

NESDIS Response to Independent Review Team (IRT) Recommendations

1. Strategic Plan: Recommendations

1.1. Future revisions of the Strategic Plan should include a section on the criticality of NESDIS' mission to be used as the basis for outreach and support-building in the Executive and Legislative Branches, as well as for expanded public engagement.

NESDIS concurs and understands the value of integrated public engagement. NESDIS will provide a preamble in the Strategic Plan on the criticality of our mission to our PMEFs and the weather forecasting enterprise. NESDIS will also include discussion of the strategic mission in its public outreach and communications.

1.2. Implied architecture conclusions should be validated before being included in future editions.

NESDIS concurs and embraces the necessity to validate architecture recommendations, and the decisions that may follow. As noted in our Strategic Plan, we are conducting an architecture level review of NOAA requirements and partnership agreements, and evaluating emergent technologies and innovations in both space and ground systems. NESDIS will establish and champion a sustained technology evaluation and investment effort, as an essential programmatic component of NOAA's sustained satellite earth observing system. This technology effort will include both NOAA direct investments and leveraged use of NASA or other's investments.

The architecture recommendations are intended to provide the basis for the continuous evolution of the observing system architecture. This system will be flexible and economically sustainable with, the ability to respond to evolving technologies. The observing system will:

- **Operate the current satellite constellation and ground systems with the continued high-reliability, secure and timely delivery of data and services that the Nation requires.**
- **Bring to operation service planned missions, data products and services on cost and on schedule while effectively managing risks and opportunities.**

1.3. The Strategic Plan should be a "Living Document" through the Implementation Plans.

NESDIS concurs. The Strategic Plan lays out six Priority Goals that address the long-term vision, and includes performance metrics covering the next three to five years. The Strategic Plan will be revisited approximately every five years. The Implementation Plans span five years, with short term and long term objectives that are reviewed and updated on a yearly basis.

1.4. Timely completion of the Implementation Plans must be a high priority.

NESDIS concurs. The inaugural Implementation Plans are complete, except for the following activities under the Continuity Goals, which must be reviewed and revised based on the Agency budget guidelines:

- **Realign budget accounts consistent with portfolio-based structure and establish organizational structure and processes for effective management.**

1.5. The goals and their implementation need to be prioritized and preeminence given to meeting mission/operational commitments.

NESDIS concurs in principle, while recognizing that some progress on all six goals is essential to accomplishing acceptable progress on any goal. The Implementation Plans include priorities under each of the Priority Goals (Continuity, Data and Information, Science, Architecture, Partnerships, People), and priorities across the Goals. For example, commitments under "Continuity" for NESDIS over the next five years include:

Follow through on NESDIS' Commitments and Plans

- **Ensure safe and secure operation of on orbit assets**
- **Launch and transition to operations of JPSS-1 and GOES-S**
- **Support Metop-C**
- **Prepare for JPSS-2 and GOES-T**

1.6. The Implementation Plans must be actionable and have measurable metrics.

NESDIS concurs. The Implementation Plans include Short and Long Term Measures of Success or Performance Indicators, preliminary examples of which are provided below.

Continuity - Measures of Success Performance Measures		
Short Term Indicators (1 to 2 years)	Source	Frequency
Sustained better than 98.5% of primary NOAA-managed satellite data processed and distributed within published times	OSPO/OSGS	Monthly
Launch and early commissioning of JPSS-1, and completion of JPSS-2 KDPs within commitments for schedule and budget	NJO	Monthly

2. Architecture: Recommendations

2.1. To be successful, the OSAAP [NESDIS Office of Systems Architecture and Advanced Planning] process must:

2.1.1. Account for and amortize the cost of successful past and current investments in the existing system.

The NSOSA Study includes the full cost of systems under consideration, and therefore accounts for significant prior investments supporting both current systems and future additions or minor modifications of current system designs. New systems which require new R&D for either the space or ground infrastructure or both will have to show improved performance/cost to rate more highly.

2.1.2. Prioritize within its process to ensure robust low risk and high value outcomes that build on the significant gains achieved in the current GOES and JPSS baseline architecture.

NESDIS concurs. Low-risk and high-value outcomes are not only prioritized in the NSOSA process, but used as a basis for the enhancement of future candidate architectures.

2.1.3. Adopt an end-to-end architectural validation approach where the currently approved system capabilities represent an “equal or better” baseline for evaluating proposed alternatives.

NESDIS concurs. The “equal or better” criterion provides a useful assessment standard when considering all aspects of an observing system. The “equal or better” performance threshold will be considered across the integrated observing system performance, and as NESDIS considers the introduction of new observations into an established system such as from commercial providers or partner missions.

2.1.4. Protect the availability and manufacturability of key parts, components, and systems comprising the existing GOES and JPSS systems.

For the current programs of record, risk management is the responsibility of the program offices. NOAA understands that the significant GOES-R and JPSS system investments are programmatic assets to be managed and utilized. The timely determination of the follow-on mission concepts is essential to preserving the assets. Following the current programs of record, these risks will be handled with the technology and transition roadmaps as appropriate for the selected architecture option(s).

2.1.5. Validate new candidate requirements as a prerequisite to determine if additions to the current GOES and JPSS baselines will be beneficial in the foreseeable future.

NESDIS concurs. NESDIS has a requirements validation process through the NOAA Observing System Council (NOSC). The observational needs of all NOAA programs and service areas are represented in the NOSC.

2.1.6. Guard against making premature architectural conclusions.

NESDIS concurs. Architectural recommendations will be determined by way of rigorous analysis of the available trade space and other relevant factors such as available funds, emerging technologies, Congressional authorities, and evolving mission requirements.

3. Partnership: Recommendations

3.1. The Department of Commerce leadership plays a key role in supporting the NOAA/NASA partnership and assuring the success of the NESDIS satellite programs. To accomplish this DOC must:

3.1.1. Advocate on behalf of the Nation's civil weather satellite programs.

NESDIS concurs. The support from and advocacy by the DOC is essential to the current and future success of the Nation's civil weather satellite programs. Through its membership in the National Space Council and Cabinet level discussions, the DOC is the singular voice for the operational civil weather and oceans observing and monitoring services.

3.1.2. Facilitate the approval of block buys, advance purchases of long-lead hardware items, etc.

NESDIS concurs and attempts to do this in our acquisition programs based on appropriated funding. NESDIS and the DOC understand that block buys of major systems substantially reduce the cost and development risk of our major acquisitions. NESDIS has been successful with this approach on the GOES-R program, and seeks to ensure its application in the JPSS/PFO program by continuing with the rapid procurement of the PFO instruments. NESDIS has included those program lessons into our future systems planning.

3.1.3. Delegate authority and responsibility to NESDIS to implement their programs, including authority to procure and manage the highly specialized IT required for satellite programs.

NOAA concurs to support the delegation of authority and responsibility to NESDIS to implement their satellite programs, including authority to procure and manage the highly specialized IT required for satellite programs. NOAA will reach out to NASA and other agencies to understand different approaches to delegating authority and responsibility to procure and manage the information technology required for satellite programs.

3.1.4. Streamline vital administrative processes such as hiring and contracting, that are important to the efficient implementation of the satellite programs.

NESDIS concurs.

3.2. Adopt a customer (NOAA) - contractor (NASA) construct for project implementation.

3.3. Adopt a partnership construct for programmatic subjects.

NESDIS concurs on the need to develop a more nuanced relationship with NASA. NOAA also understands the NOAA-NASA relationship is multi-faceted and changes depending on many different programmatic and strategic factors. The customer-contractor construct will apply in some cases and for some mission phases, but not all. NOAA-NASA recognizes this and are now together working to document this complex partnership.

3.4. Resolve the responsibility between NOAA and NASA for technology development, including funding.

NESDIS and NASA concur, and acknowledge there are individual and shared responsibilities for technology development to meet our Agencies' mission needs. We are working collaboratively to develop innovative partnerships that leverage both NESDIS' unique operational mission demands and NASA's technology development expertise.

3.5. Clarify expectations, roles and responsibilities, including management relationships, for the parties involved in the JPSS program: NOAA/NESDIS and NJO [NOAA JPSS Office], NASA SMD [Science Mission Directorate], NASA JASD [Joint Agency Satellite Division], GSFC [Goddard Space Flight Center] management, and JPSS Program.

NOAA and NASA concur. In December 2016, the Administrators of NOAA and NASA jointly agreed to a number of management changes to ensure the continued success of the JPSS program. Additionally, the relevant parties have been actively collaborating to refine the expectations, roles, and responsibilities of the JPSS program. In July 2017, NOAA and NASA signed an agreement on a new program structure that simplifies and clarifies the program structure for the JPSS and PFO programs.

3.6. Consider one or more focused off-site meetings to accomplish the above recommendations.

NESDIS concurs. NESDIS and NASA have arranged a first off-site discussion in June 2017 amongst agency leadership to discuss strengthening this critical partnership. More such meetings will be scheduled.

3.7. Complete the JPSS transition to the GOES-R management model as quickly and completely as possible.

NESDIS concurs. NESDIS and NASA are actively collaborating to execute program adjustments to streamline the JPSS management model. In July 2017, NOAA and NASA signed an

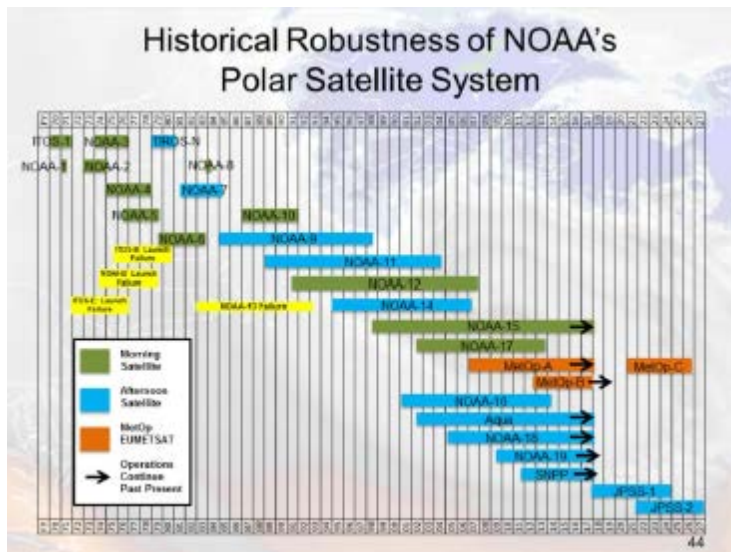
agreement to complete the transition to the new program structure no later than Spring 2018.

3.8. Operating in a true joint endeavor manner, NESDIS and GSFC [Goddard Space Flight Center] senior leadership should meet regularly to not only discuss implementation issues but also to better plan for the future.

NESDIS concurs. NESDIS leadership regularly meets with Goddard Space Flight Center (GSFC) counterparts on a monthly basis at the Agency Program Management Council. The NESDIS AA and the GSFC CD also share regular coordination and planning calls.

4. Continuity: Recommendations

4.1. Polar Flyout Plan - IRT Recommendation [Chart] -



NESDIS concurs that the continuity of our polar-orbiting constellation is a critical national priority. NESDIS considers flyout plans based on consideration of the overall health of the constellation, the calculated life expectancy of our assets, the availability of other data sources (e.g. other agency assets and partner constellations), and a prudent risk posture that maximizes the calculated availability of Key Performance Parameters across the life of the program. Additionally, NESDIS produces an annual Mitigation Plan to prepare for a loss of a Key Performance Parameter.

4.2. The national need for continuity of the GOES/JPSS-type programs must be communicated to the various Federal stakeholders (NOAA, DOC, NASA, OMB [Office of Management and Budget], OSTP [Office of Science and Technology Policy], Congress, etc.).

NESDIS concurs and continues to discuss our programs, their value and the benefits they provide at every opportunity. Quarterly briefs to OMB and Congress provide an opportunity

to highlight the benefits of key NESDIS programs as well as identify issues and concerns. NESDIS also continues strategic dialogue with NASA/SMD to coordinate on messaging and future initiatives. These interactions, though significant, will be augmented by additional public fora to speak more directly to Federal and commercial stakeholders.

4.3. The lack of adequate time to develop new capabilities requires the procurement of additional GOES-R and JPSS systems;

4.3.1. Parts procurement to avoid obsolescence starting in FY19

4.3.2. Procurement of GOES-V in FY22

4.3.3. Procurement of JPSS-5 in FY25

NESDIS concurs with the conclusion that data continuity is absolutely critical and is actively studying all future architectural solutions to meet National requirements in close coordination with relevant stakeholders. Among the architectural solutions that will be evaluated will be options to continue current technologies until transition to new architecture is complete or options to introduce risk reduction missions prior to achieving full operational capability for new architecture.

4.4. To address the potential for a gap in the 2019-22 timeframe and to add flexibility to respond to potential failures,

4.4.1. Study the possibility of being able to launch JPSS-2 earlier, possibly only with ATMS and CrIS.

4.4.2. Similar to the established JPSS-3 option, create an option for the launch of JPSS-4 only with ATMS and CrIS.

4.4.3. Examine other potential partial replacement options such as EON-MW.

NESDIS appreciates the concern regarding a gap in critical weather observations and is studying potential remedies. NESDIS is focused on launching JPSS-1 as early as practicable to prevent any gap between Suomi NPP and JPSS-1. Currently the key instruments on JPSS-2 are under development. NESDIS will evaluate the optimum launch date for JPSS-2 spacecraft, the PFO budget and the date of the JPSS-1 launch. NESDIS is reviewing options related to the Polar Follow-on Program and the benefits of launching JPSS-4 with only ATMS and CrIS. In addition to continuing the JPSS satellites, NESDIS will advance additional measurement options to meet the polar observing needs.

This set of recommendations from the IRT highlight the pressing need for NESDIS to conduct true observing system risk management, including exploiting opportunities to provide gap mitigation observations as they become available. Future NESDIS budget requests should include programmatic authority to apply appropriated funds to address emerging issues. These observations include, but are not limited to, radio occultation measurements; alternative small sounders such as EON MW or TROPICS; and an assessment of parallel NASA and commercial technology instruments.

4.5. Technology development and examination of commercial approaches to develop options to replace GOES and JPSS need to be initiated as soon as practical.

NESDIS plans to examine both new technology insertion and maturation, and commercial services procurement as pre-formulation activities based on NSOSA results. NESDIS is already executing the Commercial Weather Data Pilot, through which NESDIS is evaluating currently-available commercial data to demonstrate the quality of the data and its impact to weather forecast models, as well as informing NOAA's process for ingesting, evaluating, and utilizing commercial data in the future.

4.6. The JPSS program should examine developing a launch vehicle strategy to allow launch on need.

NESDIS concurs and will continue to explore this with the NASA Launch Services Program.

5. Administration: FITARA Recommendations

5.1. DOC and NOAA should explore ways to improve and streamline acquisition oversight and approval processes for satellite IT programs consistent with current practice for DOD, Intelligence Community, and portions of other agencies.

OCIO and NOAA concur and will explore ways to improve and streamline acquisition oversight and approval processes for satellite IT programs, including evaluating the current practice for DOD, Intelligence Community, and portions of other agencies.

5.2. IT acquisitions associated with NOAA satellite programs should be designated as "Highly Specialized IT". A definition of "Highly Specialized IT" needs to be developed and appropriately staffed.

NOAA understands the IRT concern and will reach out to NASA and other agencies to understand different approaches to addressing satellite IT procurements.

5.3. Acquisition CIO approval authority for the "Highly Specialized IT" should be delegated to the NESDIS Assistant Chief Information Officer.

IT Investment Authority (ITIA) for systems embedded in other systems should not be required at all. The NESDIS ACIO should identify, subject to NOAA CIO review, when that circumstance is met so that the ITIA requirement can be waived. If appropriate, the NOAA CIO will advocate to the DOC CIO waiving the ITIA requirement
Approval authority for the acquisition plan and strategy, however, is shared between the DOC senior acquisition executive and the DOC CIO. The NOAA CIO will continue to request NOAA CIO delegation be equal to the Director of Acquisition and Grants.

5.4. To ensure transparency and FITARA compliance, the DOC Chief Information Officer should continue to be involved in relevant Agency management boards and reviews such as the Satellite Quarterlies and Agency Program Management Council.

NESDIS and the NOAA OCIO concur. NESDIS will continue to engage DOC on all relevant Agency management boards.