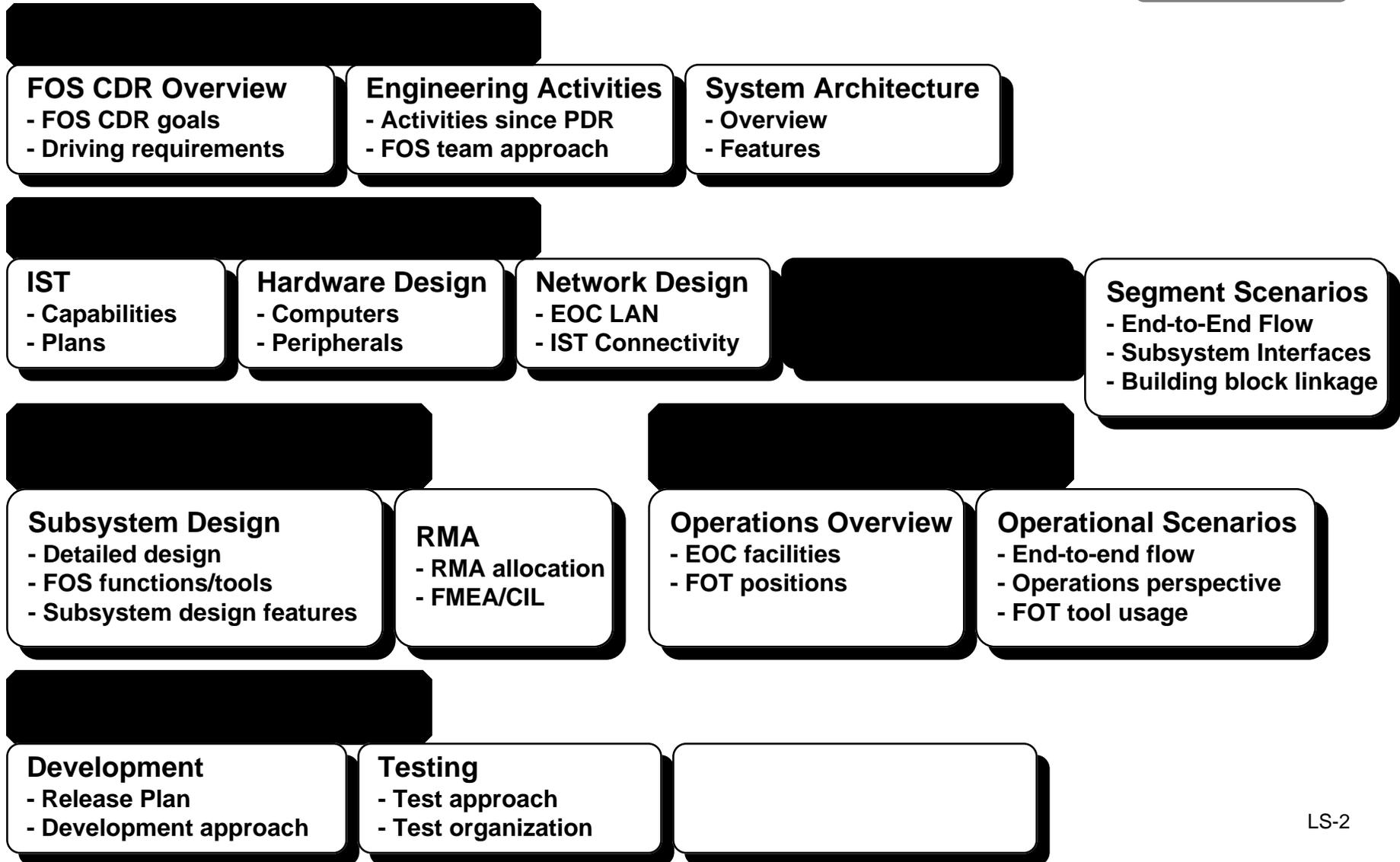
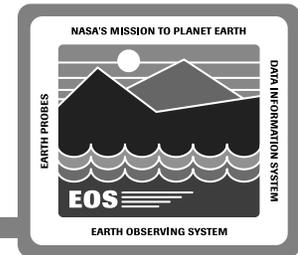


Management Services Subsystem

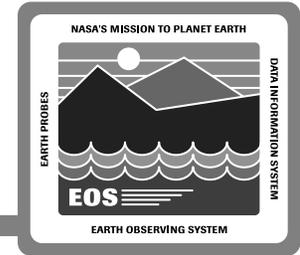
Lou Swentek

16 October 1995

FOS CDR Roadmap



MSS Overview



MSS Purpose

- **MSS provides services that allow M&O operators to manage EOC resources.**

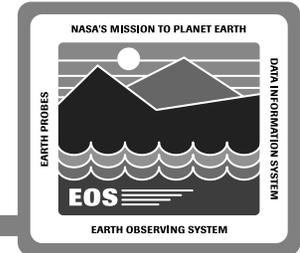
Presentation Purpose

- **Provided an overview of MSS services provided to EOC operators.**
- **Detailed information was presented at Release A CDR on August 17.**

Outline

- **Context**
- **Management Views**
- **MSS Framework**
- **MSS Services**

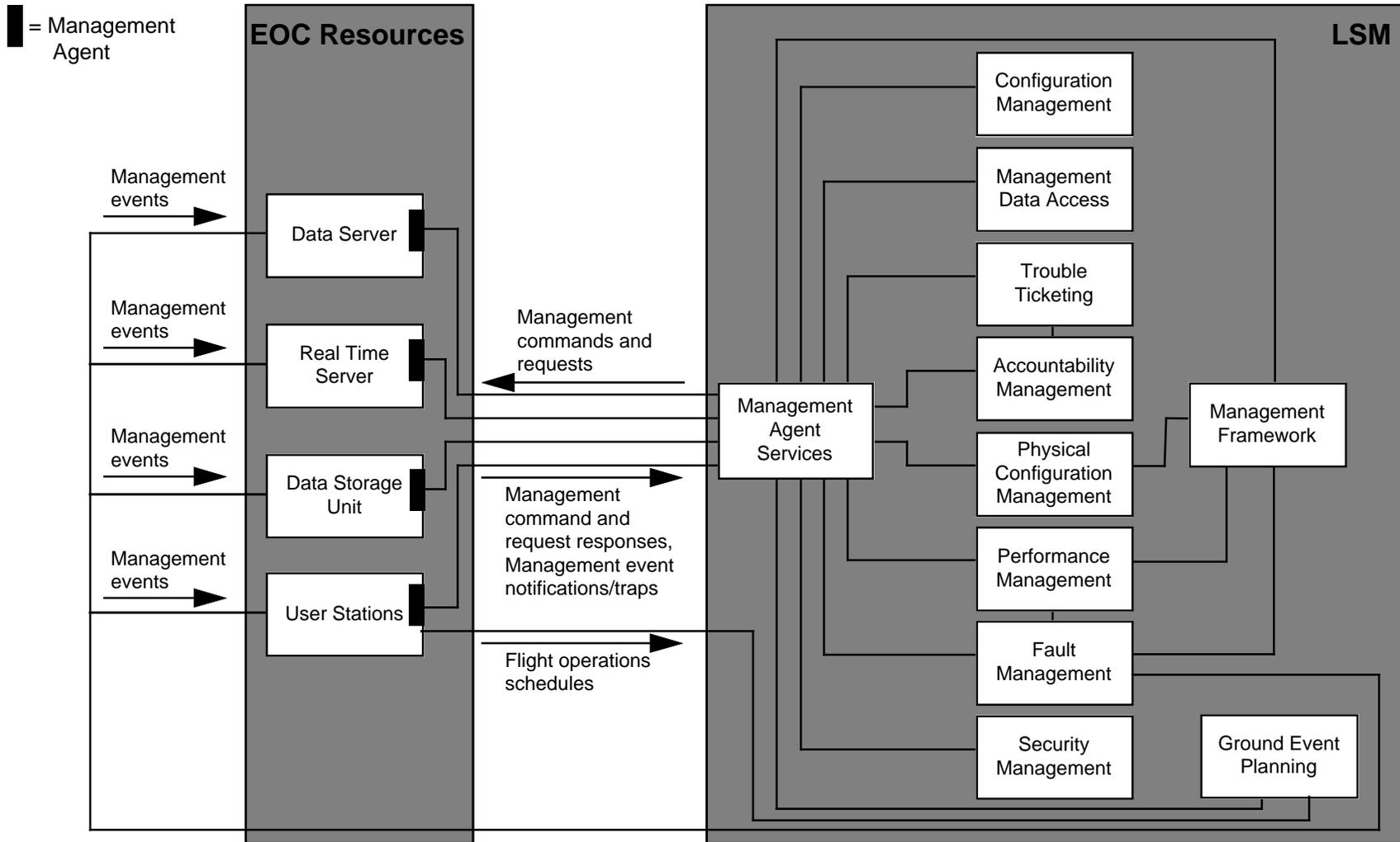
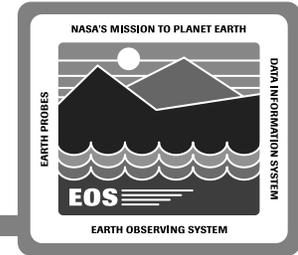
MSS Context



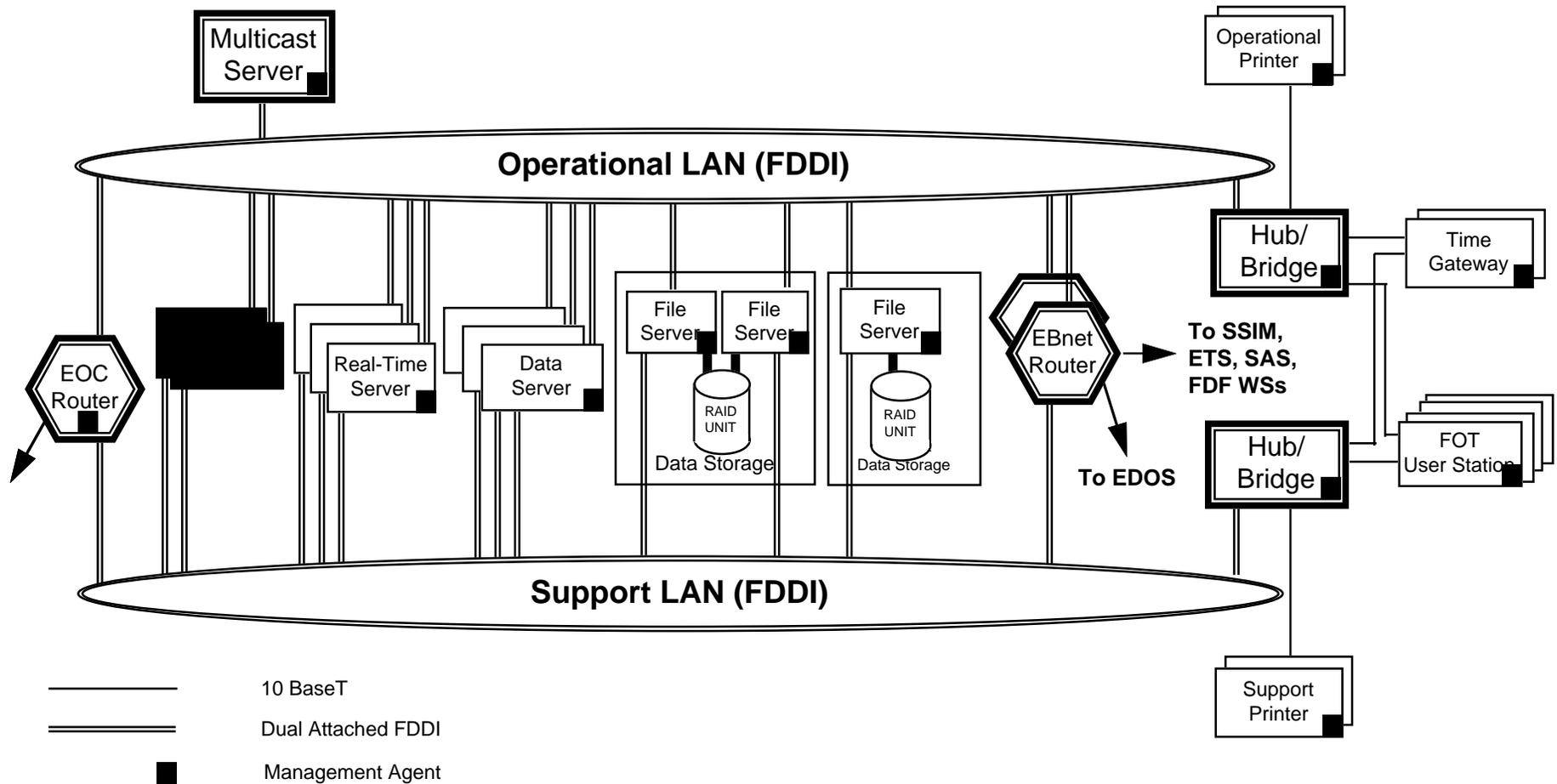
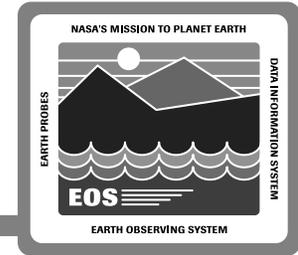
MSS Interfaces with EOC Resources

- **Management Data**
 - All management commands, requests, responses, and event notifications sent via Management Agent Services
 - Information (event notifications, performance data) passed through Management Agent Services to MSS applications
- **Event notifications**
 - Application-level event notifications made from Fault Management to FOS event handler
- **Scheduling Data**
 - Electronic interface between User Stations and MSS Ground Events Planning Service

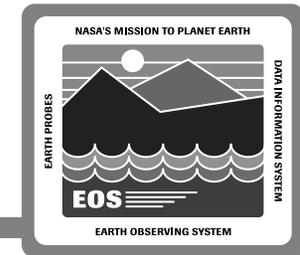
MSS Context Diagram



MSS Hardware Context



System Management Views



LSM perspective

- Manage EOC resources
- Perform inter-site coordination
- Maintain EOC user information
- Perform system administrator functions
- Coordinate system maintenance activities
- Provide summary management data to SMC
- Maintain site software and hardware configuration
- Record and track problem reports through resolution

EOC perspective

- Monitor EOC service-level performance
- Manage EOC functions
- Manage EOC tasks and processes
- Manage critical real-time software

EOC

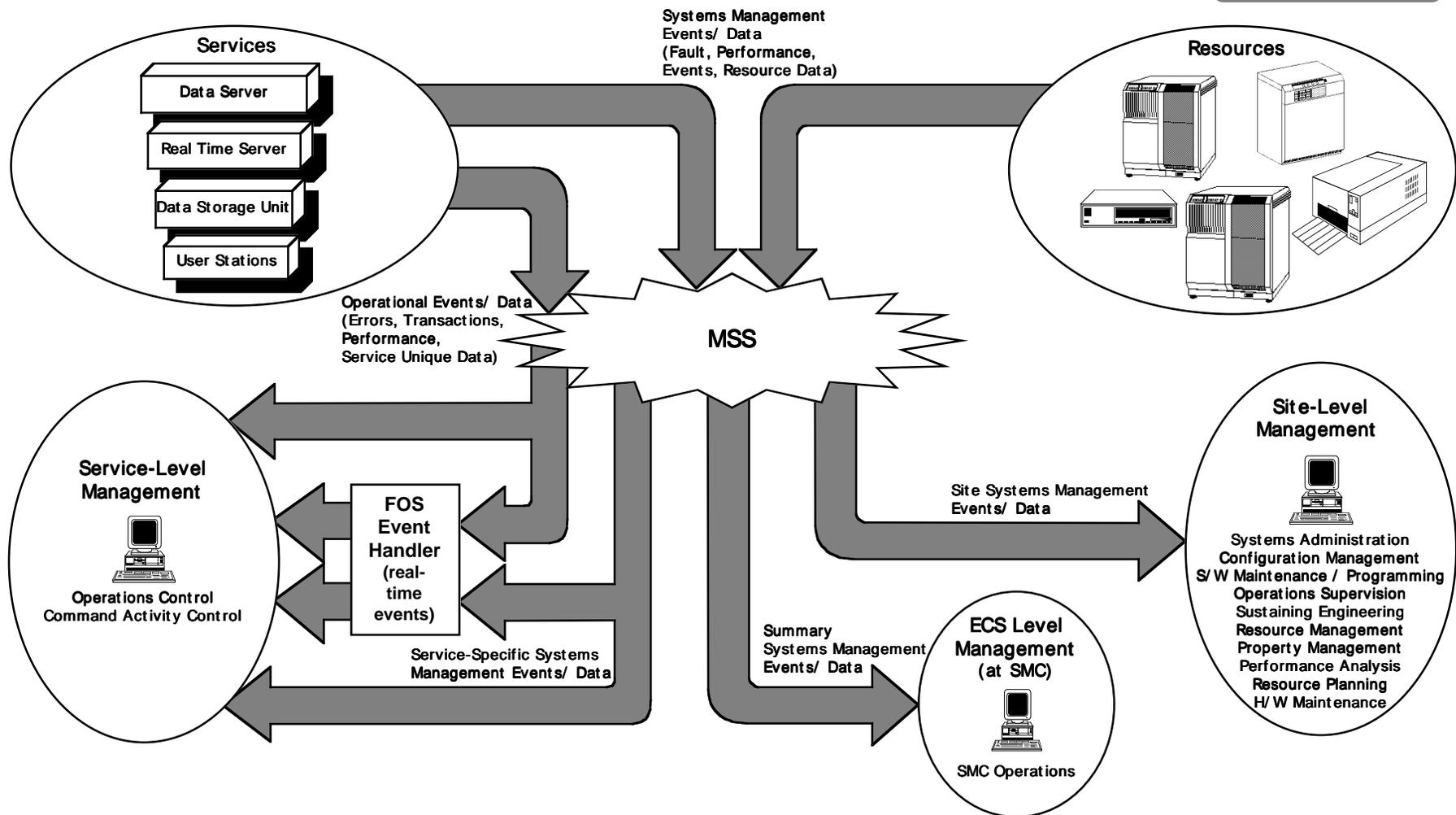
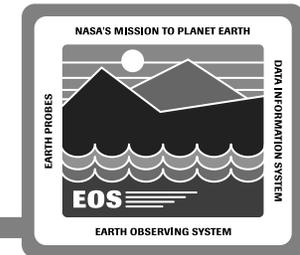
SMC



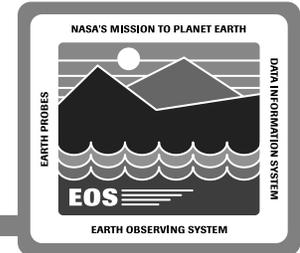
SMC perspective

- Monitor system-level performance
- Coordinate EOC-related information with other sites (DAACs, external systems)

Management Data Flows



MSS Framework



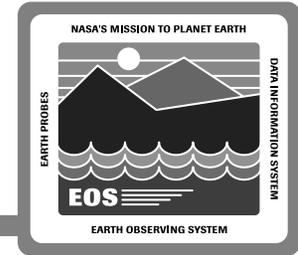
“Intelligent” agent concept

- Moves functionality to agent on each EOC host
- Filters management event reporting to minimize network traffic
 - Critical data sent immediately to LSM server
 - All systems management events and data logged locally
 - Local log periodically forwarded to LSM server
- “Discovers” FOS applications
- Provides lifecycle services (startup and shutdown) interface for FOS applications

EOC Application Management

- Non-intrusive monitoring - collects information about an application (e.g., CPU utilization, disk I/O's)
- Intrusive monitoring - collects information directly from an application (e.g., avg. time to process command)

MSS Software Distribution



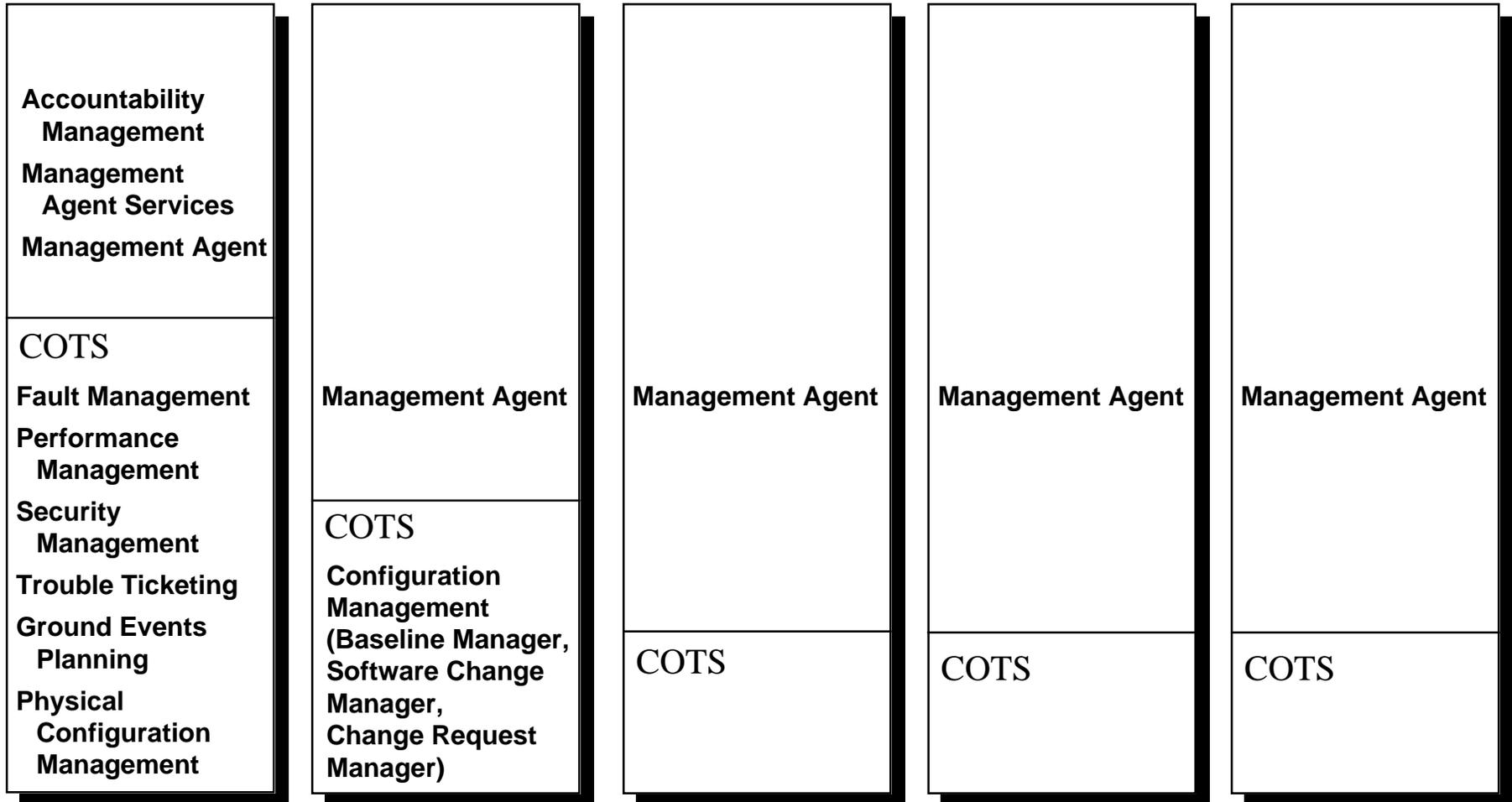
LSM Server

LSM Workstation

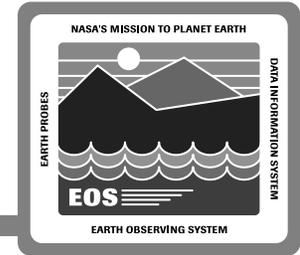
Real-Time Server

Data Server

User Station



Performance Management



Performance metrics established and thresholds for each managed resource

Resource level performance data for all EOC resources gathered and monitored in real time via management agents

Performance management generates alert whenever thresholds are exceeded

Performance trends analyzed off-line

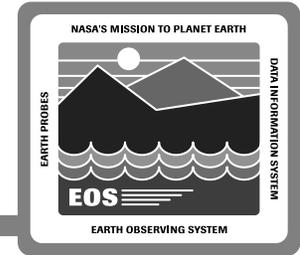
LSM Perspective

- **Monitor performance of all EOC resources in real time**
- **Set/adjust metrics to be checked for each managed resource**
- **Perform off-line trends analysis based on logged data**

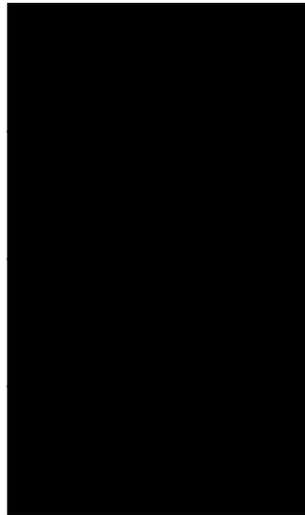
EOC Perspective

- **Notify performance management of “level of interest”**
- **Analyze service-level performance data available in logs**

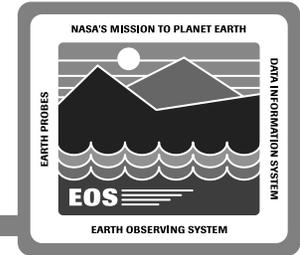
EOC Performance Metrics



Representative Metrics



Fault Management



Provides

- **Fault detection, notification, isolation, diagnosis, and recovery**
- **Resource status lookup**

Fault detection/notification

- **Resource-level faults**
- **Notification provided to LSM and all affected services**

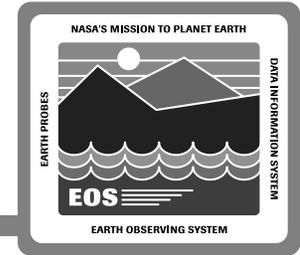
Fault isolation, diagnosis, and recovery

- **Operator initiated and automatic**
- **Tools provided to aid M&O staff**

Resource status lookup

- **Provides status of EOC resources to FOS applications**

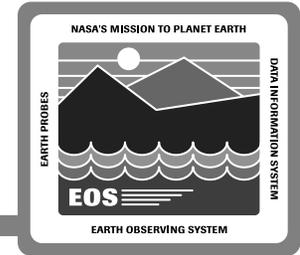
EOC Fault Events



Representative EOC Events

- CPU errors
- Memory errors
- Process errors

Fault Scenario



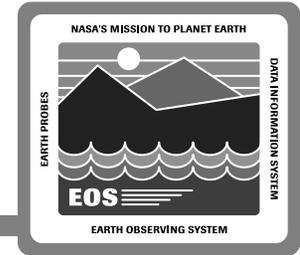
Measured performance metric exceeds threshold

Agent detects exceeded threshold, forwards event to fault management via management framework

Fault management implements automatic response

- **LSM perspective operator notification**
 - **Visual (icon color change, pop-up window, entry in message log)**
 - **Audible (ringing bell)**
- **FOS perspective operator notification**
 - **Event sent to FOS event handler**
- **Support for automated recovery actions**
 - **Test scripts**
 - **Reconfiguration**

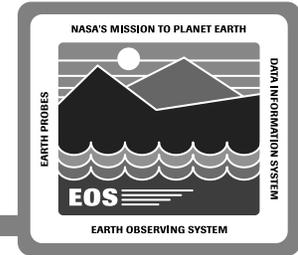
Configuration Management



Provides the following capabilities:

- **Baseline Manager (pending approval)**
 - Profiles baselines
 - Profiles baselined hardware and software resources and their interdependencies
- **Software Change Manager (ClearCase)**
 - Maintains software libraries
 - Performs software version control
 - Builds software
 - Maintains audit trail of software changes

Other MSS Services



	<ul style="list-style-type: none">• Security Database Management• Compliance Management• Intrusion Detection
	<ul style="list-style-type: none">• User Profile• User Audit Trail• Security Audit Trail
	<ul style="list-style-type: none">• Problem Report tracking• Problem Report classification• Problem Report reporting
	<ul style="list-style-type: none">• Planning of ground events against EOC resources
	<ul style="list-style-type: none">• Physical mapping of EOC resources• Asset management