Office of Satellite Ground Services (OSGS) Status

Robin Krause

STAR-JPSS Science Team Annual Meeting

May 12, 2014

NESDIS Identified Need for a Ground Enterprise

Today's Ground → Ground Enterprise

Today's Ground

- Stand-alone ground systems with limited interoperability and parts commonality

  - High sustainment and O&M costs
  - Inefficient use of government & contractor personnel

- Lack of an enterprise approach to future capability development.

  - Limited use of similar capabilities across missions
  - Limited ability to leverage existing systems for new products and services
  - Difficult and costly to integrate future missions

Ground Enterprise

- Enterprise approach with flexible, agile concepts of operation that reduce costs and speed product / service deployment

- Integrating current infrastructure with common services for interoperability and improved utilization

- Improved parts commonality for more efficient use of resources

- Separate hardware and software sustainment activities, enabling hardware refresh and new capability insertions as opportunities and budgets permit

- Establishing well-defined, common business processes & procedures, and roles & responsibilities across all ground projects

OSGS Vision

One integrated, cross-program, cross-NESDIS team creating and sustaining the Ground Enterprise ARchitecture (GEAR) System (GEARS)

OSGS Mission

- Sustain Current Ops (GOES, POES, S-NPP, …)

- Enable Future Ops (GOES-R, JPSS, …)

- Create GEARS (NDE, PDA, CLASS, …)

OSGS FY15 Mission Objectives Begin the Transition to the NESDIS GEAR System

Sustain

- Conduct sustainment on legacy (POEs/GOES/etc.) and NDE/PDA/CLASS infrastructure

  - Initiate cost-avoidance activities as funding and timelines allow

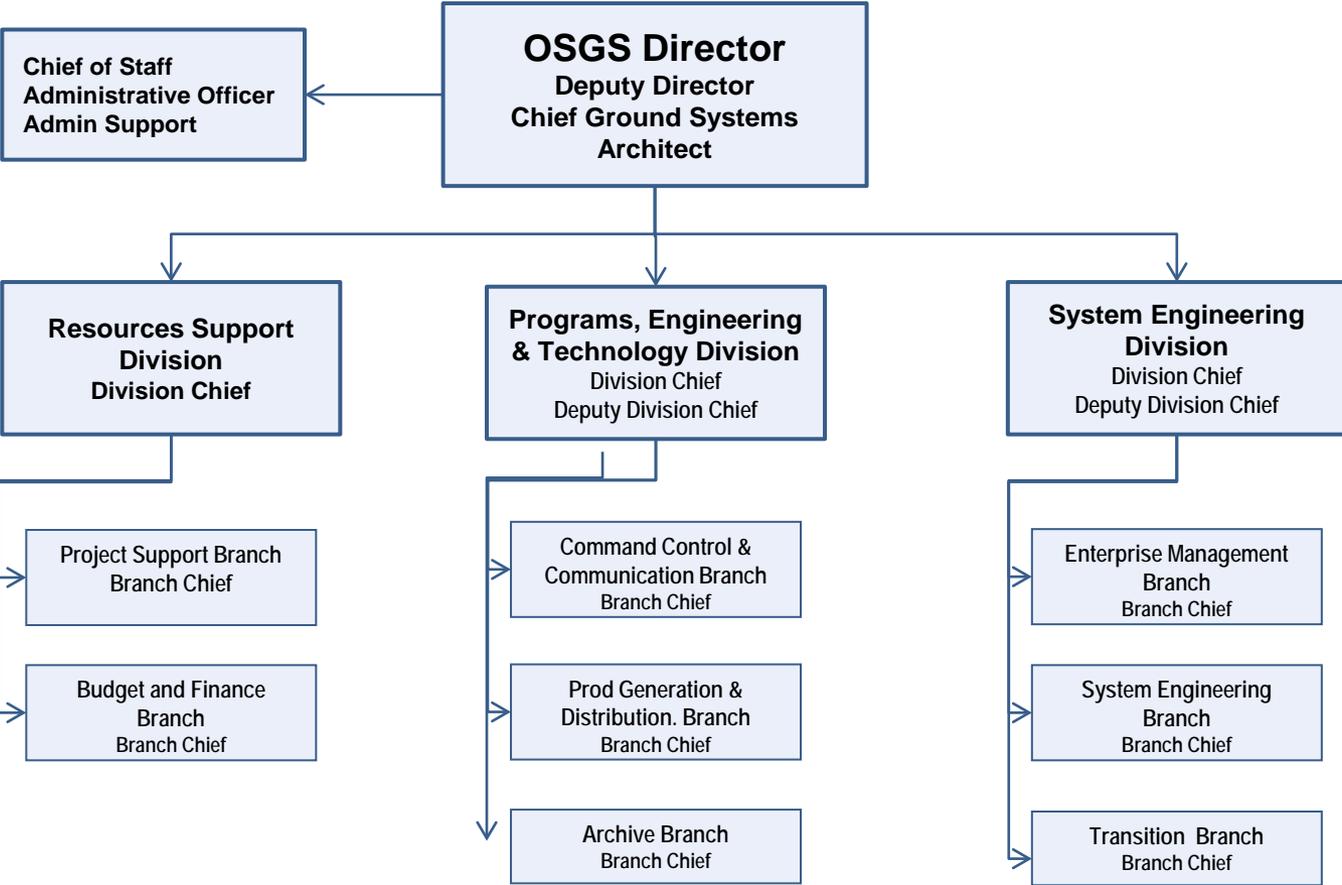 - Existing staff with augmentation

Enable

- Provide matrixed support to GOES-R and JPSS-1 programs

  - Complete the ground segments

  - Watch for further opportunities to migrate to enterprise operations

  - Prepare to lead sustainment after transition

  - Existing staff

Create

- Finish transition plan and draft acquisition plan for FY17 GEAR System initiative

  - Prototype three types of services (security, algorithms, C3)

  - Primarily new FY15 hires

Delivering the Ground Enterprise and Strengthening Systems Engineering

Chief of Staff
Administrative Officer
Admin Support

OSGS Director
Deputy Director
Chief Ground Systems
Architect

Resources Support Division
Division Chief

Programs, Engineering & Technology Division
Division Chief
Deputy Division Chief

System Engineering Division
Division Chief
Deputy Division Chief

Project Support Branch
Branch Chief

Budget and Finance Branch
Branch Chief

Command Control & Communication Branch
Branch Chief

Prod Generation & Distribution. Branch
Branch Chief

Archive Branch
Branch Chief

Enterprise Management Branch
Branch Chief

System Engineering Branch
Branch Chief

Transition Branch
Branch Chief

Technical and Programmatic Leadership in Close Coordination with Stakeholders

OSGS

Plan, acquire, develop, transition to operations, and sustain the enterprise ground system for NOAA's environmental satellite systems

Programs, Engineering & Technology

- Lead for capability implementation
- Project management for acquisition & sustainment
- Coordination with programs, projects, & customer/user communities
- Interface with flight projects for product generation, distribution and archival systems
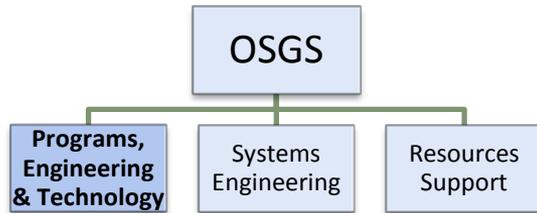
Systems Engineering

- Coordination with users & customers for transition to ops
- Coordination for sustainment of operational ground systems
- Architectural and systems engineering standards
- NESDIS-wide enterprise ground mission assurance
- System and IT security architecture analyses & studies

Resources Support

- Establishment of SLA and partner agreements
- Budgetary and financial coordination
- Acquisition services
- Project management services

Functional Responsibilities: OSGS Programs, Engineering and Technology

```
          OSGS
   ┌────────┼────────┐
Programs,  Systems  Resources
Engineering Engineering Support
& Technology
```
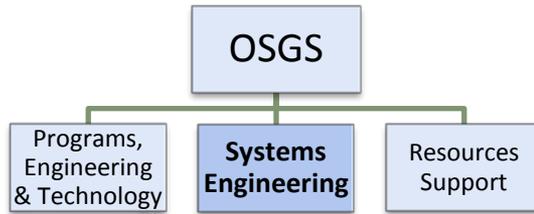
- Engineering and technical expertise
- Lead organization for implementing capabilities
- Project management for acquisition and sustainment
- Project baseline of all documentation

- Capability for development of ground system functional areas

- Coordination with programs and projects, customer and user communities, and OSGS System Engineering Division on lower level satellite data needs requirements

- Development-level integration and test

- Trade studies, technical analyses, technology assessment, and proof-of-concept development for risk reduction and technology exploitation

- Re-use or make-buy decisions

- Interfaces with flight projects for command and control and data acquisition systems and user/customer organizations, providing science development and testing for product generation, distribution and archival systems

- Establishes standards and centers of excellence for engineering/technology disciplines

Functional Responsibilities:
OSGS Systems Engineering

```
                OSGS
    ┌─────────────┼─────────────┐
 Programs,     Systems      Resources
 Engineering  Engineering    Support
 & Technology
```

- Primary systems engineering organization in OSGS

- Requirements flow down and tracking

- System and IT security architecture analyses and studies

- Architectural & system interface standards

- System-wide verification and validation activities

- Oversight of system integration & testing into the operational environment

- Configuration and document management functions for system assets

- Coordination with user/customer organizations in transitioning systems into operations and associated training

- Systems engineering services and operations coordination for the sustainment of operational ground systems

- Implements NESDIS-wide Mission Assurance (safety, reliability, maintainability, and quality assurance policies and procedures)

Functional Responsibilities:
OSGS Resources Support
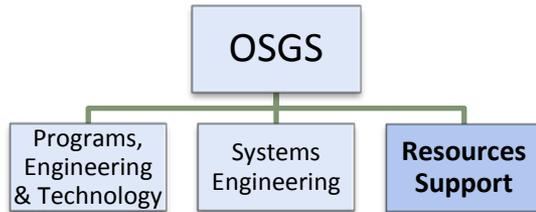
- Resources, processes, and methodologies for planning and execution

- Establishment of SLAs and partner agreements

- Development of project management policies and management practice

- Budgetary and financial coordination with major programs, projects, offices, and centers

- Acquisition services including coordination of legal services with the Department of Commerce, contract management and interface to NOAA Acquisition and Grants Office

- Project control including scope, schedule and cost control

- Project support to initiation, planning (e.g., cost estimation), execution, and performance monitoring (e.g., EVM and Exhibit 300s)

- Risk management services

9

Delivering the Benefits of an Enterprise Approach

Mission Success

- Accelerated deployment of new ground system capabilities

  - Elimination of redundant acquisitions of common ground system functionality

  - Common hardware and software environment for deployment of new functionality

  - Implementation of business process changes to streamline deployment

Cost Effectiveness Success

- Avoidance of mission ground system costs

  - Elimination of redundant development of common ground system functionality

  - Sharing of common but underutilized infrastructure resources across satellite programs

  - Simplification of ground operations to require fewer support staff

10

Ground Enterprise Stakeholders

- Stakeholders
  - Customer & user communities
  - NOAA
  - Oversight groups

- Mission partners
  - OSAAP
  - GOES-R
  - JPSS
  - OPPA
  - NEIO
  - OSPO
  - STAR
  - CIO
  - Facilities
  - NASA Goddard

Stakeholder Engagement Methods

- Quarterly ground enterprise leadership forums or steering committee meetings

- Participation in establishing ground enterprise strategy and evolution

- Engagement in Cross-NESDIS working groups (or IPTs)

- Tailored communication materials

- And so forth…

Illustration of NESDIS Organizations and Their Functions

OSAAP *Policy and Governance*

Enterprise Orchestration

OSGS
Ground Systems Development & Sustainment

NEIO
Data Synthesis & Stewardship

GOES-R Program

JPSS Program

OPPA
Flight Projects

CIO
Network Infrastructure

Facilities
Facilities Infrastructure

OSPO
Satellite Ops. & Products

STAR
Science & Algorithms

Flight Programs

Infrastructure

Science & Operations

OSGS Transition Teams

Team	Lead
Staff Planning & Hiring	George Serafino
Facility Planning and Office Moves	George Serafino & Debra Rodgers
Resources	Stan Stanczyk
Contracts	Greg James
Architecture Alignment Strategic & Transition Planning (STP)	Robin Krause
NESDIS Ground Integration	Michelle Detommaso
Organizational Change	Diane Schulte
Sustainment	Ron Smilek

New NESDIS GEAR System
Will Serve the NESDIS Ground Enterprise

GEAR System Vision

To provide a suite of common ground services enabling accelerated deployment of capabilities and avoidance of mission ground systems costs

Look to the Future

GEAR System Drivers

- Transition without harm to launch of GOES-R and JPSS 1 & 2

- Define enterprise ground services

- Enable the evolution of the ground architecture as NESDIS needs change

- Promote interoperability between observing systems, common ground, and diverse partners

- Maximize acquisition flexibility

Meet Mission Needs

GEAR System Concept Of Operations
Guides Its Development

Architectural Principles

- Avoid cost while maintaining value

- Develop common services

- Share information

- Be technology independent

- Control technical diversity

- Be interoperability

General Attributes

- Enterprise management
  Shared infrastructure
  Mission isolation

- Hardware agnostic
  Location agnostic
  Acquisition approach agnostic

- Service oriented architecture
  Common services reuse
  Standards-based

- Automation capable

- Highly secure

Service-Oriented Approach to Enterprise Avoids Costs and Accelerates Delivery of New Capabilities

Common Services

- Available to any Enterprise application

- Registered in the enterprise service registry

- Negotiated SLA with each user of the service

- Maintained by Enterprise

- Changes require approval by the GEAR System Governance Board

Private Services

- Specific to a particular Enterprise-hosted application

- Not visible or usable outside that application

- Not approved or funded by Enterprise

- Maintained by the application provider

Section 5

Status of GEAR

- Current focus on high priority services

  - Overarching target architecture

  - Transition plan that embraces ongoing activities and maximizes on what can be done to avoid costs in the near term

  - Product Management (Algorithm Framework, Product Generation, Product Distribution and Archive) and Infrastructure

- Early Prototyping

  - Common algorithm framework, Blended Products, IT Security

  - Will be integrated into a lab in Suitland when it's available

- Concept of Operations under NESDIS directorate-level review

- Independent Reviews:

  - IIRT #3 was held on 27 March 2014

  - Focused on approach to capture target architecture and performance goals

  - IIRT #4 is scheduled for 4 September 2014

  - Focus will be on transition roadmap and supporting documentation

Summary

- Vision and Mission Established

- Organization Structure and Staffing Plan completed

- Interactions with peer organizations underway

- GEAR System Concept of Operation in coordination

Questions?