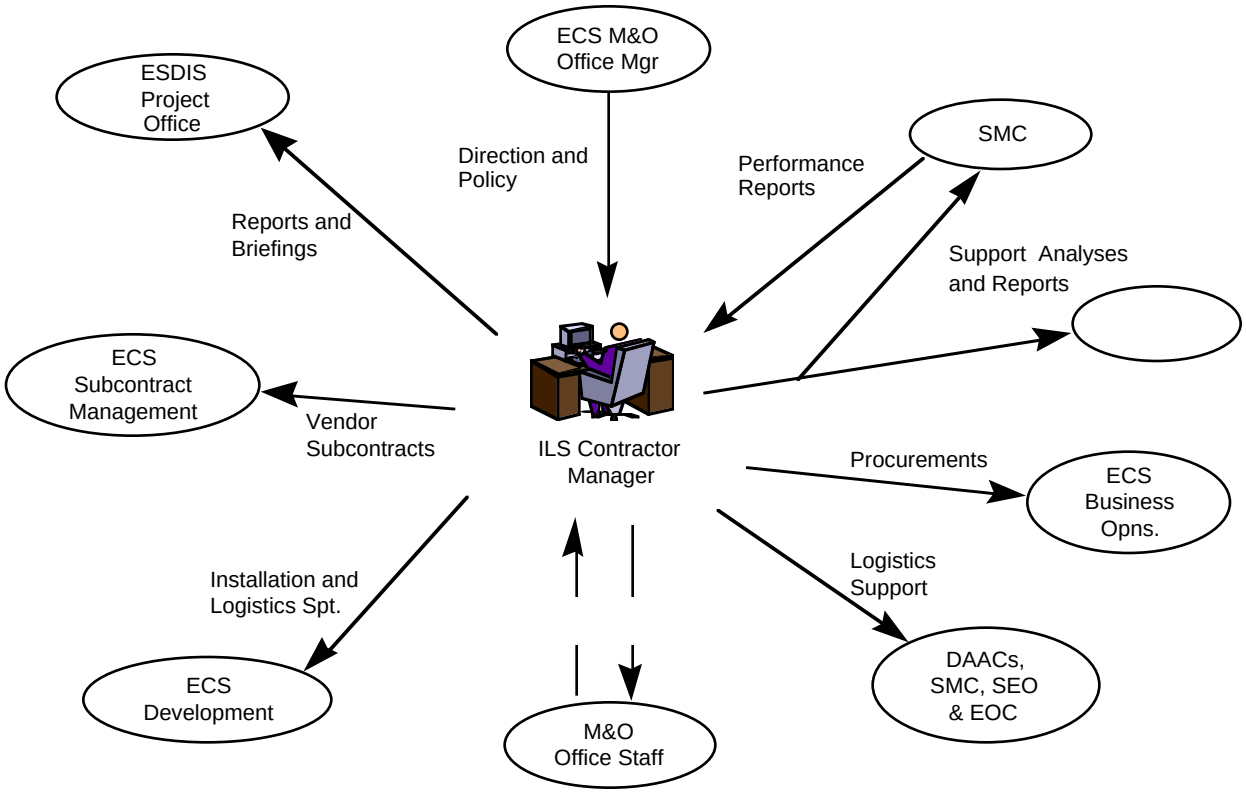

Figure 6.1-1 ILS Contractor Manager Interfaces

6.2 ILS Administrator

The ILS Administrator provides control of contractor and government ECS property at the SEO, the SMC and the EOC and maintains a continuous audit trail from receipt of a COTS item until transfer of accountability. This individual maintains accountability for all ECS equipment at these sites until it is accepted by CO/COTR, and for all equipment for which the contractor has M&O responsibility.

6.2.1 Interfaces

Interfaces for the ILS Administrator are identified in Figure 6.2-1. These interfaces are described in Section 6.2.2.

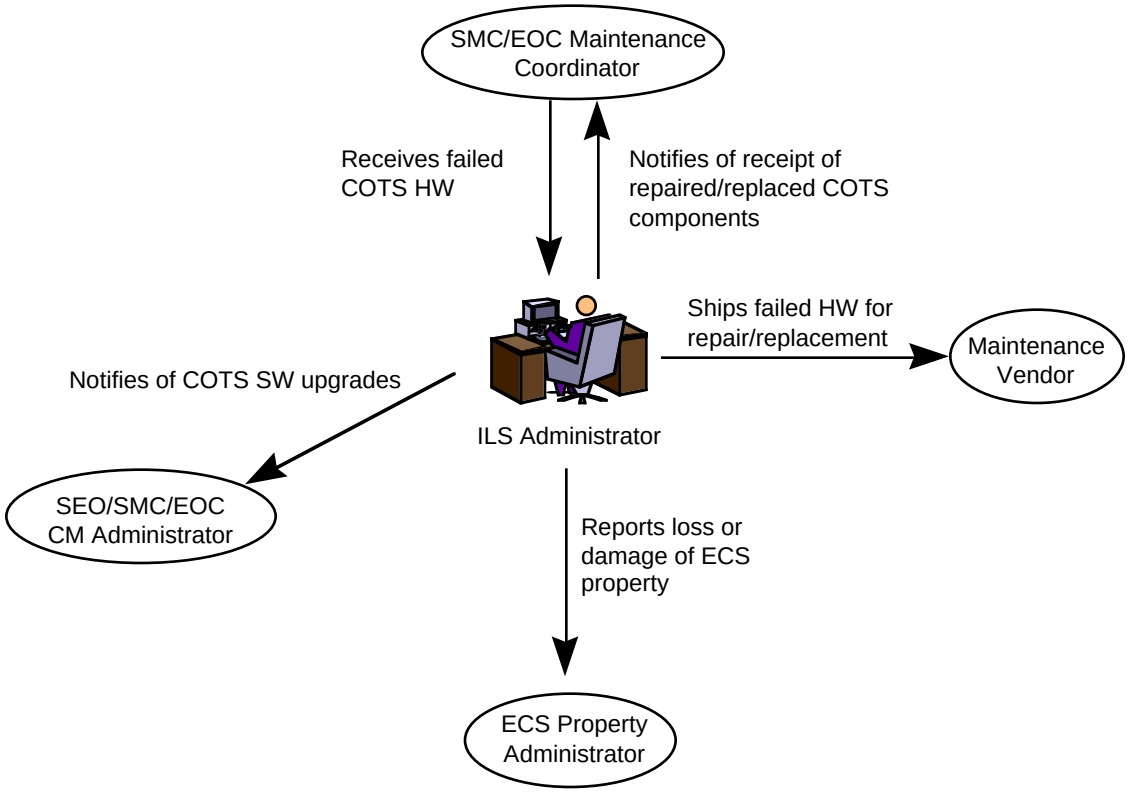

Figure 6.2-1 ILS Administrator Interfaces

6.2.2 Roles and Responsibilities

The roles and responsibilities of the ILS Administrator are listed below.

1. Receive, inventory, store, issue and replenish spares, consumables, tools and test equipment (if any), and end items stocked at the SEO, SMC and EOC using the Inventory, Logistics and Maintenance Manager (MSS).

2. Receive failed ECS HW from the SMC/EOC Maintenance Coordinator and ship it to appropriate maintenance vendor for repair or replacement using vendor supplied RMA number.
3. Monitor vendor repair actions and the return of the repaired or replaced item to the SMC or EOC.
4. Notify SMC/EOC Maintenance Coordinator of receipt of repaired or replaced item; update the record of spares using the Inventory, Logistics and Maintenance Manager (MSS).
5. Conduct periodic inventories of ECS equipment and maintain records through the Inventory, Logistics and Maintenance Manager (MSS).
6. Report loss or damage to ECS property to ECS Property Administrator.
7. Support conduct of the annual property audit using inventory data in the Inventory, Logistics and Maintenance Manager (MSS).
8. Receive upgrades of ECS COTS SW and enter them into the Inventory, Logistics and Maintenance Manager (MSS).
9. Notify the SEO/SMC/EOC CM Administrator of receipt of SW upgrades.

6.3 ILS Logistics Engineer

The ILS Logistics Engineer is the system level logistics monitor and coordinator. This engineer performs system level coordination, scheduling, monitoring, planning, reporting, spares/repair parts and consumables planning, and vendor contracting of ECS logistics support.

6.3.1 Interfaces

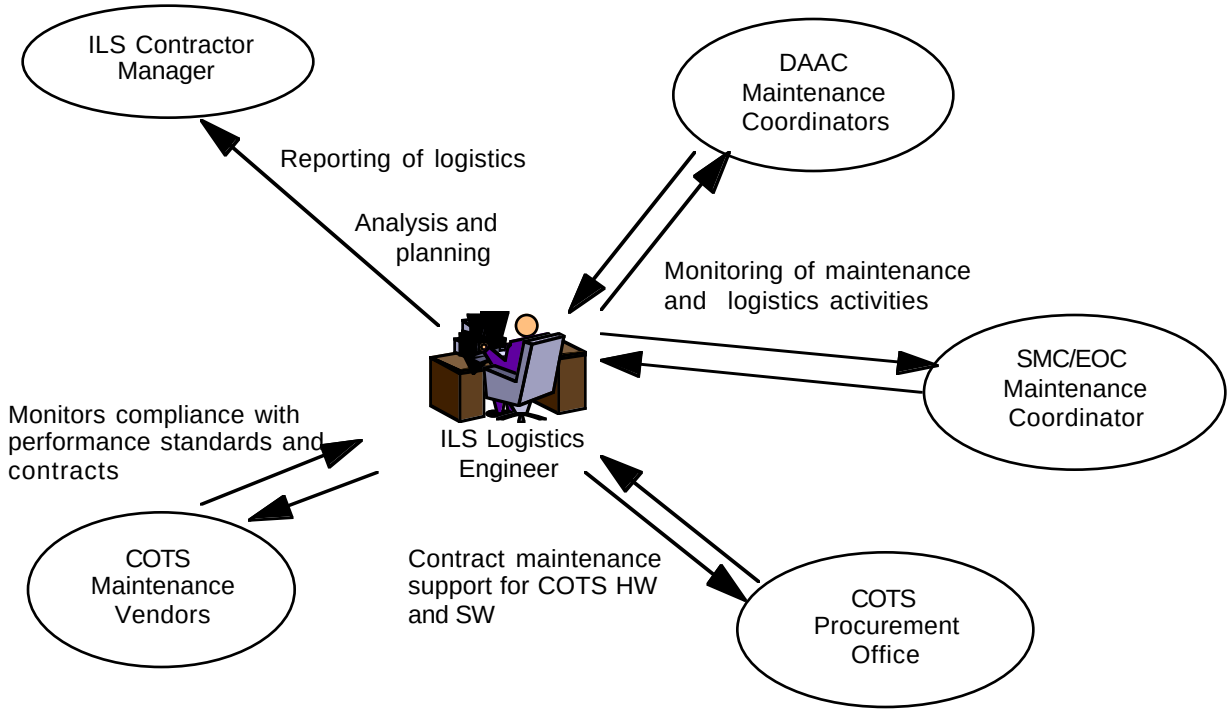

Figure 6.3-1 ILS Logistics Engineer Interfaces

6.3.2 Roles and Responsibilities

The responsibilities of the Logistics Engineer are:

1. Analysis of and planning for logistics needs of the ECS system.
2. Monitoring and reporting of logistics activities, using:
   - XRP-2 (Baseline Manager, MSS)
   - Inventory, Logistics and Maintenance Manager (MSS)
   - Remedy ARS (Trouble Ticketing Tool, MSS)
   - DDTS (Change Request Manager, MSS)
3. Contracting of logistics and maintenance support for all ECS COTS HW and SW.
4. Establishing the provisioning levels, procurement actions and monitoring of spares at ECS sites.
5. Monitoring of vendor compliance with performance standards contained in maintenance contracts and system specifications.

6.4 Installations Coordinator

The Installations Coordinator plans, coordinates and monitors all installations of ECS equipment at ECS sites.

6.4.1 Interfaces

See Figure 6.4-1.

6.4.2 Roles and Responsibilities

The responsibilities of the Installation Coordinator are:

1. Plan, coordinate and monitor the execution of all ECS release installations at the sites.
2. Determine facility installation requirements for ECS equipment.
3. Prepare facility plans and installation plans.
4. Coordinate with vendors regarding the installation of ECS equipment.
5. Coordinate with DAAC/government facilities engineers.
6. Maintain current facilities diagrams.

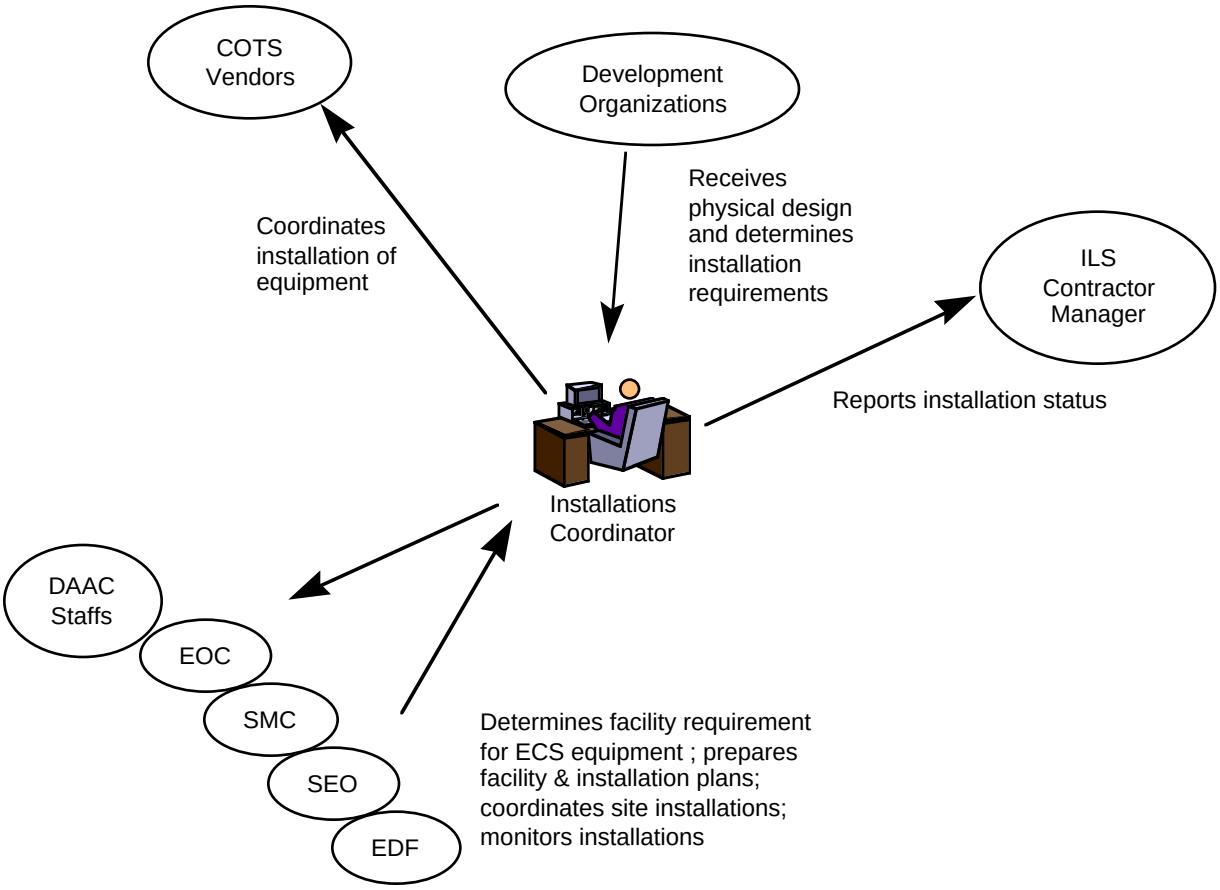

Figure 6.4-1 Installations Coordinator Interfaces

6.5 ECS Property Administrator

The ECS Property Administrator maintains accountability of all government procured property in the ECS system.

6.5.1 Interfaces

See Figure 6.5-1.

6.5.2 Roles and Responsibilities

The responsibilities of the ECS Property Administrator are:

1. Receive, inspect and stage all COTS HW and SW for the ECS system.
2. Enter received COTS items into the VCATS database.
3. Prepare and ship COTS equipment and SW to ILS Administrators at sites.

4. Ensure accuracy of property records by reconciling VCATS records with the Inventory, Logistics and Maintenance Manager (MSS) and XRP-2 (Baseline Manager, MSS).
5. Report inventory discrepancies and property loss or damage to the ILS Contractor Manager.
6. Manage and account for vendor equipment and SW loaned to the ECS Project.

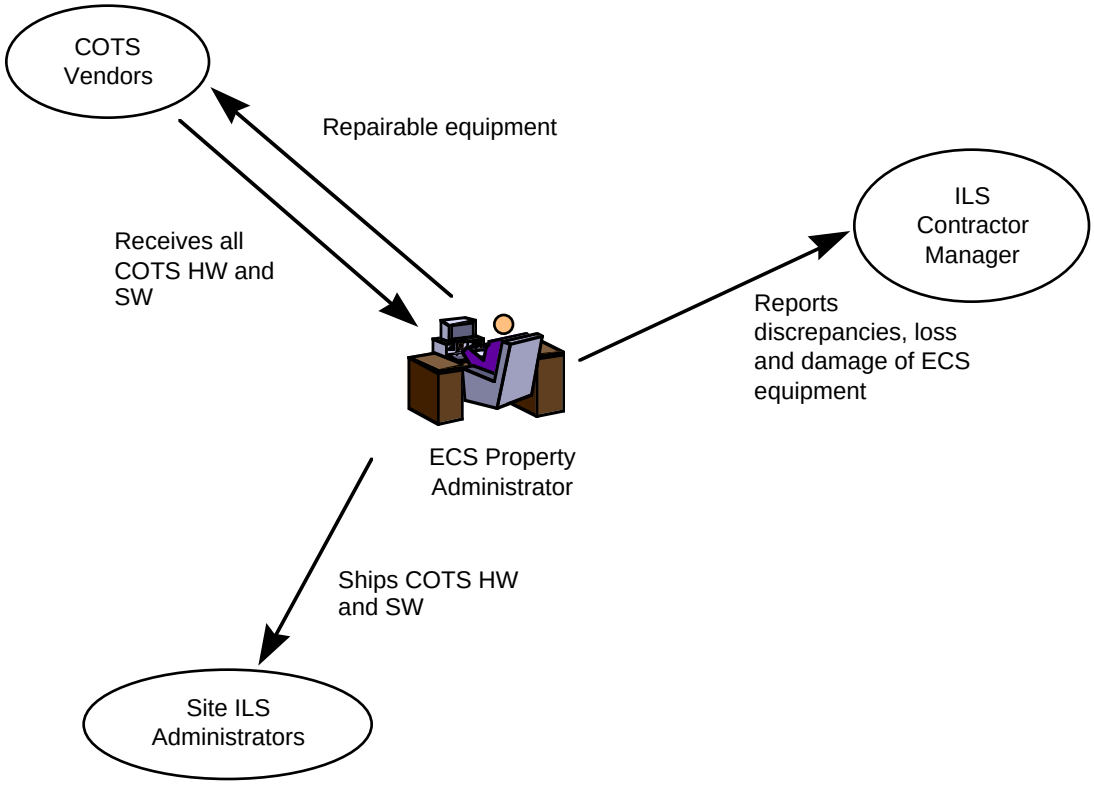

Figure 6.5-1 ECS Property Administrator Interfaces

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7. Flight Operations Team (FOT) Roles

The ECS Flight Operations Team (FOT) will operate the FOS which will be located in the EOSDIS Operations Center (EOC). The EOC is located in Building 32 at NASA GSFC. The FOT will operate the AM-1 spacecraft (S/C) and instruments, as well as monitor the health and performance of these flight elements, and maintain the FOS system. The FOT consists of four sections (Management, Operations, Flight Engineering, and Ground System Engineering). Figure 7-1 provides an overview of the FOT Operational positions, interfaces and functions. The remainder of Section 7 describes the roles and responsibilities of the FOT.

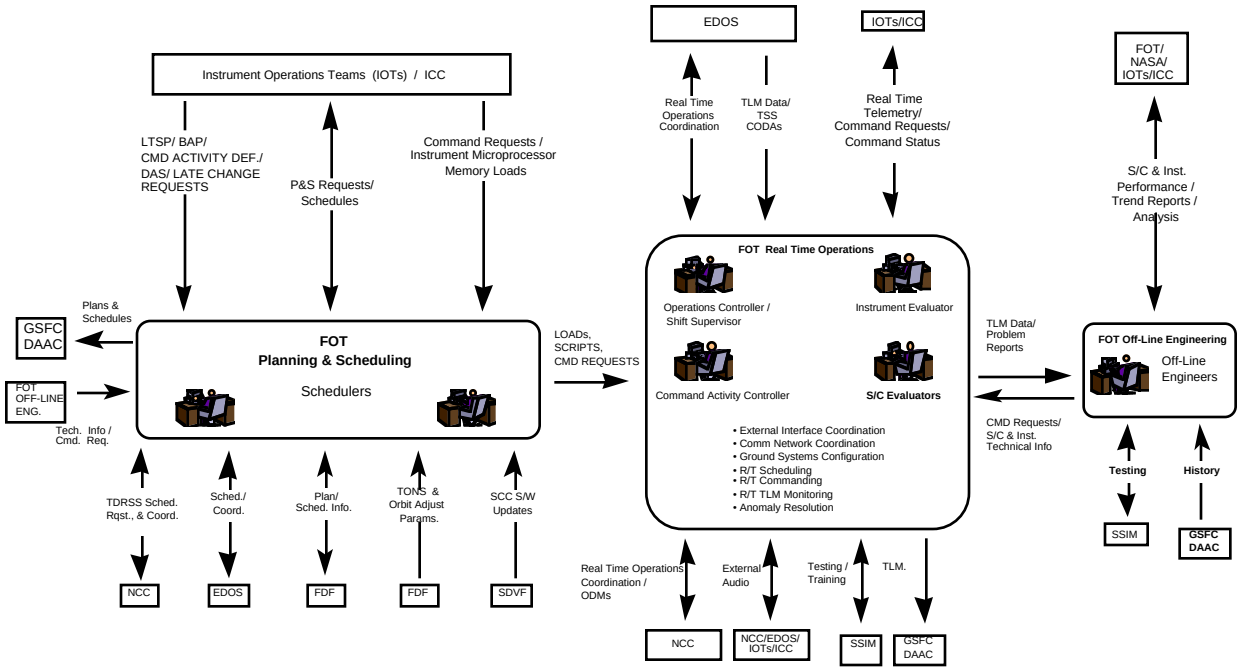

Figure 7-1 Flight Operations Team (FOT) Interfaces/Functions

7.1 FOT Management

The FOT Management section is responsible for overall FOT activities in the support of the AM-1 mission according to directives specified in the ECS SOW.

7.1.1 Project Support Manager

7.1.2 FOT Configuration Management (CM) Coordinator

7.1.3 FOT Performance Assurance (PA) Coordinator

7.1.4 FOT Training Coordinator

7.1.5 FOT Administrative Assistant

7.1.1 Project Support Manager

The Project Support Manager (PSM) is the lead FOT manager. The PSM will be the prime FOT interface with ECS management and their NASA counter parts. The following members of the FOT staff report directly to the Project Support Manager: the Configuration Management Coordinator, the Performance Assurance Coordinator, the Training Coordinator, the Administrative Assistant, the FOT Operations Manager, the FOT Flight Systems Engineer and the FOT Ground System Engineer.

7.1.1.1 Interfaces

Figure 7.1.1-1 shows the role interfaces of the Project Support Manager.

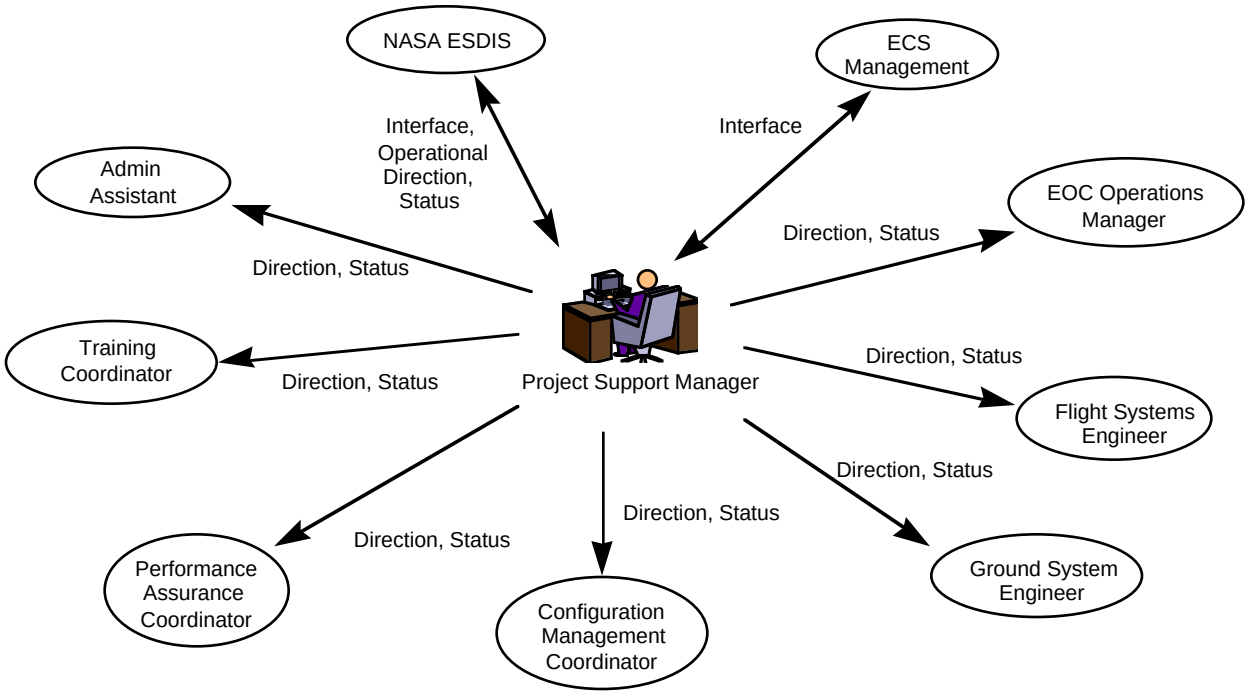

Figure 7.1.1-1 Project Support Manager Interfaces

7.1.1.2 Roles and Responsibilities

1. Is the primary FOT interface with ESDIS (GSFC Code 505). Shall receive operational direction from, and provide FOT status information to, the NASA Mission Operations Manager (MOM).

2. Is the primary interface with ECS management for operational, administrative and management issues. Shall provide FOT status and will receive direction from ECS management.

3. Provide management and technical direction, and receive operational status information from, the FOT Operations Manager.

4. Provide management and technical direction to, and receive operational status information from, the Flight Systems Engineer.

5. Provide management and technical direction to, and receive operational status information from, the Ground System Engineer.

6. Provide management and technical direction to, and receive operational status information from, the Configuration Management Coordinator.

7. Provide management and technical direction to, and receive operational status information from, the Performance Assurance Coordinator.

8. Provide management and technical direction to, and receive operational status information from, the FOT Training Coordinator.

9. Provide management to the FOT Administrative Assistant.

7.1.2 FOT Configuration Management (CM) Coordinator

The FOT CM Coordinator is responsible for usage of approved configuration management procedures; ensuring that hardware, software and procedure changes are properly documented and coordinated; assists in the development and administration of the FOT library; if requested by Customer, provides recording secretarial tasks for the FOT CCB, generates CCB monthly reports; prepares agendas for CCB meetings; and coordinates Review Item Discrepancy (RID) requests generated during M&O reviews.

7.1.2.1 Interfaces

Figure 7.1.2-1 shows the role interfaces of the CM Coordinator.

7.1.2.2 Roles and Responsibilities

1. Record and manage proposed and approved FOS Configuration Change Requests (CCRs) in the Change Request Manager (Distributed Defect Tracking System--DDTS). Act as the Change Request Manager database administrator for the FOT. Responsible for the coordination of all FOS CCRs with external interfaces, coordination of impact assessments, and propagating system CCR resolutions to the site-level. Support for the deliberations of the FOT Configuration Control Board.

2. Record, report, manage and distribute changes to custom FOS SW and database control files in the ClearCase tool. Maintain privileged access to the FOS SW library at the EOC.

3. Record, report and maintain system-level changes to the as-built operational baseline of FOS products in the Baseline Manager (XRP-II) tool. Generate the Configuration Status Accounting Records (CSAR). Maintain inventory of control items and version control of FOS Configuration Items.

4. Generate status reports as required for the FOT Configuration Control Board. Support the system-level implementation of resolutions provided by the FOT Configuration Control Board. Provide implementing instructions and monitor progress in implementing change/problem resolutions as directed by the FOT CCB.

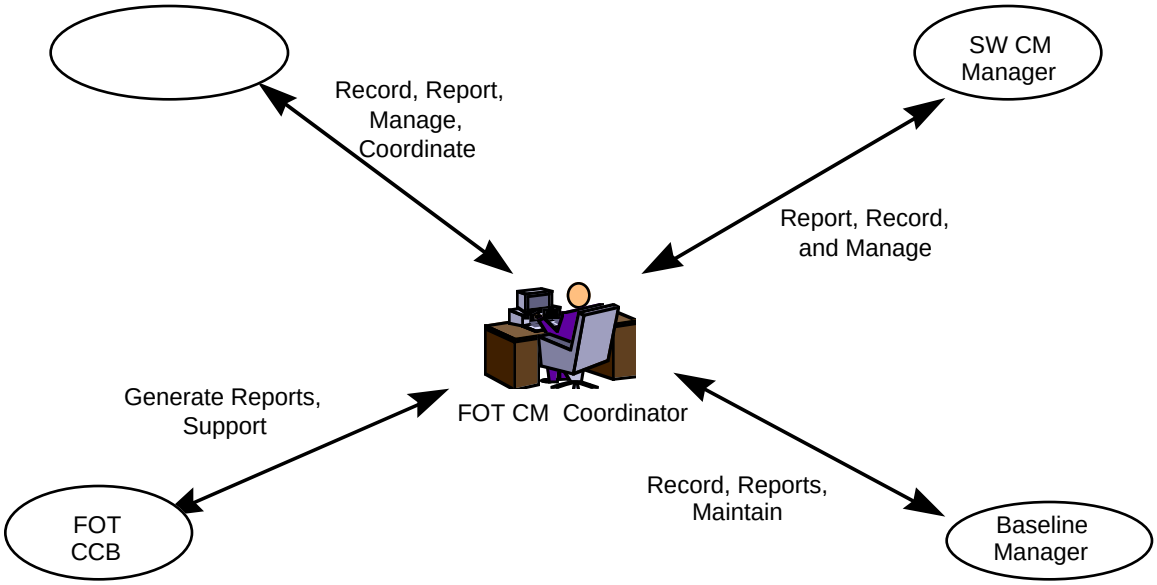

Figure 7.1.2-1 FOT Configuration Management (CM) Coordinator Interfaces

7.1.3 FOT Performance Assurance (PA) Coordinator

The FOT PA Coordinator monitors, reviews and provides input to FOS document reviews. Responsible for ensuring that the FOT and FOS (hardware, software, documents, databases) are in a state of operational readiness at all times including launch preparations. Responsible for the regular monitoring of FOT activities and providing visibility to Project Support Manager. Provide coverage of operational phase activities in PAIP (DID 501/PA1). Continue the tasks of the RMA program throughout the operational phase.

7.1.3.1 Interfaces

Figure 7.1.3-1 shows the role interfaces of the FOT Operations Performance Assurance Coordinator.

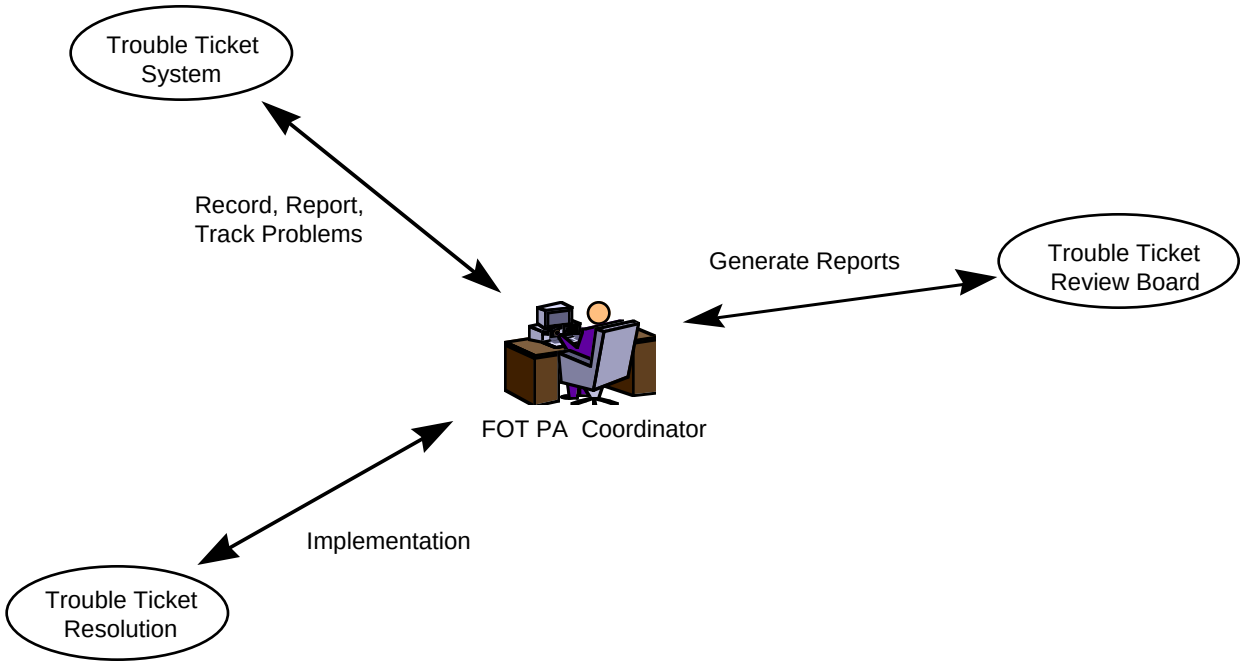

Figure 7.1.3-1 FOT Performance Assurance (PA) Coordinator Interfaces

7.1.3.2 Roles and Responsibilities

1. Record, report and track FOS problems recorded in the Trouble Ticket System Database (Remedy). Act as the Trouble Ticket database administrator for the FOT. Responsible for the forwarding of FOT and ECS system-level issues and propagating system problem resolutions to the site-level. Support for the deliberations of the Trouble Ticket Review Board.
2. Generate status reports as required for the Trouble Ticket Review Board.
3. Support the FOS site-level implementation of resolutions provided by the Trouble Ticket Review Board. Provide implementing instructions and monitor progress in implementing change/problem resolutions as directed by the TT Review Board.

7.1.4 FOT Training Coordinator

The FOT Training Coordinator will be responsible for ensuring that all FOT training courses are conducted, training and certification records are maintained, and that all FOT operators are certified.

7.1.4.1 Interfaces

Figure 7.1.4-1 shows the role interfaces of the FOT Training Coordinator.

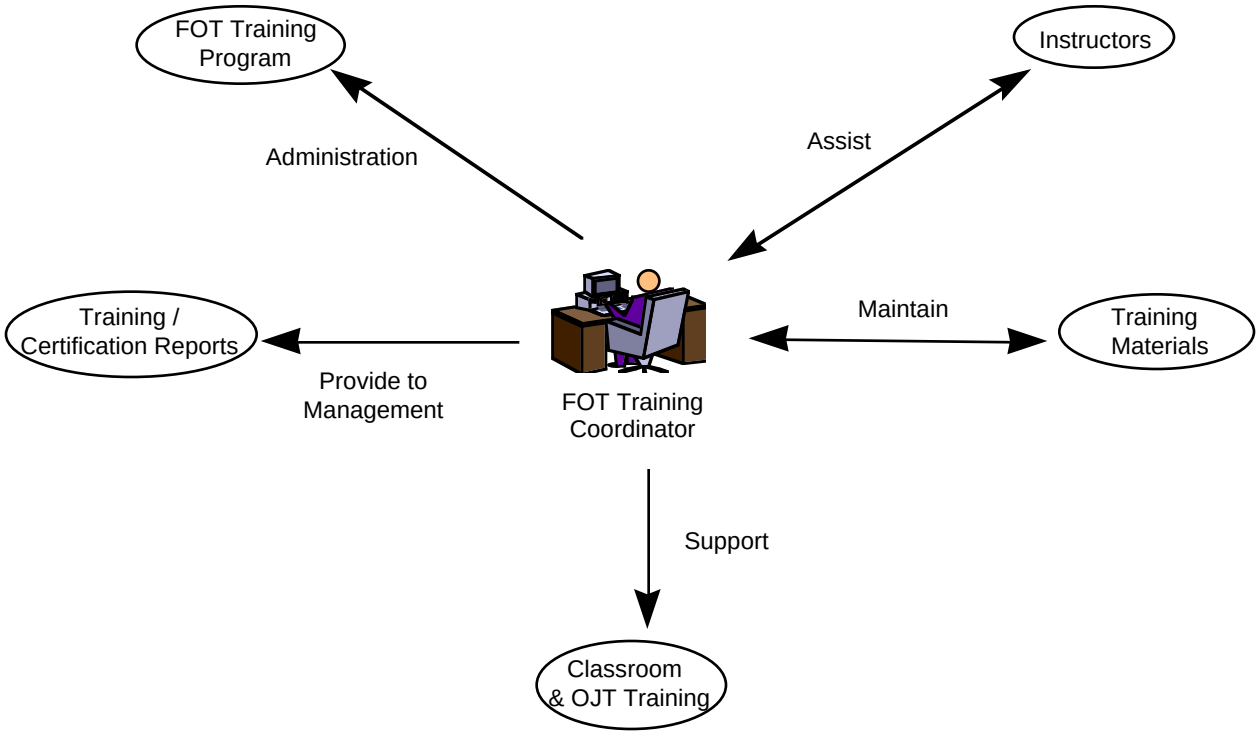

Figure 7.1.4-1 FOT Training Coordinator Interfaces

7.1.4.2 Roles and Responsibilities

1. Responsible for administration of the FOT training program.
2. Assist instructors in guidance and preparation of instructional material.
3. Maintain FOT training materials.
4. Support classroom and OJT training process.
5. Provide training and certification reports to the Project Support Manager.

7.1.5 FOT Administrative Assistant

The FOT Administrative Assistant will provide clerical, secretarial and administrative functions to the FOT. Responsibilities include providing typing support, filing, processing expense reports, performing administrative functions and preparing travel arrangements.

7.1.5.1 Interfaces

Figure 7.1.5-1 shows the role interfaces of the FOT Administrative Assistant.

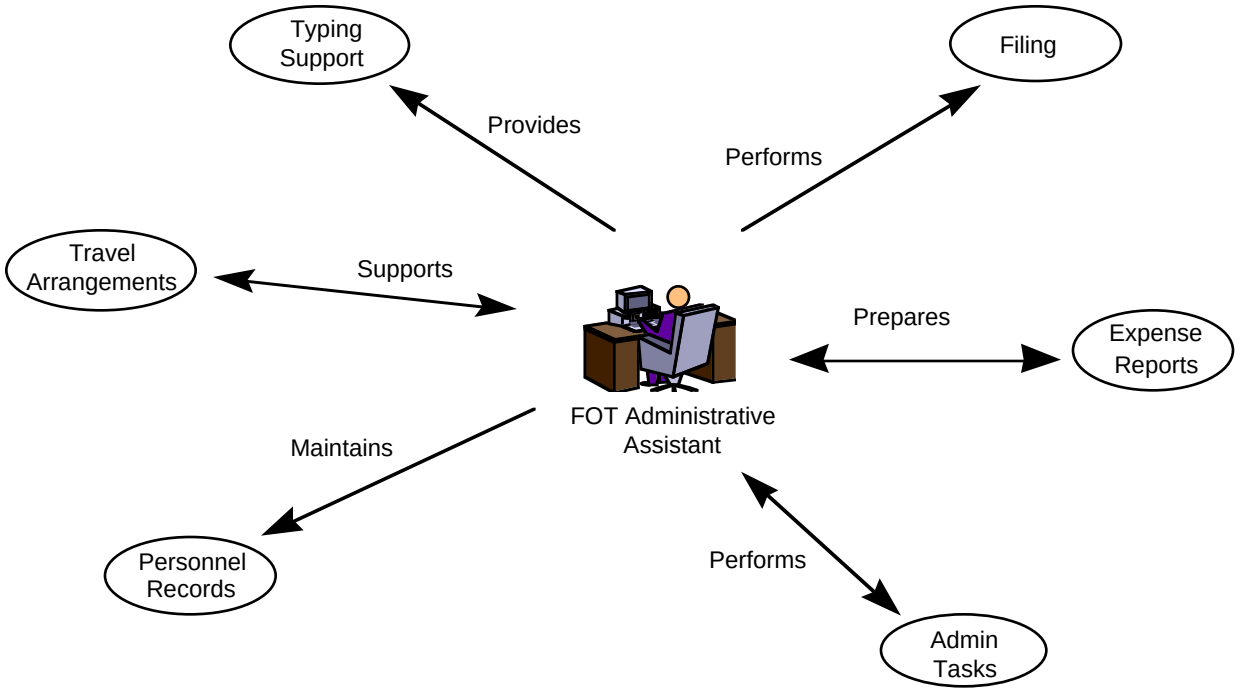

Figure 7.1.5-1 FOT Administrative Assistant Interfaces

7.1.5.2 Roles and Responsibilities≠

1. Provide typing support for FOT.
2. Perform filing for FOT.
3. Prepare expense reports for FOT.
4. Perform administrative tasks for FOT.
5. Maintain personnel records for FOT.
6. Prepare travel arrangements for FOT.

7.2 FOT Operations≠

The FOT Operations section is responsible for all real-time activities and real-time support functions.

7.2.1 FOT Operations Manager

7.2.2 FOT Operations Coordinator

7.2.3 FOT Operations Controller/Shift Supervisor

7.2.4 FOT S/C Activity Controller

7.2.5 FOT Mission Planner/Supervisor

7.2.6 FOT Planner/Scheduler

7.2.1 FOT Operations Manager

The FOT Operations Manager is responsible for providing direction and leadership to the FOT Real-time positions. These positions include: the Operations Coordinator; Operations Controller/Shift Supervisor; S/C Activity Controller; Mission Planner/Supervisor; Schedulers.

7.2.1.1 Interfaces

This figure shows the role interfaces of the FOT Operations Manager.

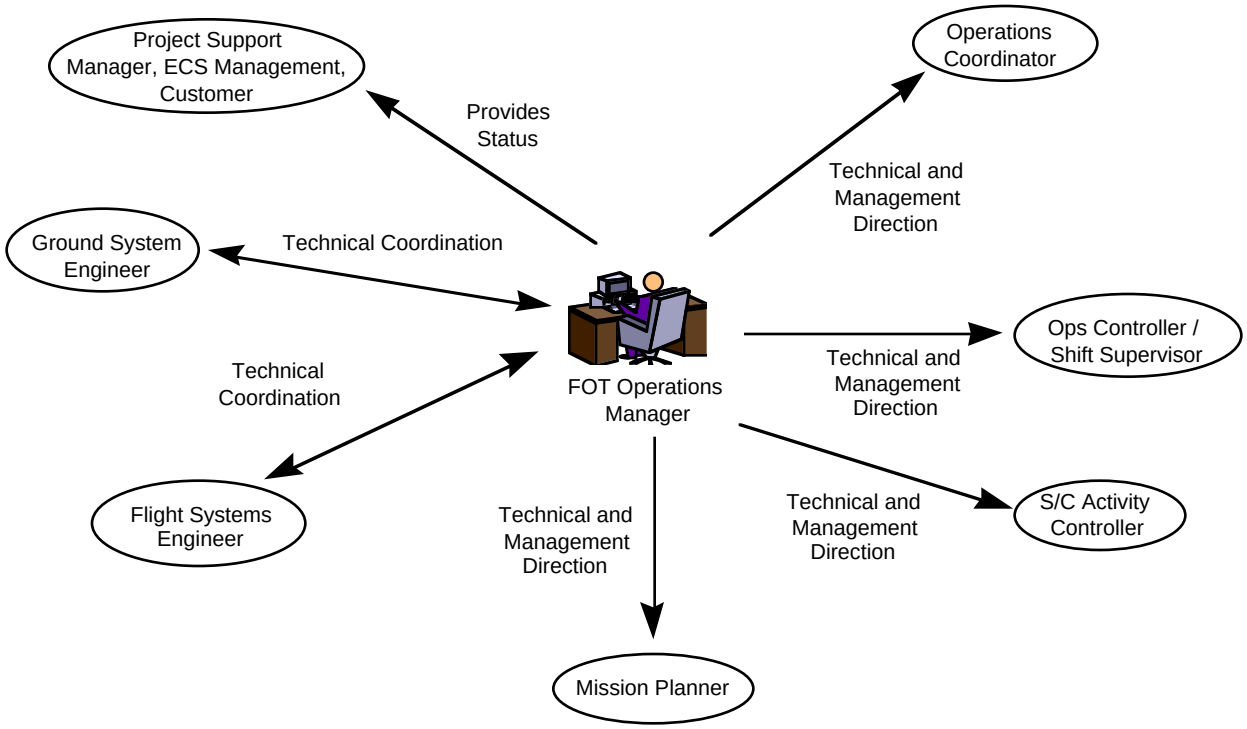

Figure 7.2.1-1 FOT Operations Manager Interfaces

7.2.1.2 Roles and Responsibilities

1. Provide status and progress reports to Project Support Manager, ECS Management and customer.
2. Shall provide technical and management direction to the Operations Coordinator.

3. Shall provide technical and management direction to the Operations Controllers.
4. Shall provide technical and management direction to the S/C Activity Controllers.
5. Shall provide technical and management direction to the Mission Planner.
6. Shall provide technical information and resolve technical issues with the Flight Systems Engineer.
7. Shall provide technical information and resolve technical issues with the Ground System Engineer.

7.2.2 FOT Operations Coordinator

The FOT Operations Coordinator shall be the lead operations interface between the Flight Systems and Ground System Engineering sections, represent FOT Operations at internal and external meetings, lead operational test coordinator and the lead operations interface for FOS S/W and Project Database deliveries.

7.2.2.1 Interfaces

This figure shows the role interfaces of the FOT Operations Coordinator.

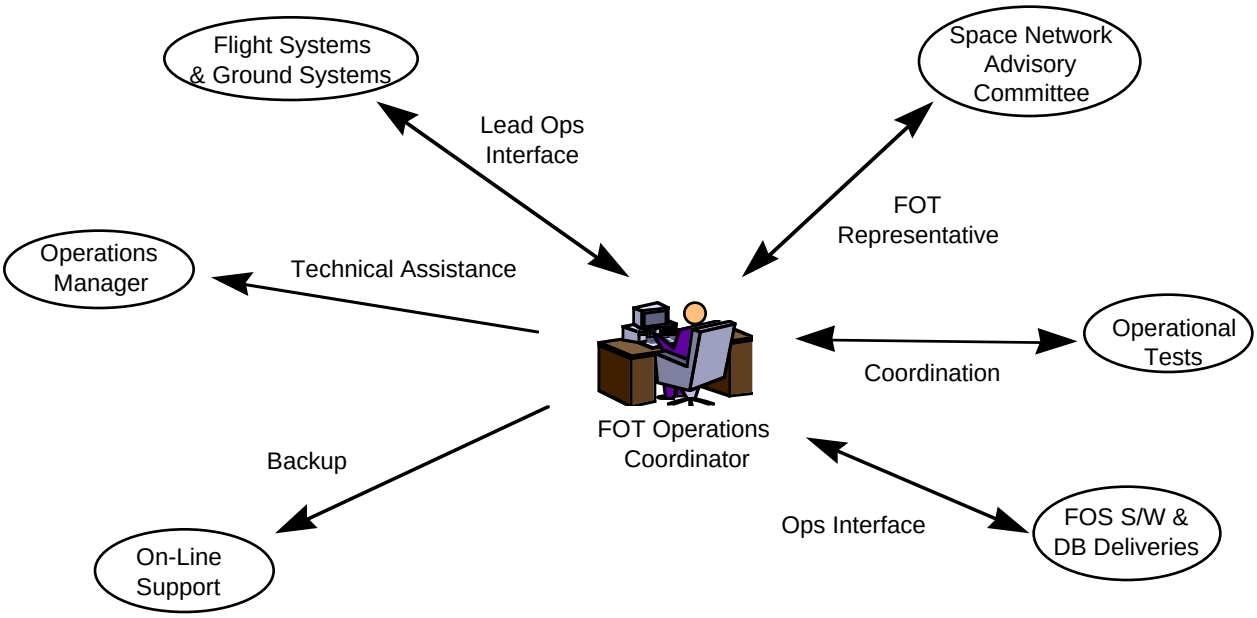

Figure 7.2.2-1 FOT Operations Coordinator Interfaces

7.2.2.2 Roles and Responsibilities

1. Shall be the lead Operations interface with the Flight Systems and Ground System Engineering sections for operational issues.
2. Shall be the ECS FOT representative to the Space Network Advisory Committee (SNAC).
3. Shall be the lead test coordinator of all FOS operational tests.
4. Shall be the lead operational interface for FOS S/W and Project Database deliveries.
5. Serve as backup for on-line positions as required.
6. Provide technical assistance to the Operations Manager as needed.

7.2.3 FOT Operations Controller/Shift Supervisor

The FOT Operations Controller/Shift Supervisor manages technical aspects of flight segment planning and scheduling, analyzes operations and performance. He/she provides shift supervision for all real time S/C commanding, data capture and external interface communications, and represents FOT management during non-prime shift hours.

7.2.3.1 Interfaces

This figure shows the role interfaces of the FOT Operations Controller/Shift Supervisor.

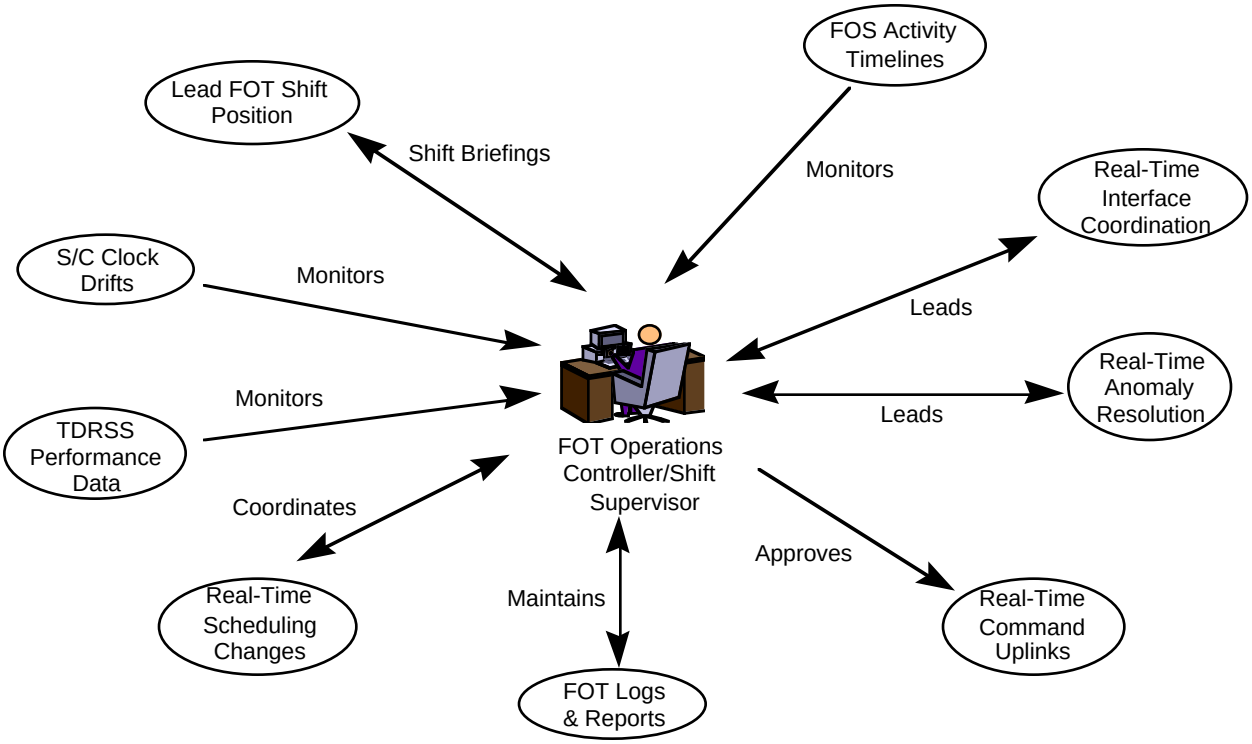

Figure 7.2.3-1 FOT Operations Controller/Shift Supervisor Interfaces

7.2.3.2 Roles and Responsibilities

1. Lead FOT on-shift position, responsible for performing shift briefings/debriefings and representing FOT management during non-prime shifts.
2. Responsible for monitoring FOS activity timelines.
3. Lead FOT real-time interface coordination with external and internal elements.
4. Lead FOT real-time anomaly resolution.
5. Responsible for approving FOT real-time command uplinks.
6. Responsible for maintaining FOT shift logs and distribution of reports.
7. Responsible for coordination of real-time scheduling changes.
8. Responsible for monitoring TDRSS performance data.
9. Responsible for monitoring S/C Clock drifts.

7.2.4 FOT S/C Activity Controller

The FOT S/C Activity Controller is responsible for the FOS Ground System elements, H/W, S/W, communications links, command capability and Local Site Manager (LSM) functions.

7.2.4.1 Interfaces

This figure shows the role interfaces of the S/C Activity Controller.

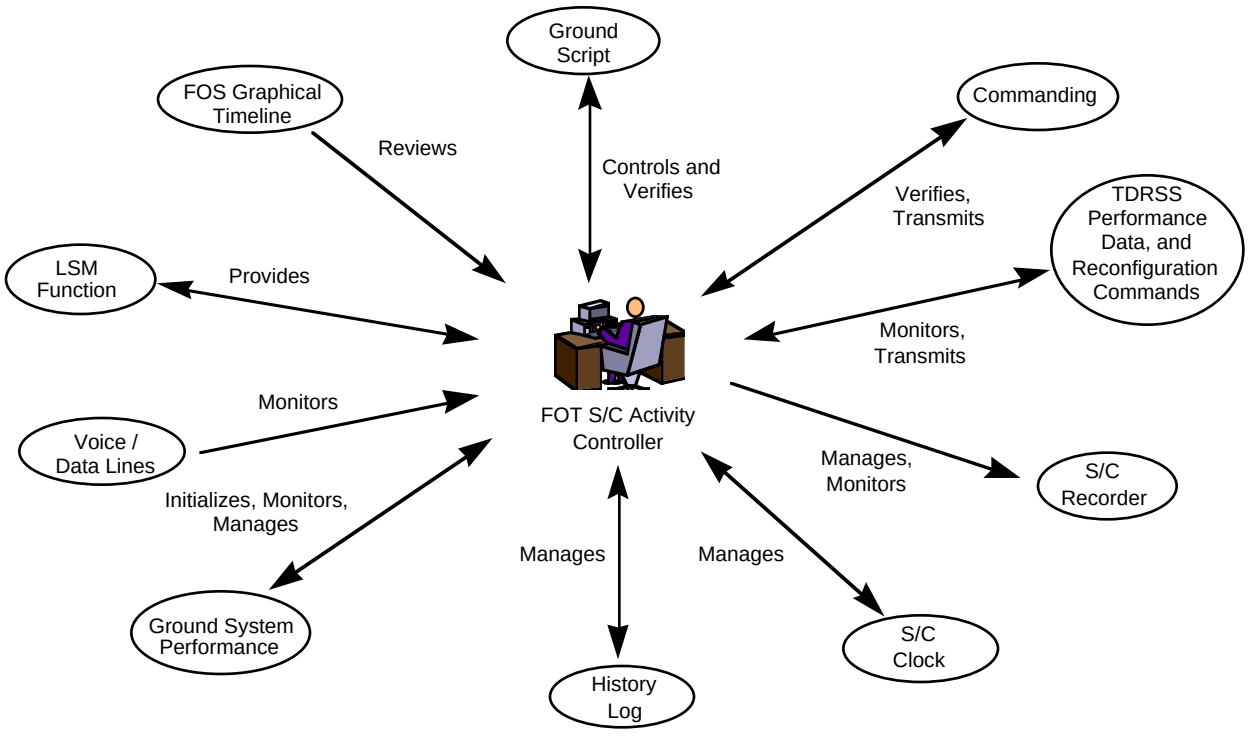

Figure 7.2.4-1 FOT S/C Activity Controller Interfaces

7.2.4.2 Roles and Responsibilities≠

1. Review graphical FOS timeline for upcoming TDRSS supports.
2. Control and verify FOS Ground Script execution.
3. Verify Command load contents, transmit and verify commands and load uplinks.
4. Monitor TDRSS ground station performance data, and transmit required TDRSS reconfiguration commands.
5. Manage S/C recorder and monitor S/C recorder playback data quality.
6. Manage S/C Clock updates.
7. Manage history log archival.
8. Initialize, monitor and manage ground system performance.
9. Monitor voice and data lines, and EDOS configuration and status messages.
10. Provide the FOT Local Site Manager (LSM) function.

7.2.5 FOT Mission Planner/Supervisor≠

The FOT Mission Planner/Supervisor is the lead FOT Scheduler responsible supervising for all scheduling activities. He/she is responsible for ensuring the S/C activity loads and scripts are error free.

7.2.5.1 Interfaces≠

Figure 7.2.5-1 shows the role interfaces of the FOT Mission Planner/Supervisor.

7.2.5.2 Roles and Responsibilities≠

1. Shall be main FOT interface with internal and external organizations for scheduling issues.
2. Shall supervise the technical performance of the FOT Schedulers.
3. Shall resolve scheduling technical issues and report concerns to the Operations Manager.
4. Shall coordinate scheduling issues and command requests with FOT Operations, Flight Systems Engineering, Ground System Engineering sections, IOTs and ICC.
5. Responsible for supervising the preparation of all AM-1 command loads and spacecraft schedules.

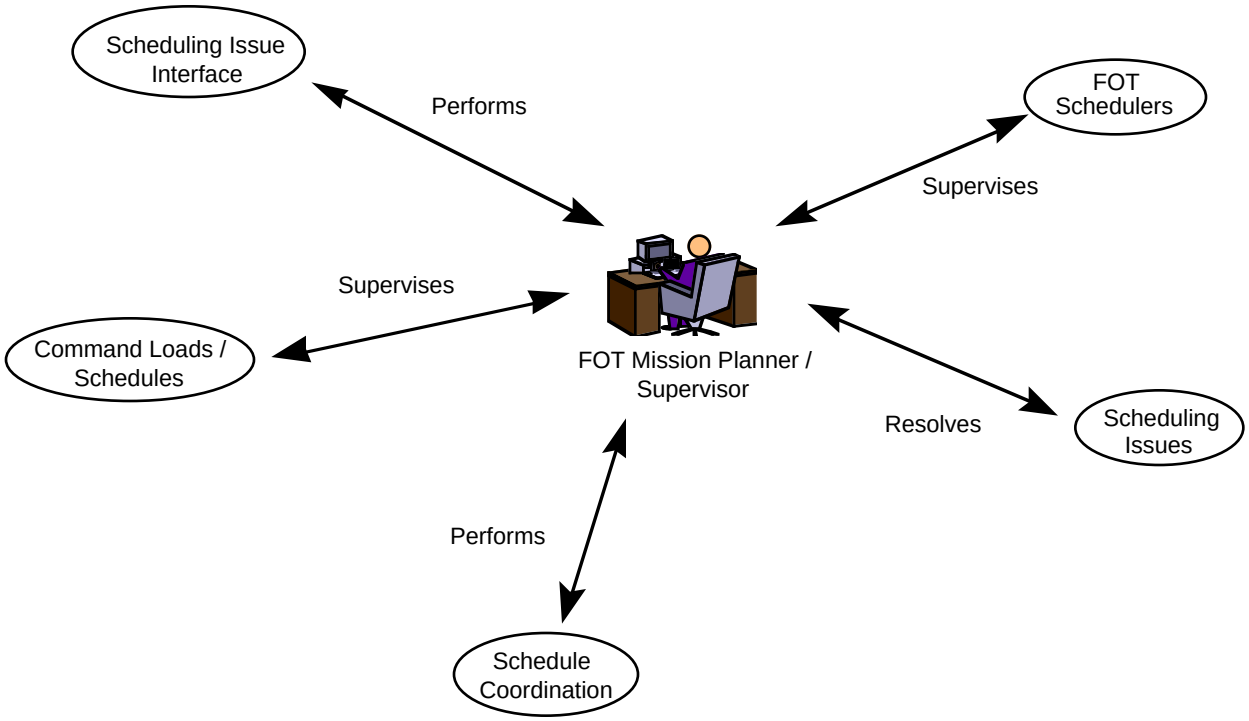

Figure 7.2.5-1 FOT Mission Planner/Supervisor Interfaces

7.2.6 FOT Planner/Scheduler

The FOT Planner/Scheduler is responsible for the technical aspects of command load and schedule generation.

7.2.6.1 Interfaces

Figure 7.2.6-1 shows the role interfaces of the FOT Planner/Scheduler.

7.2.6.2 Roles and Responsibilities

1. Receive and coordinate technical information and command requests from the Off-Line Engineers.
2. Receive and send Planning and Scheduling requests and schedules to and from the IOTs and ICC.
3. Receive Long Term Science Plan, Command Requests, Baseline Activity Profile, Instrument Microprocessor Memory Loads, Command Activity Definition, Daily Activity Schedules, and Late Change Requests from the IOTs and ICC.
4. Receive planning and scheduling information from FDF. Provide FDF with planning and scheduling information.

5. Provide the FOT with command loads, scripts and command requests.
6. Coordinate schedules with EDOS and NCC.
7. Receive Spacecraft Computer (SCC) Software updates from the SDVF, and SCC Table Loads from the FOT.

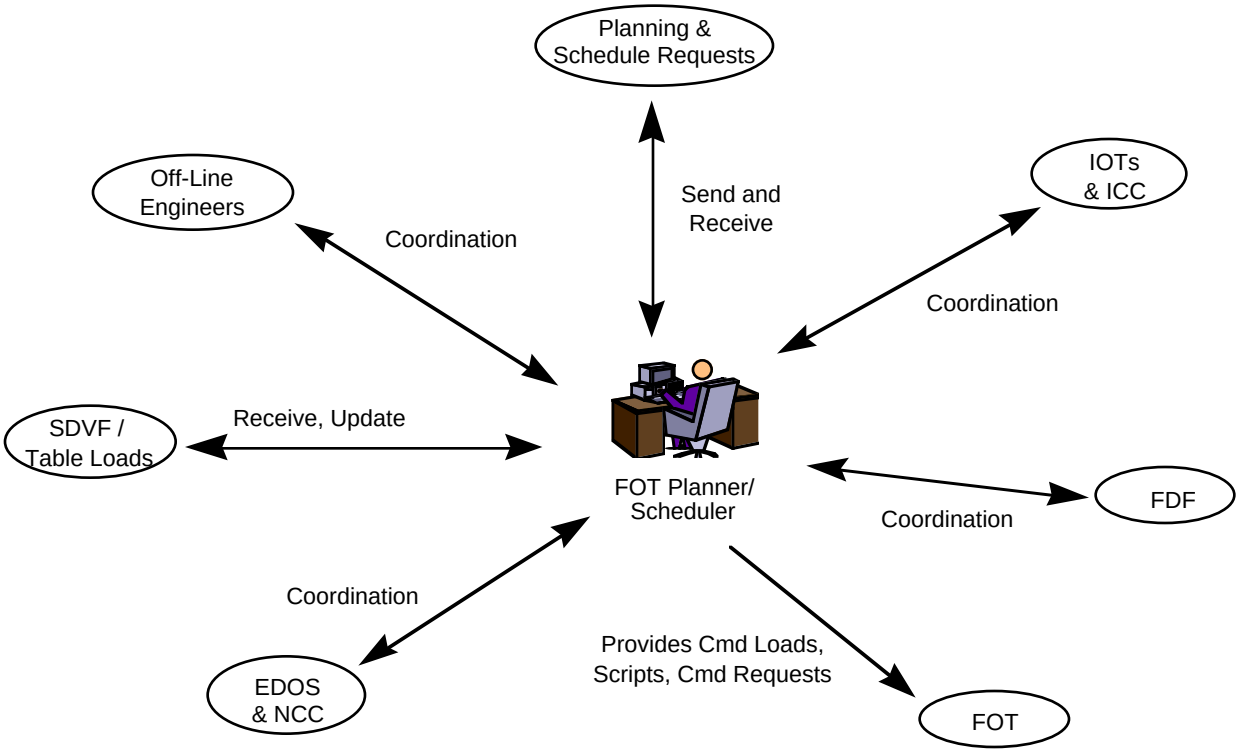

Figure 7.2.6-1 FOT Planner/Scheduler Interfaces

7.3 FOT Flight Engineering

The FOT Flight Engineering section is responsible for all S/C Engineering functions.

7.3.1 FOT Flight Systems Engineer

7.3.2 FOT Off-Line Engineer

7.3.3 FOT S/C Evaluator

7.3.4 FOT Instrument Evaluator

7.3.1 FOT Flight Systems Engineer

The FOT Flight Systems Engineer is responsible for the engineering support for the AM-1 S/C Bus, subsystems, instruments and Project Database. The Flight Systems Engineer supervises

and provides technical direction to the Off-Line Engineers, S/C Evaluators and Instrument Evaluators.

7.3.1.1 Interfaces≠

This figure shows the role interfaces of the Flight Systems Engineer.

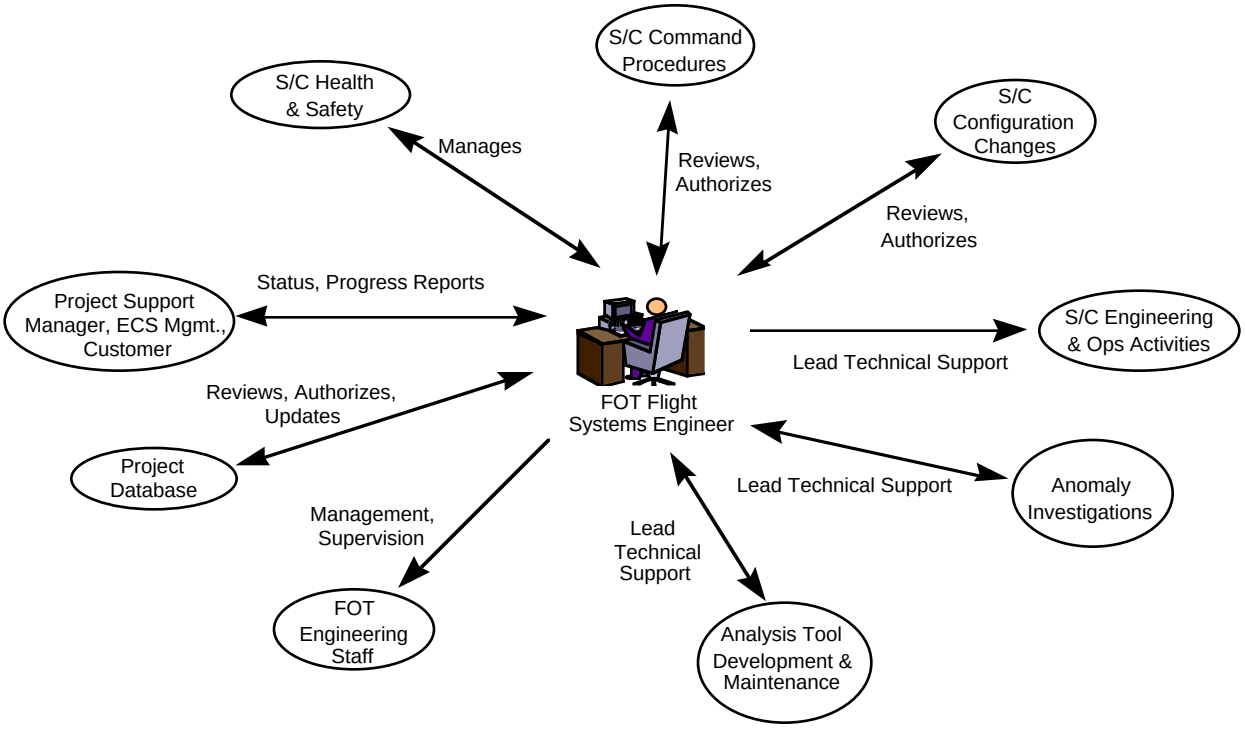

Figure 7.3.1-1 FOT Flight Systems Engineer Interfaces

7.3.1.2 Roles and Responsibilities≠

1. Responsible for managing overall S/C health and safety.
2. Review and authorize all S/C command procedures.
3. Review and authorize all S/C hardware and software configuration changes and updates.
4. Lead technical support for all S/C engineering and operational activities.
5. Lead technical support of all anomaly investigations.
6. Lead technical support for Analysis Tool development and maintenance.
7. Provide management and supervision to the FOT engineering staff.
8. Review and authorize all updates to the Project Database.

9. Provide status and progress reports to Project Support Manager, ECS Management and customer.

7.3.2 FOT Off-Line Engineer

The FOT Off-Line Engineers are the knowledge experts for their assigned S/C subsystems or instruments. They are responsible for ensuring that the subsystems or instruments are operated correctly, within specifications, and applying sound engineering techniques to the operations of the subsystems or instruments.

7.3.2.1 Interfaces

This figure shows the role interfaces of the Off-Line Engineers.

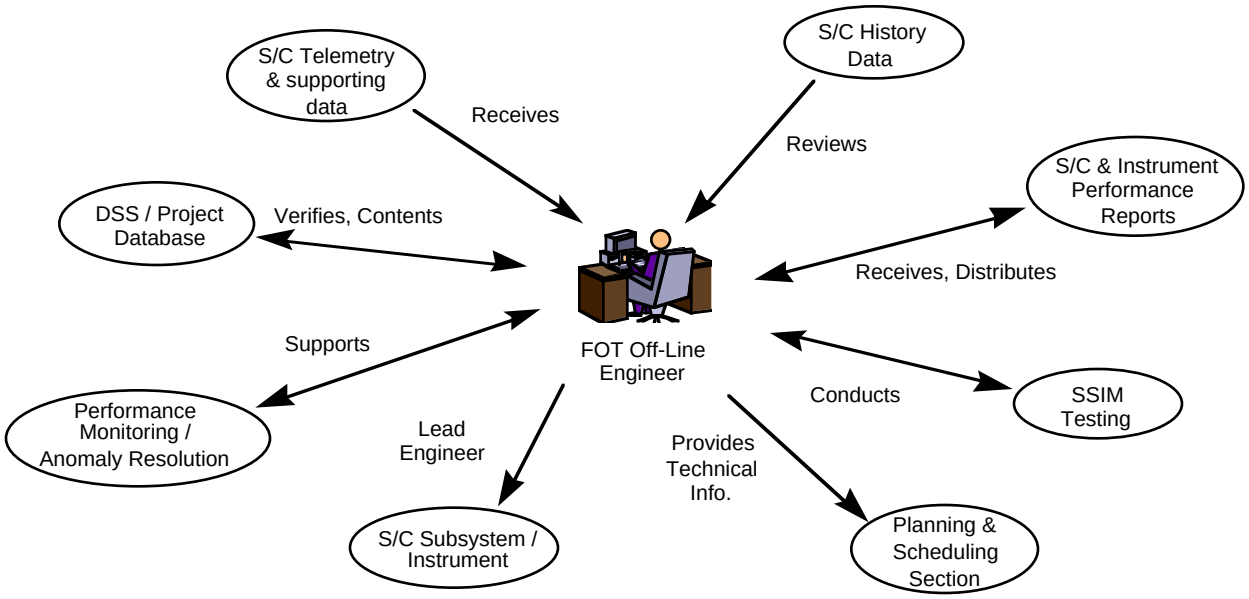

Figure 7.3.2-1 FOT Off-Line Engineer Interfaces

7.3.2.2 Roles and Responsibilities

1. Receive spacecraft telemetry, ODMs, CODAS, FDF data and TSS.
2. Receive spacecraft history telemetry.
3. Receive and send spacecraft, instrument and trend performance reports to and from the FOT, NASA and the IOTs and ICC.
4. Conduct SSIM testing.
5. Provide spacecraft and instrument technical information and command requests to the FOT and Planning and Scheduling section.

6. Lead Engineer for their assigned S/C subsystems or instruments.
7. Support Flight System Engineer in monitoring S/C / Instrument performance and anomaly resolution.
8. Verify DSS (Expert Systems) and Project Database contents for their subsystem or instrument.

7.3.3 FOT S/C Evaluator

The FOT S/C Evaluators are responsible for monitoring the AM-1 S/C subsystems during real-time operations and assisting the Off-Line Engineers in S/C trend analysis, anomaly recognition and resolution.

7.3.3.1 Interfaces

This figure shows the role interfaces of the S/C Evaluator.

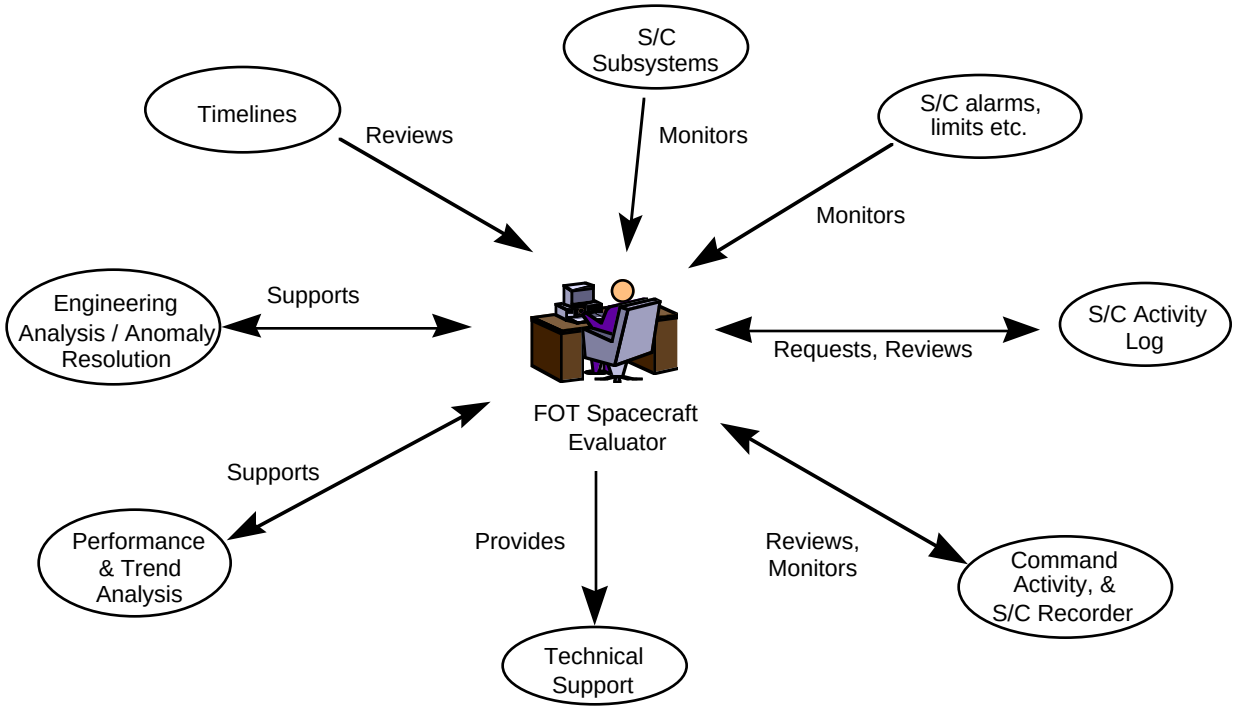

Figure 7.3.3-1 FOT S/C Evaluator Interfaces

7.3.3.2 Roles and Responsibilities

1. Review timelines for upcoming Tracking and Data Relay Satellite (TDRSS) events.
2. Monitor spacecraft subsystems health and safety, and ground script execution.

3. Monitor alarms, limits, clock drifts and TDRSS ground station performance data.
4. Request and review S/C activity log.
5. Review, monitor, support command activity (ATC, Ground Script, and Command requests), S/C recorder management and clock maintenance.
6. Provide technical support to the FOT shift supervisor.
7. Support FOT Performance and Trend analysis of subsystems from S/C recorder playback data.
8. Support FOT Off-Line engineering analysis activities and anomaly recognition and resolution.

7.3.4 FOT Instrument Evaluator

The FOT Instrument Evaluators are responsible for monitoring the AM-1 Instruments during real-time and assisting the Off-Line Engineers in instrument trend analysis, anomaly recognition and resolution.

7.3.4.1 Interfaces

This figure shows the role interfaces of the Instrument Evaluator.

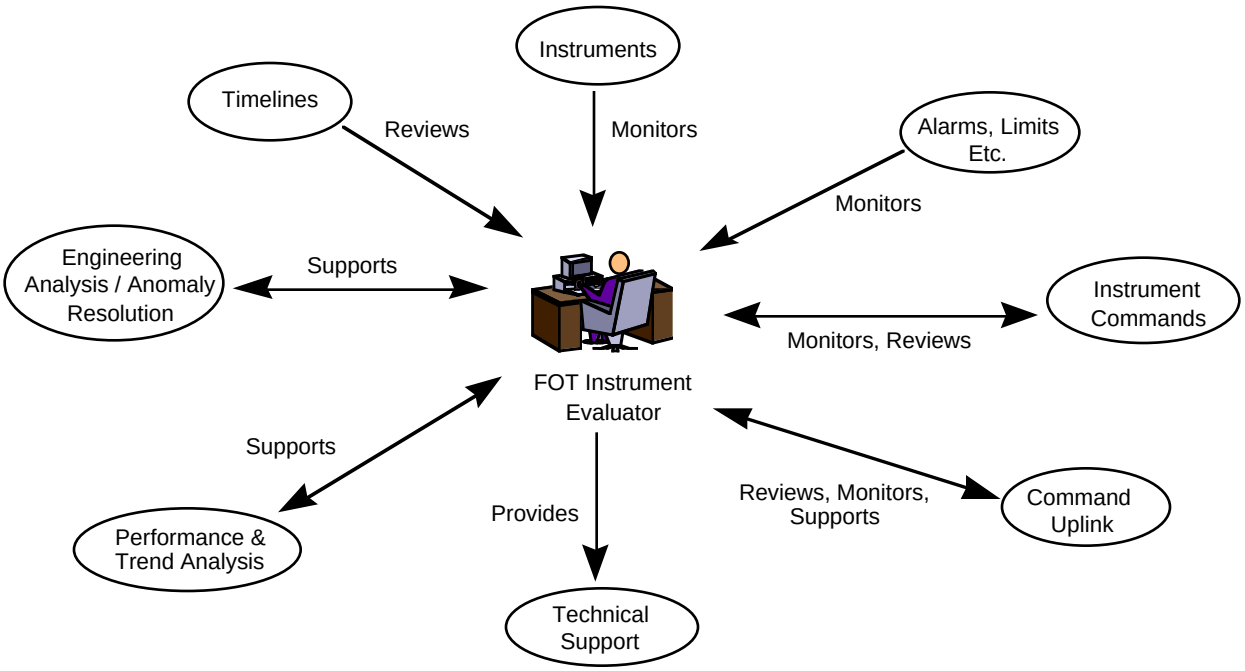

Figure 7.3.4-1 FOT Instrument Evaluator Interfaces

7.3.4.2 Roles and Responsibilities

1. Review timelines for upcoming Tracking and Data Relay Satellite System (TDRSS) events.
2. Monitor instrument health and safety, alarms, limits and ground script execution.
3. Monitor/verify instrument command activity.
4. Review, monitor, support command activity and S/C activity log.
5. Coordinate with Principal Investigator/Team Leader (PI//TL) and shift supervisor for instrument command uplink.
6. Provide technical support to the FOT shift supervisor.
7. Support Performance and Trend Analysis of instruments from S/C recorder playback data.
8. Support FOT Off-Line engineering analysis activities, anomaly recognition and resolution.

7.4 FOT Ground System Engineering

The FOT Ground System Engineering section is responsible for maintaining and enhancing the FOS.

7.4.1 FOT Ground System Engineer/Supervisor

7.4.2 FOT Database Manager

7.4.3 FOT Software Maintainer

7.4.1 FOT Ground System Engineer/Supervisor

The FOT Ground System Engineer is responsible for ensuring that the FOS Ground System meets the operational needs of the FOT. The following positions report to the Ground System Engineer: the Database Manager and Software Maintainers.

7.4.1.1 Interfaces

Figure 7.4.1-1 shows the role interfaces of the Ground System Engineer/Supervisor.

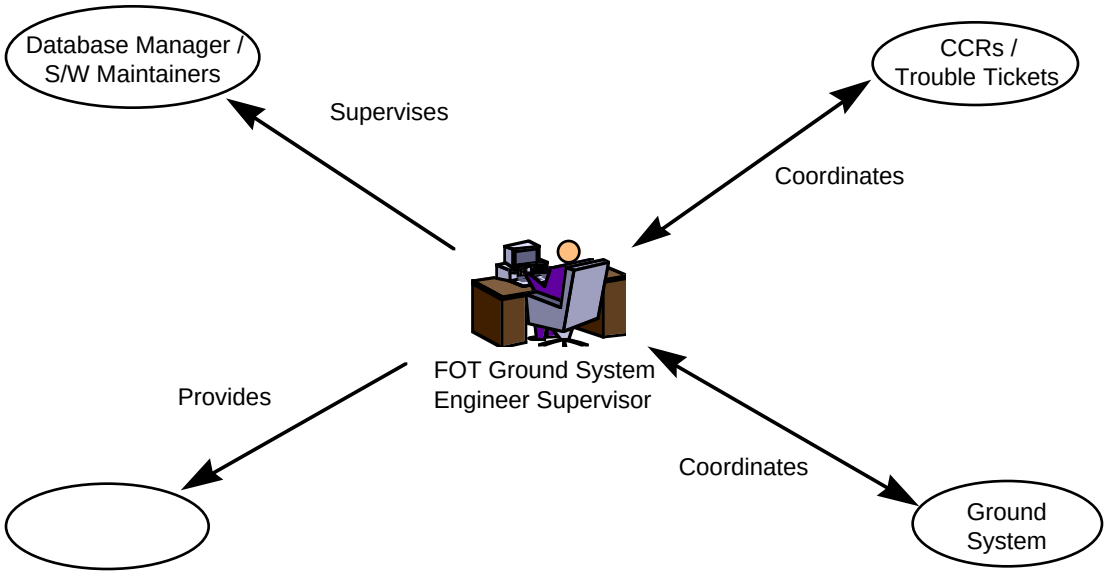

Figure 7.4.1-1 FOT Ground System Engineer/Supervisor Interfaces

7.4.1.2 Roles and Responsibilities

1. Supervise the Database Manager and Software Maintainers.
2. Coordinate the analysis and implementation of all Ground System CCRs and trouble tickets.
3. Coordinate Ground System configuration and status with Operations Manager and Flight Systems Engineer.
4. Provide status and progress reports to the Project Support Manager, ECS Management and customer.

7.4.2 FOT Database Manager

The FOT Database Manager is responsible for maintaining and updating the FOS Database.

7.4.2.1 Interfaces

Figure 7.4.2-1 shows the role interfaces of the Database Manager.

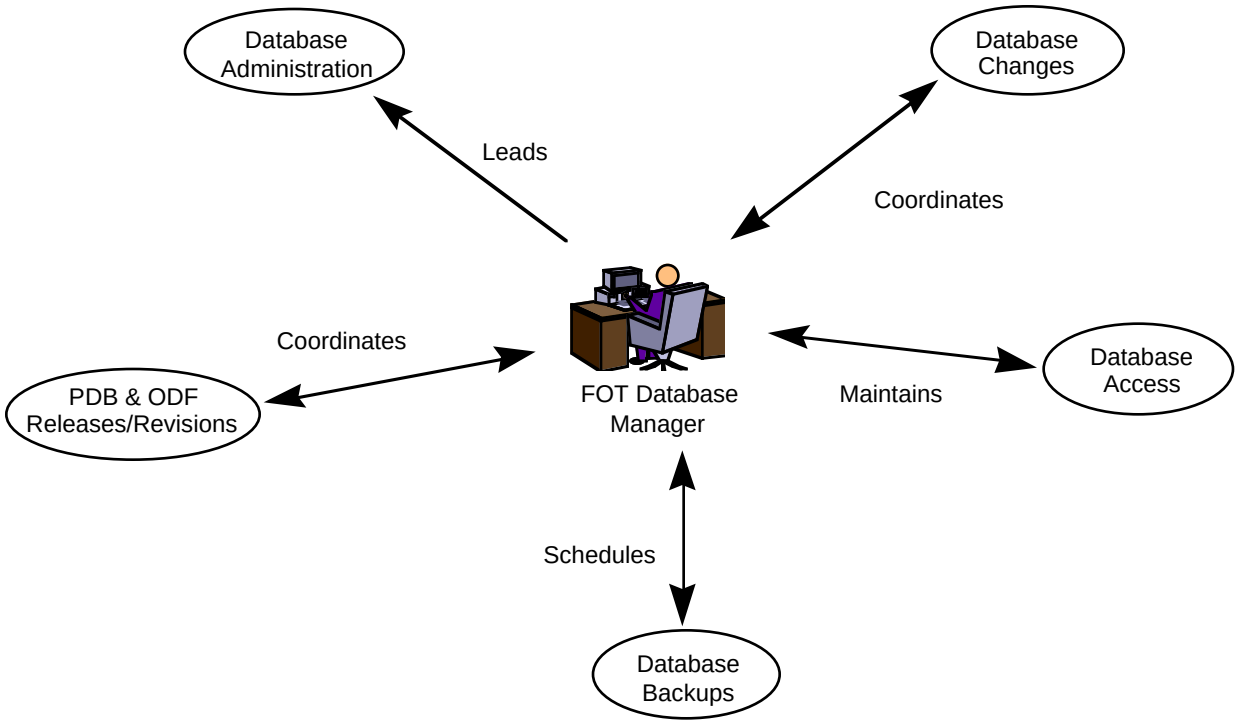

Figure 7.4.2-1 FOT Database Manager Interfaces

7.4.2.2 Roles and Responsibilities

1. Lead Database Administrator for the Project Database and Operational Data Files (ODFs) (Command Procedures, RTS, Pages/Rooms, TMONs).
2. Responsible for coordinating all Database changes and updates with other FOT elements.
3. Maintain database access, validate user access/privileges, investigate/document violations.
4. Schedule Database backups with other FOT elements.
5. Coordinate PDB and ODF releases and revisions.

7.4.3 FOT Software Maintainer

The FOT S/W Maintainers are responsible for ensuring that the FOS S/W is operable, and they respond to CCRs written on the FOS S/W.

7.4.3.1 Interfaces

Figure 7.4.3-1 shows the role interfaces of a Software Maintainer.

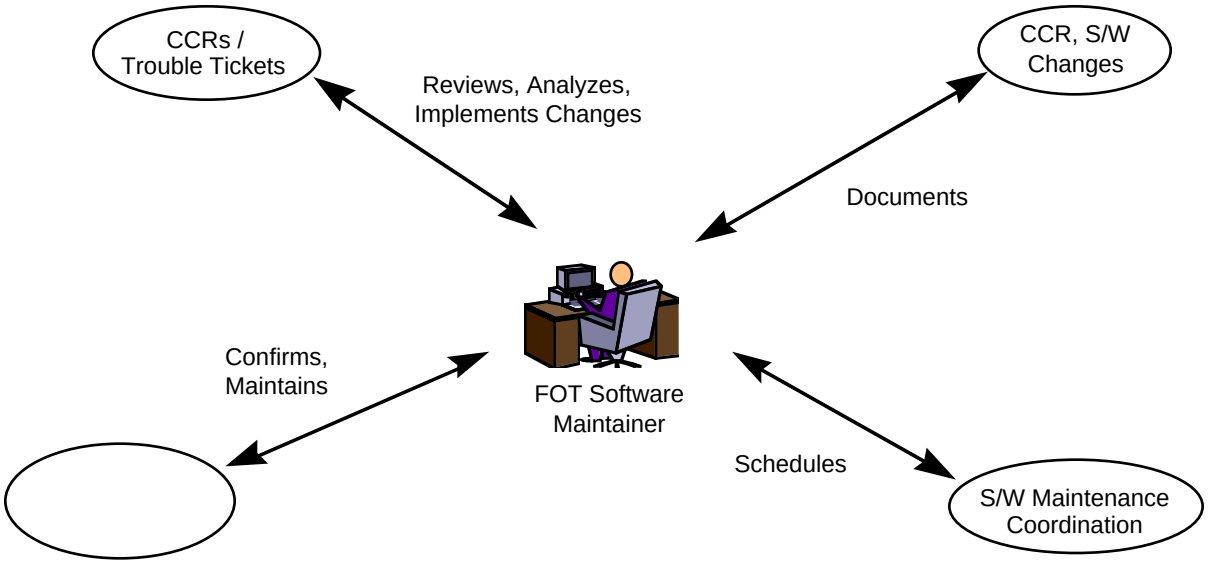

Figure 7.4.3-1 FOT Software Maintainer Interfaces

7.4.3.2 Roles and Responsibilities

1. Review CCRs and Trouble Tickets, analyze the problem, propose changes, implement changes and test CCRs/Trouble Tickets assigned to their area of responsibility. Coordinate the analysis and implementation of CCRs/Trouble Tickets with the Ground System Engineer.
2. Provide proper documentation to any implemented CCRs, and all S/W changes, e.g., difference listings, version numbers, etc.
3. Schedule CCR investigations, test, version backups, etc. with the Ground System Engineer and other FOT elements.
4. Confirm/maintain appropriate backups, versions and fail-over components.

Abbreviations and Acronyms≠

ACL	Administer user access control
ADC	Affiliated Data Center
ASF	Alaska SAR Facility
ATC	Absolute Time Command
CCB	Configuration Control Board
CCR	Configuration Change Requests
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CM	Configuration Management
COTS	Computer off the Shelf
CSAR	Configuration Status Accounting Record
CSMS	Communications and Systems Management Segment
DAAC	Distributed Active Archive Center
DCE	Distributed Computing Environment
DCN	Document Change Notice
DDTS	Distributed Defect Tracking System
DID	Data Item Description
DIM	Distributed Information Manager
DPR	Data Processing Request
EBnet	EOSDIS Backbone Network
ECS	EOSDIS Core System
EDF	ECS Development Facility
EDOS	Earth Data and Operations System
EOC	EOS Operations Center
EOS	Earth Observing System

EOSDIS	Earth Observing System Data and Information System
ESA	European Space Agency
ESDIS	Earth Science Data and Information System
ESST	Earth Science Search Tool
FCA	Functional Configuration Audits
FOS	Flight Operations Segment
FOT	Flight Operations Team
GSFC	Goddard Space Flight Center
GUI	Graphical User Interface
H/W	Hardware
HP	Hewlett-Packard Corporation
HPOV	HP OpenView
ICC	Instrument Control Center
ILS	Integrated Logistics Support
IT	Instrument Team
LAN	Local Area Network
LaRC	Langley Research Center
LIM	Local Information Manager
LRU	Line Replaceable Unit
LSM	Local Site Manager
M&O	Maintenance and Operations
MOM	Mission Operations Manager
MSFC	Marshal Space Flight Center
MSS	System Management Subsystem
NASA	National Aeronautics and Space Administration
NCC	Network Control Center
NOAA	National Oceanic and Atmospheric Administration

NSI	NASA Science Internet
ODF	Operational Data File
OEM	Original Equipment Manufacturer
ORNL	Oak Ridge National Laboratory
ORPA	Operations Readiness and Performance Assurance Analyst
PA	Performance Assurance
PCA	Physical Configuration Audit
PDL	Program Design Language
PI/TL	Principal Investigator/Team Leader
PSM	Project Support Manager
QA	Quality Assurance
RID	Review Item Discrepancy
S/C	Spacecraft
S/W	Software
SAR	Synthetic Aperture Radar
SCC	Spacecraft Computer
SCF	Science Computing Facility
SDPS	Science Data Processing Segment
SDVF	Software Development and Validation Facility
SEO	Sustaining Engineering Organization
SMC	Systems Monitoring and Coordination Center
SMC	System Monitoring and Coordination Center
SNAC	Space Network Advisory Committee
SORR	Segment Operational Readiness Review
SOW	Statement of Work
SQL	Structured Query Language
SSI&T	Science Software Integration and Test

TCP	Transport Control Protocol
TDRSS	Tracking and Data Relay Satellite System
TRMM	Tropical Rainfall Measurement Mission
TSDIS	TRMM Science Data and Information System
TT	Trouble Ticket (Problem report)
TTS	Trouble Ticket System
USWG	User Services Working Group
V0	Version Zero Data System
WWW	World Wide Web