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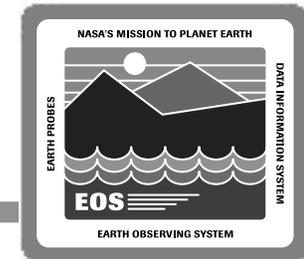
# FOS Release B Summary

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29 May 1997

# FOS TRR Roadmap



## Overview Material

### FOS Overview

- TRR Objective
- Schedule & Status

### Release B Summary

- Release Capabilities
- Release/Reqmt. Status
- Process Summary

## Test Readiness Status

### Development Status

- Unit Test Results Summary
- SDF Status

### Integration Status

- SWIT Status & Results Summary
- NCR Status

### EOC Installation Status

- Installation/Checkout Status
- Changes Since Release A
- Hardware, COTS, Software
- PCA Preparation

### Test Procedure Status

- Test Procedure Development Process
- Requirements Mapping Status
- Test Data/Test Tools

## EOC Test Processes/Plans

### EOC Testing Plans

- Test Environment Status
- Test Schedule
- Test Activities
- Test Process

## Concurrent Activities

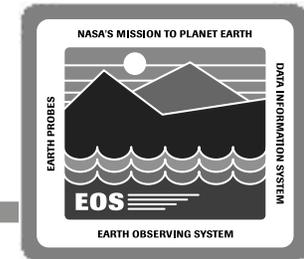
### ECT-2

- Preparation Status
- Key Activities

### IST Installation

- Status
- Key Activities
- Release B IST Integration Plan

# Release Planning Drivers



## Release A

**Establish infrastructure early that is required for development**

**Establish basic connectivity internally and with external interfaces**

**Demonstrate basic telemetry and command processing**

**Support early informal engineering tests, interface testing and Spacecraft Tests (e.g., EOC Compatibility Test, 1/97)**

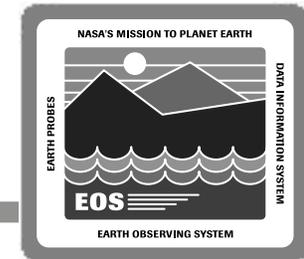
## Release B

**Expand system based on building blocks established in Release A**

**Support Spacecraft Training, Simulations**

**Support AM-1 launch**

# FOS Release A Capabilities



## Scheduling

### Planning & Scheduling

BAP Definer Tool  
 Activity Definer Tool  
 Detailed Activity Schedule  
 Timeline Tool  
 ASTER I/F Filter

### Command Mgt

Uplink Load Generation  
 ATC Load Generation  
 Ground Sched Generation

## Real-Time

### Resource Mgt

String Manager  
 Command Authority  
 Ground Control Privilege

### Telemetry

Decom Engine  
 Mirrored Telemetry  
 Parameter Server

### Command

Cmd Validation, Generation,  
 Uplink, and Notification

### Real-Time Contact Mgt

NCC GCMRs

## Analysis

### FUI

Analysis Request Tool  
 Analysis Report Generation

### Analysis

User Selected Statistics  
 Basic Analysis Request

### Data Mgt

Data Archive

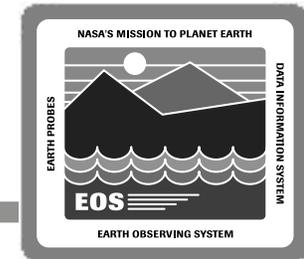
## Support Services

|        |                     |                   |                       |                        |
|--------|---------------------|-------------------|-----------------------|------------------------|
| ECL    | Screen Management   | Display Builder   | Time Selector         | DB Generation          |
| Events | Window Manipulation | Procedure Builder | Ground Script Control | (Activities, Cmd, Tlm) |
| Help   | Status Window       | Room Builder      | DB Edit               |                        |

## Infrastructure

|                   |                    |                     |                        |
|-------------------|--------------------|---------------------|------------------------|
| Message Passing   | Name Services      | Network Services    | Interface Connectivity |
| Security Services | Directory Services | Management Services | Time Services          |

# FOS Release B Capabilities



## Scheduling

### Planning & Scheduling

Timeline Tool  
 Planning Aids Mgt  
 TDRS Scheduling  
 Activity Constraint Check  
 What-If

### Command Mgt

Cmd Constraint Check  
 Load Catalog/Reports  
 Generate Patch Loads  
 Memory Mgt/Compares  
 Load Manager  
 Microprocessor Loads  
 RTS Load Builder

## Real-Time

### Resource Mgt

String Cfg Change Requests  
 Resource Monitor  
 Failure Recovery

### Telemetry

Derived Parameters, Selective  
 Decom, Tailored Telemetry  
 S/C State Check  
 Memory Dump

### Command

Cmd Verification  
 Load Processing

### Real-Time Contact Mgt

NCC ODMs, EDOS CODAs

## Analysis

### FUI

Standing Orders

### Analysis

Clock Correlation  
 Solid State Recorder Mgt  
 S/C Activity Log  
 System Statistics  
 User-Defined Algorithms  
 Expert Advisor

### Data Mgt

Triggers  
 Queue Mgr

## Support Services

User Customization  
 E-Mail  
 Document Reader

Report Browser/Editor Tool  
 Quick Msg & Analysis  
 Display Builder (schematics)

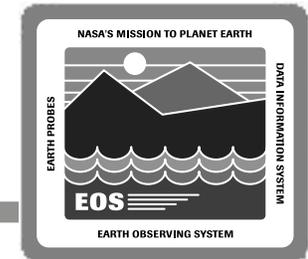
DB Backup/Restore  
 Archive Events  
 Event History Tool

DB Reporting  
 DB Maintenance  
 Data Mover

## Infrastructure

Release A Capabilities  
 Additional Management and Communication Services

# Release Status Summary



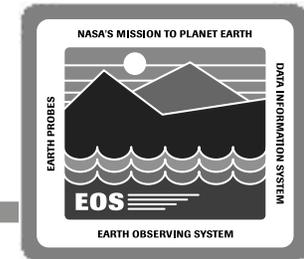
## Requirements Status Summary

- **FOS requirements updates for Release B are in May RTM baseline**
  - Updates focused on refining requirements text for testability purposes
  - Includes mapping between requirements and test procedures

## AM-1 Interface

- **White Paper prepared by NASA/FOS and FOS**
  - Defines current understanding of the interface for each functional area between the FOS and the AM-1 spacecraft
  - Defines interface baseline to effectively manage future spacecraft modifications
  - **FOS Release B is compliant with the White Paper**

# Release Status Summary (cont.)



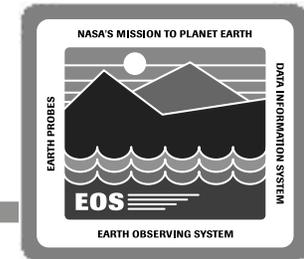
## **Kerberos has been removed**

- **Based on requests by NCC and EDOS**
- **No changes to security requirements**
  - **Simplify implementation for user authentication services**
  - **ICDs need to be updated**

## **GSFC DAAC/FOS Interface Moved to Post-Release B delivery**

- **Approach**
  - **Analogous to PDPS interface**
  - **Code samples have been provided to FOS by PDPS**
- **Impact**
  - **None since FOS has local archive with requisite disk space to support pre-launch activities**
- **Plan**
  - **Interface functionality scheduled for December 1997**

# Release Status Summary (cont.)

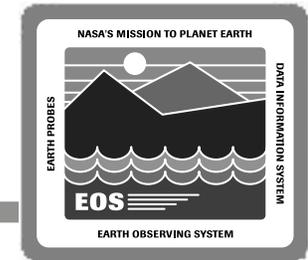


## FOS Release B Contingency Implementation Summary

- **Security Services**
  - Authentication
  - Authorization
- **Management Services**
  - Monitor hardware, network, software
  - Trouble-ticketing from ISTs
- **Requirements Impact**
  - EOC interface to SMC is being reviewed
  - Security Service implementation consistent with CDR presentation and ESDIS Security Working Group presentation
  - Management Services reporting level consistent with original ops concept per FOS/CSMS ICD

# Release Status Summary (cont.)

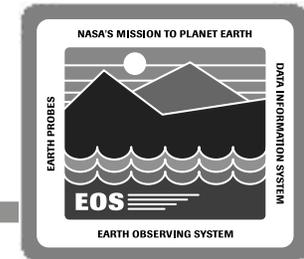
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## FOS Release B Contingency Implementation Summary (continued)

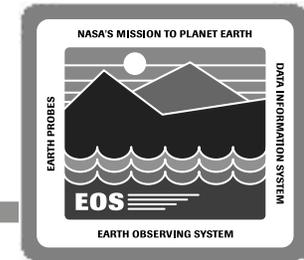
- **Communications Server**
  - **Host reflector software**
    - Direct multicast traffic to IST**
  - **Host Netscape Communications Server**
  - **Previously entitled 'Multicast Server'**
- **Management Server**
  - **Prime/backup servers**
  - **Host Tivoli Management software**
  - **Host DCE interface to GSFC DAAC**

# FOS Release B Process Summary



| Lifecycle Phase<br>Code and Unit Test | Milestones/Processes  | Notes  |
|---------------------------------------|---|--|
| Integration                           | Code walkthrough<br>Unit Test<br>SDF update/audit   | Developer writes/tests software; SE, integrators, testers, FOT, QA review code & unit test results                             |
| EOC Installation                      | Software turnover<br>SWIT development<br>SWIT execution   | Integrator tests assigned threads; SE, dev't, test FOT, QA review SWITs  |
| Test                                  | EOC CCB<br>EOC config checkout  | Sys admins install and checkout H/W and COTS; Integration Team installs software system  |
|                                       | Test procedure development, walk-throughs and checkout<br>Test data, test tool development & verification | Developers, integrators, FOT, SE, customer, QA review procedures; reqmts mapped to procedures; reqmts verified during checkout |

# FOS Release B Process Summary



## DEV Area Mini-EOC

- Developer's
- Code & Unit Test
  - Fix and checkout software modifications

## STABLE Area Mini-EOC

- Developer's
- Verify NCRs
  - Retains fixed software
  - Regression test functionality
  - Move NCRs into *FIXED* (R) state

## INT Area Mini-EOC

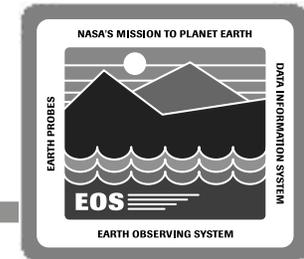
- Integration Team
- SWIT execution
  - NCR checkout
  - Regression test system
  - Move NCRs into *READY* (T) state



FOS Developers

Integration Team

# FOS Release B Process Summary



## TEST Area EOC (Support LAN)

### Test Team

- Dry-Run and AT execution
- NCR verification
- Regression test system
- Move NCRs to *VERIFIED (V)* state

## OPERATIONS Area EOC (Ops LAN)

### Flight Operations Team (FOT)

- ECT-2 Preparation & Dry-Runs
- PDB Checkout
- External Engineering Tests
- IST point-of-contact

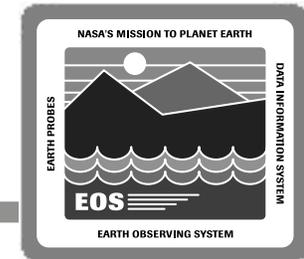


Integration Team

Flight Operations Team

Test Team

# Process Improvements Summary



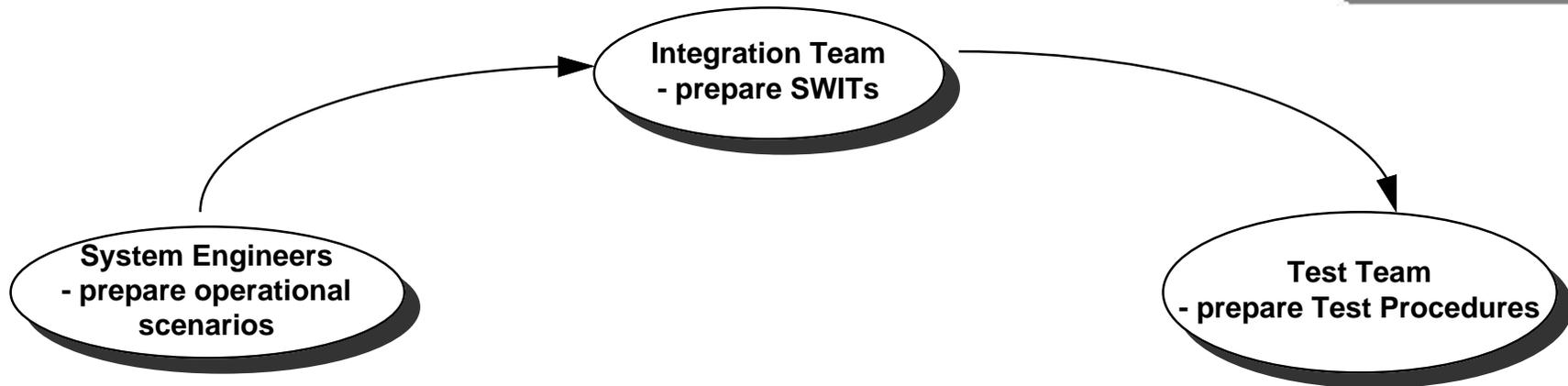
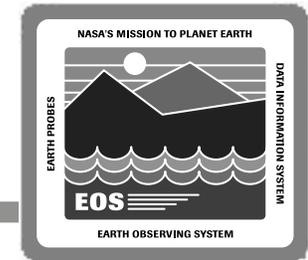
## Primary Objective

- **Identify lessons learned in Release A that could be directly applied to Release B to improve productivity and enhance overall system quality**
- **Identify processes to improve early detection of software and system discrepancies**

## Integration

- **Development of Thread Teams**
  - **Provides checks-and-balances from a system perspective of all products associated with Integration and Test**
- **Formalized development of Software Integration Tests (SWITs)**
  - **Provides more rigorous integration environment**
  - **Explicitly defines required integration environment which fostered early identification of integration dependencies and issues**
  - **Provides set of repeatable tests by the Development and the Integration staff prior to delivery of software to EOC**

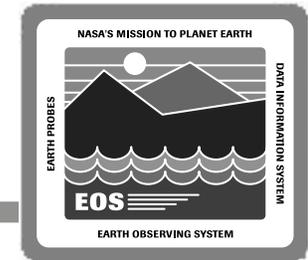
# FOS Thread Teams



**Development Team**  
- technical review

**Quality Assurance**  
- quality review

# Process Improvements Summary



## Dry-Run installation process

- **Verify that the process of installing system from the CM area works effectively and is repeatable**
- **Work through system configuration problems**

## Test

- **Streamline document deliverables**
  - **Provide red-line copies of Test Procedures on-line on FOS home page**
  - **Focus on keeping Test Procedure updated with each test pass that is performed**