



Next Generation Satellites – Plan

Presented to: NOAA/NESDIS Workshop

*Thomas Burns
Deputy Assistant Administrator for Systems*

April 28, 2015

NOAA Satellite and Information Service





Transition to the Future

“Develop a space-based observing enterprise that is flexible, responsive to evolving technologies, and economically sustainable”

-FY15 NOAA Annual Guidance

Paradigm shift that will affect technical, business, organizational, and work force aspects of NESDIS.

- NESDIS to develop plan for transition to future in FY15
- Conduct Analysis of Alternatives, Build Architecture Options in FY15–16
- Conduct Concept Development Studies, Technology Risk Reduction in FY17+ (budget permitting)

End to End Solution is sought.

- Focus the space observation constellation to achieve flexibility, leverage technology, and achieve greater efficiencies
- Establish Enterprise Ground to maximize efficiencies, minimize complexity, and reduce cost
- Establish program management and integration structures to minimize overhead, simplify interfaces, and enable flexibility in execution and acquisitions
- Establish Enterprise Architecture and Enterprise Systems Engineering and Integration as a core competency of NESDIS
- Partner with NASA, other Labs, Industry, and Academia to leverage investments in science and technology to enable more frequent and predictable refresh opportunities



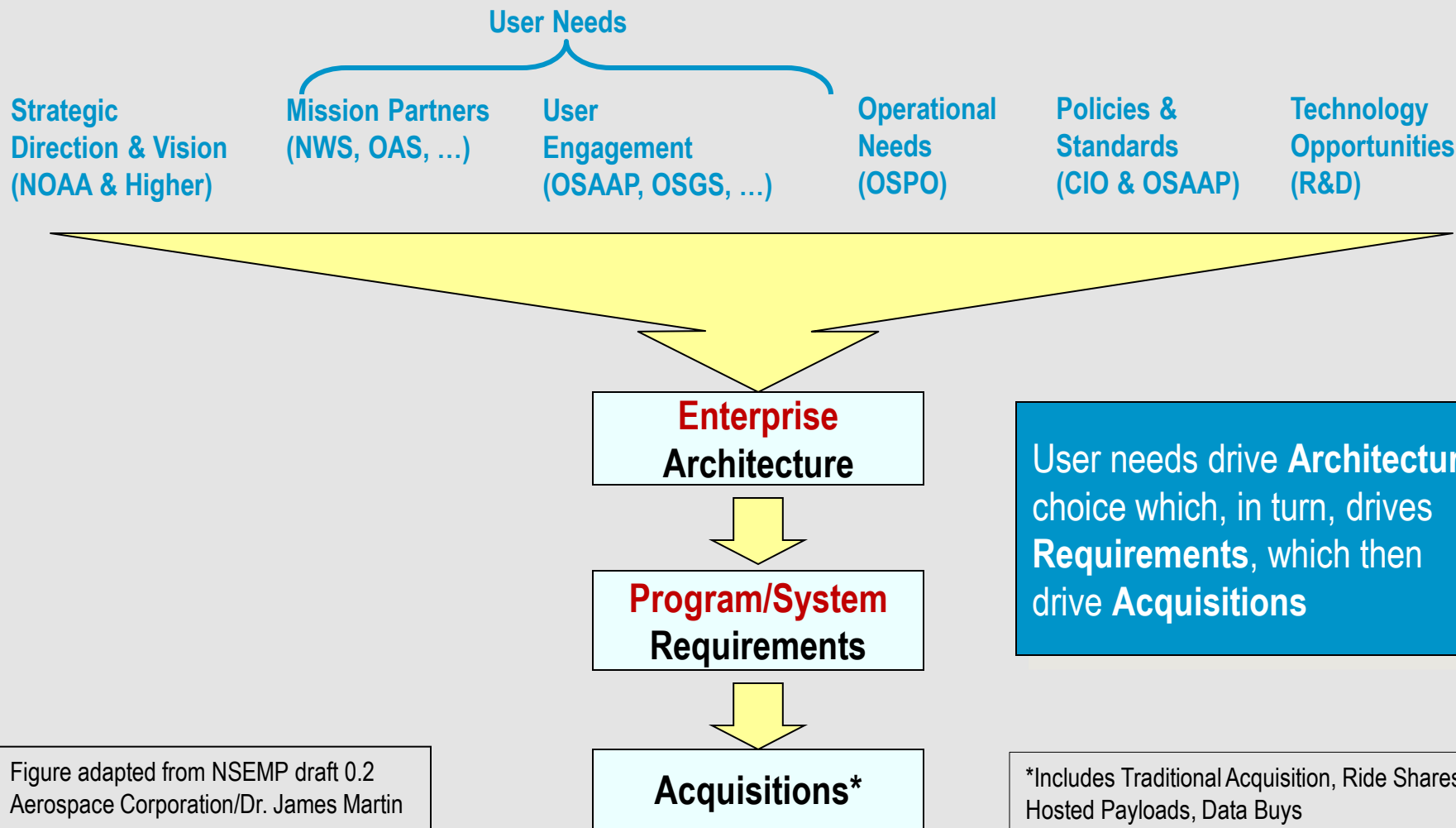
Key Considerations / Drivers

Goals of Future Architecture:

- Increased Flexibility: Shorter overall acquisition cycles; Faster decision cycles, to start or change contracts or budgets; Smaller number of interfaces to reduce programmatic complexities, increasing agility
- Increased Responsiveness to Evolving Technologies: Reduce technology refresh cycles; Manage technology enhancement evolution to achieve incremental performance improvements more frequently
- Increased Budget Stability: Manage to a NESDIS budget which is substantially steady from year to year

Bottom Line: Evolve to a more responsive architecture that leverages a suite of capabilities including rapid, less costly missions and direct purchases of services and data to ensure long term economic viability.

Enterprise Architecture Driven Acquisition





Commercial Opportunities

- Traditional Acquisitions
 - Gov't provides/contracts for Instruments, Spacecraft, Launch Vehicle, Ground System
 - CPAF, FFP variations
 - Gov't integrates and operates the system
- Ride Shares
 - Same as above but no dedicated launch—use small sat form factor to fit on ESPA rings or larger missions
 - Today: COSMIC, EON (proposed)
- Hosted Payloads
 - Same as above but no dedicated spacecraft or launch
 - Place Instrument(s) on a Host Spacecraft via contractual arrangement
 - Today: Data Acquisition & Rescue (proposed)
- Data Buys—purchase data at downstream end of value chain
 - Spacecraft, Instruments, Launch, Ground, Systems Engineering (portions of) are all responsibility of private sector
 - Today: Lightning data
 - Future: RO, Microwave sounding? Space Weather? Others?



Plan

- **FY15–16: Pre-Formulation Work**
 - Architecture study: Identify prioritization of user needs, develop 1 to 3 candidate Next Generation Enterprise Architectures
 - Using current resources in OSAAP, OPPA, OSGS, and leveraging JPSS and GOES-R resources as appropriate
- **FY17–22: Transition to Formulation**
 - Develop detailed design concepts, long lead risk reduction & technology maturation
 - Transition to Next Generation Phase A milestones for selected new programs
- **Beyond FY22: New Program Execution**
 - Prepare to replace requirements met by current GOES-R system by FY28; JPSS by FY31
 - Allow for continuous cycle of pre-formulation/formulation on individual measurements or missions



Key Element to Begin: People

- Must build world-class team in Systems Integration and Architecting: gov't, associates, contractors
 - Hire the right people ASAP, enlist FFRDC, Labs, possibly SETA
 - Grow the numbers and expertise of Fed cadre
 - Partner with NASA (leveraging critical expertise at all centers) but NOAA is the leader
 - Critical skills: SI/Sys. Architecting, instrument phenomenology, knowledge of NWP models
 - Enterprise Ground Architecture is an integral part



Prioritized User Needs and Value Models

- Identify and initiate process for user needs prioritization – *Critical to be done properly*
 - Example: Derive from NWS needs, e.g., specific 3–7 day forecast improvement; tornados; hurricanes; cloud specifics; etc.
 - Include Space Weather
 - Identify and fund OSEs and OSSEs to inform Architecture Analyses
- ➔ *Form Satellite Platform Requirements Working Group (SPRWG)*
- SPRWG reports to OSAAP as part of Architecture development activity

Notional Schedule Next Gen

