

A Description of NOAA's Processes for Product Development, Verification and Implementation into Operations

Summary of the Working Paper

In response to Action 36.20: CGMS Members to present WPs to CGMS-37 describing their processes for product development, verification and implementation into operations, as well as the process for continuous improvement.

NOAA's Satellite and Information Service (NESDIS) develops and distributes environmental satellite data and products for all NOAA line offices as well as for a wide range of Federal Government agencies, international users, state and local governments, and the general public. Considerable resources are required to develop new or enhanced satellite-derived data products. It is essential that an orderly review and approval process be used to manage the development of these products.

The NESDIS Satellite Products and Services Review Board (SPSRB) is responsible for the oversight and guidance necessary to effectively manage the product life cycle process from product development, transition into operations, enhancements and retirement. The SPSRB provides a powerful evaluation mechanism which enables a more efficient use of personnel, fiscal and information technology resources.

This paper describes current and proposed SPSRB processes. A few process details are still to be finalized. This paper is still in draft phase, and is presented here in response to CGMS Action 36.20.

A Description of NOAA's Processes for Product Development, Verification and Implementation into Operations

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1. Introduction

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This paper describes current and proposed SPSRB processes. A few process details are still to be finalized. When this is the case a short explanation will be given on how the process update will be addressed.

The NOAA Business Operations Manual (BOM) provides NOAA employees with a comprehensive overview of the NOAA Functional Model, organizational structure, management techniques, Planning Programming, Budgeting, and Execution System (PPBES), Operational Support Services and Program Support Services (http://www.ppi.noaa.gov/pdfs/BOM_v3.2.pdf). *The SPSRB helps bridge the gap between the requirements and program execution processes. Figure 1 shows how the SPSRB fits into the overall NOAA Panel and Council process.*

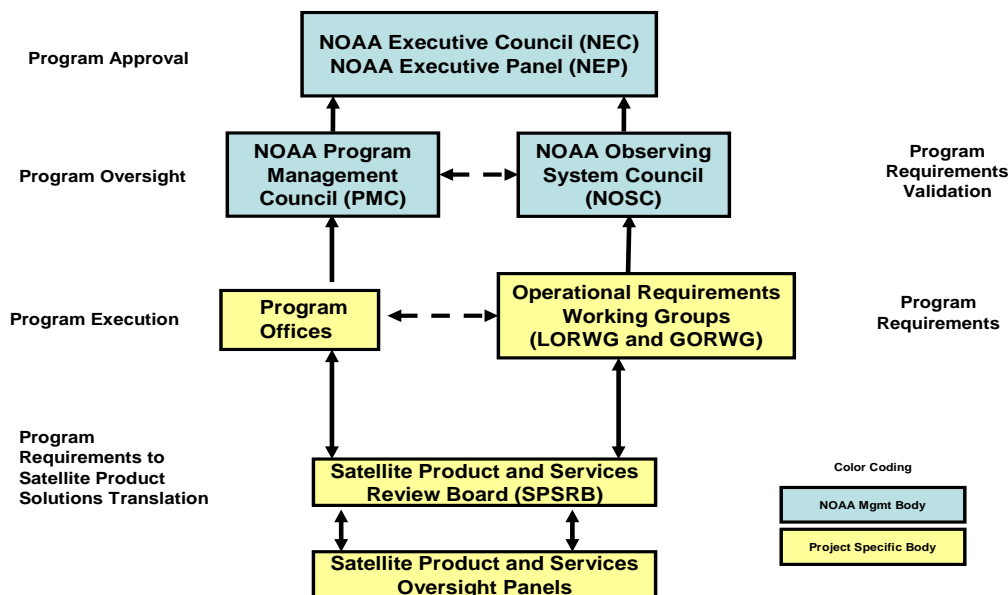


Figure 1: NOAA Panel and Councils

2. SPSRB Entities: The SPSRB process relies upon appointed individuals to execute the functions of SPSRB positions, working groups or advisory boards.

a. ***SPSRB Executive Board:*** The SPSRB is co-chaired by the STAR and OSO Directors. Principal voting members include the OSDPD, OSO, STAR and OSD Office Directors. Interested observers include representatives from STAR, OSDPD, OSD, OSO, the NESDIS Data Centers and NWS. *The SPSRB Executive Board meets quarterly to review and approve new processes and policies. The board also provides guidance on how to address outstanding SPSRB issues.*

b. ***SPSRB:*** The SPSRB is co-chaired by OSDPD and STAR Deputy Directors. Principal members include representatives from STAR, OSDPD, OSD, the NESDIS Data Centers and NWS. *The membership may expand to include representatives from NOAA mission goals and/or programs.* The SPSRB will provide a forum for OSDPD, STAR and OSD management to evaluate user requirements, perform analysis of alternatives to meet user needs, monitor the progress of product development and approve new products going into operations. The SPSRB also provides satellite product development guidance and policy.

c. ***SPSRB Executive Secretary:*** The SPSRB Executive Secretary is assigned for a 2-year appointment and rotates between STAR and OSDPD. The secretary is responsible for conducting and recording meetings and actively executing the SPSRB processes.

d. ***SPSRB Manager:*** The SPSRB Manager is a permanent OSDPD employee who oversees and manages the processing of user requests and tracks their progress to completion or termination.

e. ***Oversight Panels (OPs) and Product Oversight Panels (POPs):*** The NESDIS OPs and POPs provide technical oversight and guidance during the technical assessment of user requests and during development of products and services. OP/POPs are permanent with membership from STAR, OSDPD, OSD and key users. Current OP/POPs are: Navigation, Calibrations, Instrument Database, Services, Ocean, Ocean Color, Earth Radiation, Land Surface, Soundings, Precipitation, Images/Clouds/Aerosols, Winds, and Atmospheric Chemistry.

f. ***Integrated Product Team (IPT):*** IPTs are temporary teams responsible for exploring technical alternatives to meet user requests. Once resources are identified to do product development, the IPT oversees product development and are disbanded shortly after a product goes operational. IPTs are lead by a NESDIS person with membership from NESDIS product area leads, scientists and end users of the product. *If a product is being proposed for archive, then the IPT will have a member from the appropriate NESDIS Data Center.* The IPT can include contractor personnel.

g. ***SPSRB Process Improvement Working Group (SPI WG):*** The SPI WG is a temporary group made up of representatives from OSDPD, STAR and OSD, and includes the SPSRB Executive Secretary and Manager. The SPI WG develops recommendations for improving SPSRB procedures and oversees the development of the SPSRB web page. Once SPSRB processes/practices are standardized and implemented, the SPI WG will be dissolved. If the SPI WG is disbanded, future changes to SPSRB processes will be proposed by SPSRB

manager and approved at the SPSRB. The SPI WG may be reformed at the discretion of the SPSRB co-chairs to evaluate and improve SPSRB processes.

i. Project Lead: The project lead is the person within NESDIS that guides the project's product development efforts from research to operations. The project lead is normally the IPT lead.

j. NOAA Program Manager: The NOAA Program Managers work with the NOAA Mission Goal Leads to define program requirements to be addressed through the Planning, Program, Budgeting, and Execution System (PPBES) process.

k. NOAA Project Managers: The NOAA Project Managers control funding within their NOAA Line Offices. They work closely with the NOAA Program Managers to ensure acquisition efforts address NOAA Mission Goals. Some project managers control funds that can be applied to satellite product development. These managers ensure funds are expended by appropriate personnel for specific project purposes.

3. SPSRB Process

The nominal SPSRB process is shown in Figure 2. There are *six key SPSRB steps*:

- (1) User Request
- (2) Assessment
- (3) Analysis of Alternatives
- (4) Initial Project Plan
- (5) Operational Decision, and
- (6) Product Divestiture or Retirement.

In addition, there are several *SPSRB interface processes*. These include:

- (1) Resource Identification and Product Development/Reporting,
- (2) Consolidated Observational Requirements List (CORL) and Mission Observational Requirements List (MORL) databases, and
- (3) NOAA Observational System Architecture (NOSA) database.

The SPSRB focuses on the transition of satellite products from research into operations to meet a user need for satellite information. There are three distinct ways satellite products can be examined by the SPSRB to transition from research into operations:

(1) User request: users can identify a need for new or improved satellite observations or products.

(2) Science Improvement: scientific agencies can identify a maturing scientific development or algorithm thought to provide significant user benefit.

(3) Project Manager Development: NOAA/NESDIS program or project managers can receive requirements to develop new or improved products. These acquisition managers formulate plans to acquire the new capabilities for users.

The transition to operations of new satellite products from all of these paths requires approval through the SPSRB process. Enhanced product development can go through the SPSRB steps; however, the decision to declare enhanced products as operational is delegated to OSDPD.

The key SPSRB steps and interfaces are discussed in the following sections. The procedures for handling user requests will be described followed by discussions on handling science improvement and NOAA/NESDIS program/project development.

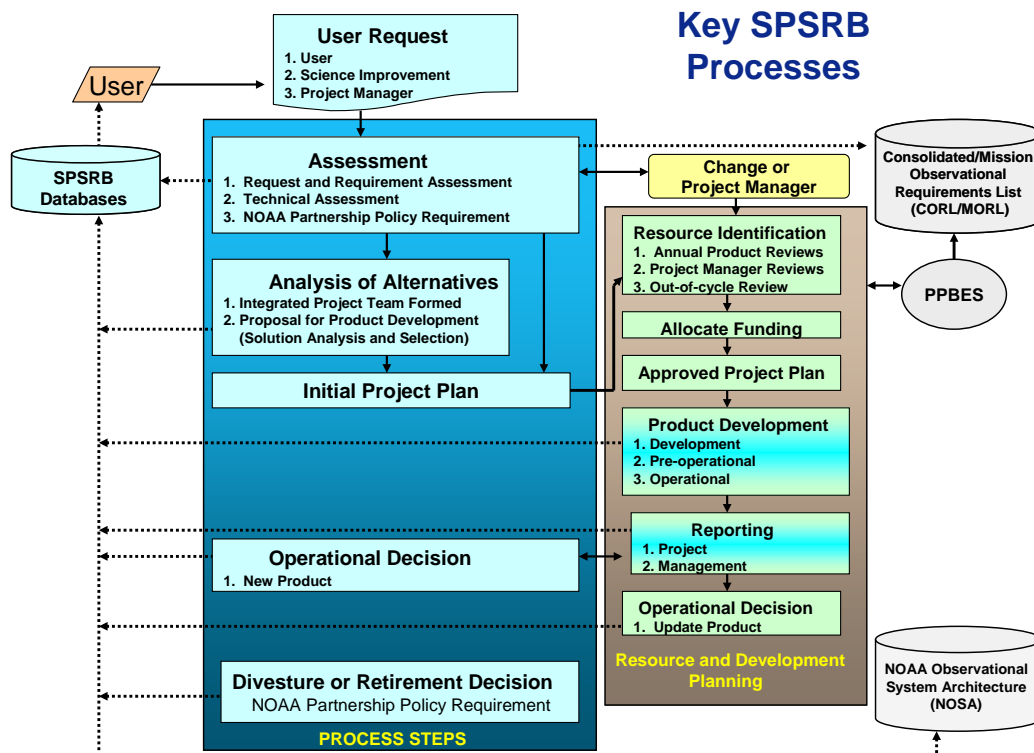


Figure 2: Key SPSRB process steps (in blue) and interfaces to resources (in green) and program processes (in gray).

3.1 User Request

User requests will include the requirements, specifications and other information needed to describe the requested product or service. Users are required to register at https://requesttracker.osd.noaa.gov/admin_login.asp. Once registered, users can submit a user request form for a new or enhanced satellite product or service.

Currently, the user request tracking web pages are restricted to .gov and .mil web domains. Other users can submit a request, but they have to work their requests through a NESDIS sponsor. *In the future, the web-based user request process will be automated and open to all potential satellite data users.*

The current user request form includes adequate information to evaluate the product specifications/requirements, user benefits for the product, criticality of need, and link between the request and NOAA Mission Goals and Programs.

There is a special category of user request called “*Science Improvements*”. As scientific research matures applications can be identified to improve an existing satellite product or introduce a new product to support a known user shortfall. For new products the NOAA scientist should get the user community involved and the user should submit a SPSRB user request if they desire the new product. For enhancements to an existing product, the NOAA scientist can submit a SPSRB user request. In either case, the user request will follow the processes described in this section.

SPSRB User Requests are now kept in the secure SPSRB database, along with the actions taken to address the user request.

Ultimately, the SPSRB database will be integrated into an overall NESDIS/NOAA metadata system with improved web and desktop interfaces.

In the near future, users and NESDIS personnel will be able to query the database and be able to generate a variety of reports (e.g., status of user request, outstanding actions, etc.).

The Satellite Products (SATPROD) web page found at <http://satprod.osd.noaa.gov/satprod/controlcenter.cfm> is an excellent tool for exploring what current capabilities NESDIS has to meet the user needs.

Through follow-on phases of the automated web page, when users are submitting a SPSRB User Request, they should be given an opportunity to review the Satellite Products (SATPROD), CORL/MORL databases. This will enable the user to understand the products currently available that might address their needs and to better link their request to similar requirements and the NOAA Mission Goals.

3.2 Assessment

This step consists of four key steps: (1) Request Assessment, (2) Requirement Assessment, (3) Technical Assessments and (4) NOAA Partnership Policy Requirement.

The purpose of the Request and Requirement Assessment (Figure 3) is to ensure the request is a valid requirement and contains sufficient information to process and perform a technical assessment. This step also determines whether the request should be addressed under the NOAA Partnership Policy.

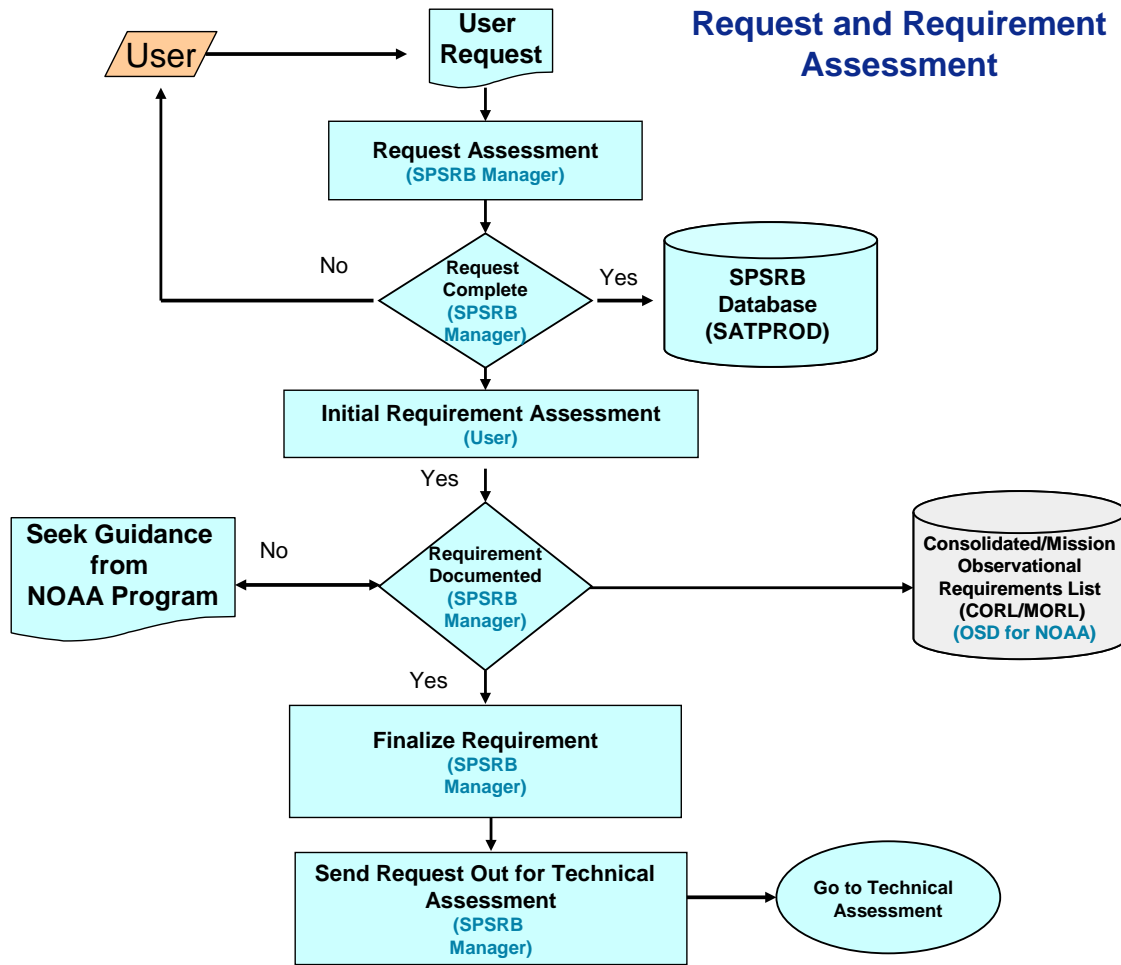


Figure 3: Request and Requirement assessment process lead by the SPSRB Manager

The SPSRB Manager evaluates the user request form for completeness and interacts directly with the user for clarification or obtains any missing information. Once deemed complete, the request undergoes a requirement assessment.

The user request contains the initial requirement assessment. The user is asked to identify which NOAA mission goals and programs require this new or enhanced product.

Once the request and requirement assessment is complete, the SPSRB Manager, through the SPSRB request tracking system, sends out a request for a technical assessment.

The purpose of the technical assessment (Figure 4) is to determine if it is technically feasible to satisfy the user request and provides NESDIS management the opportunity to determine the best way to process the user request. The SPSRB carries out a technical assessment with assistance from the Oversight Panels (OPs) and Product Oversight Panels (POPs) as required.

If the user request asks for the proposed product to be archived, then a representative from the appropriate NESDIS data center should be notified and they should be included in the technical assessment. The archive person would help validate the archive requirement and ensure the archive process is followed in other SPSRB process phases.

Technical Assessment

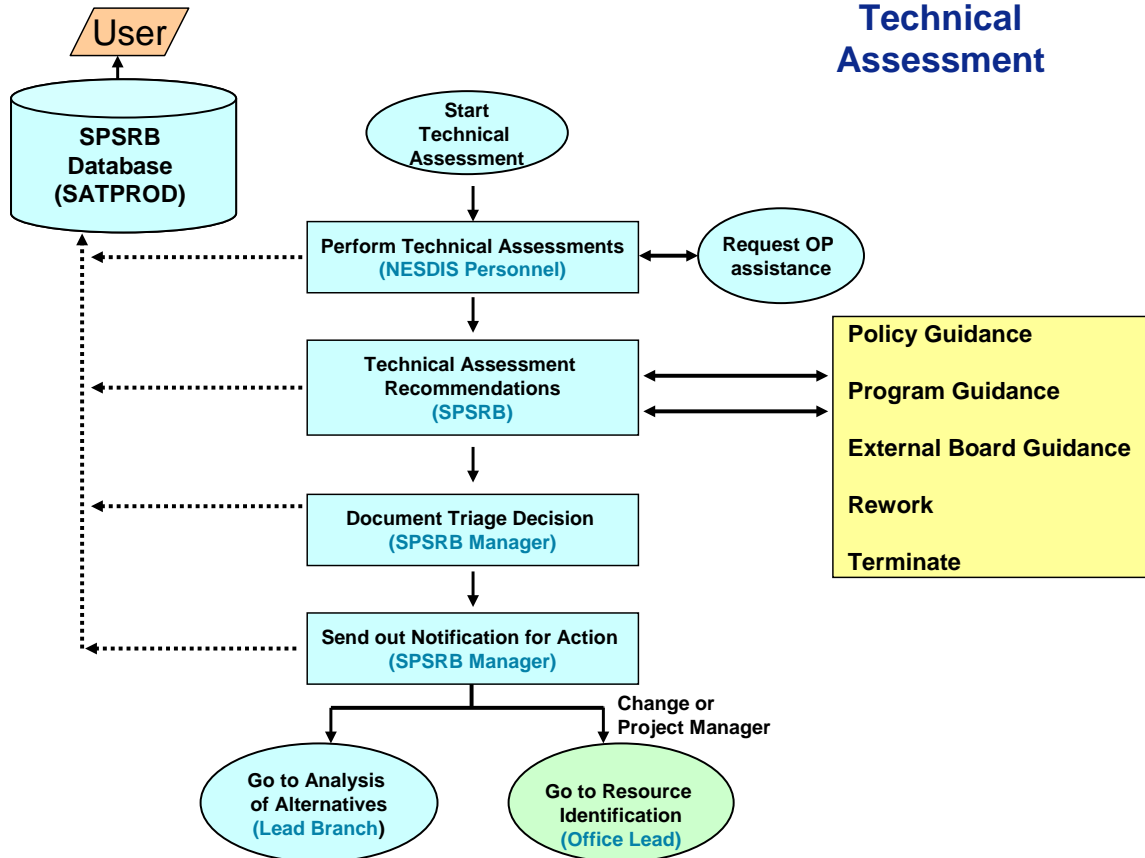


Figure 4: Technical Assessment process led by the SPSRB Manager and performed by the SPSRB with assistance from Oversight Panels

The SPSRB Manager kicks off the technical assessment process by entering the request for an assessment in the secure SPSRB web database. Assessments are then performed by STAR, OSDPD and OSD. Once the assessments are complete, the SPSRB Manager then leads the technical assessment discussions at the SPSRB meeting.

There are number of courses of action that can be taken from the SPSRB:

- (1) User requests may be terminated or returned to the user for further clarification.
- (2) The user request may require policy guidance from a higher board, like the SPSRB or NESDIS Executive Board (NEB).
- (3) If the technical solution is a simple modification (such as a format change in OSDPD or updated product coefficients or other straightforward scientific adjustment for STAR) to an existing capability, the request will be sent to STAR or OSDPD as appropriate and treated as a configuration change request. For all change management requests, the SPSRB manager will ask STAR or OSDPD to provide an estimated completion date and inform the SPSRB Manager when the project is complete. Such change management requests will not go through all the steps described in this document, but will be tracked through standard change management processes until completed. Once completed, OSDPD will notify the SPSRB. The SPSRB manager will update the SPSRB database and user.

(4) If the technical assessment determines the request can be addressed through an existing program or project effort, the request will be sent to the appropriate project lead (PL). The SPSRB Manager ask the PL to perform a project assessment concerning whether it is appropriate to address the requested development effort under their project. If it is appropriate, the PL will be asked to provide a schedule for implementation and asked to update the completion of the project to the SPSRB.

(5) If the technical assessment determines that additional research is needed before we can commit to go onto a proposal for a new or improved product development step, then the SPSRB manager will forward the user request to the appropriate STAR division and request they update the SPSRB on the status of the research at future SPSRB meeting. Once it has been determined that research has progressed sufficiently and the product is ready for consideration for transition from research to operations, then next step will be followed.

(6) If the technical assessment concludes that a new or improved product development effort may be required, the SPSRB determines whether an Analysis of Alternatives (i.e., proposal for product development) is required or whether to proceed to the initial project plan step. In either case the SPSRB managers assigns a lead branch to perform an analysis of alternatives or initial project plan. The SPSRB provides the lead branch with their guidance and identifies personnel for the Integrated Product Team (IPT) and OP/POPs to be involved in the analysis. If archive requirement is validated, an IPT archive member will be identified. The SPSRB Manager forwards to the lead branch the user request and guidance to perform the analysis of alternatives.

During the final step of the Assessment phase, the SPSRB Manager updates the SPSRB database and informs the user on the status of their request.

3.3 Analysis of Alternatives

The purpose of the Analysis of Alternatives phase (**Figure 5**) is to identify viable technical solutions and to select/gain approval of the most cost-effective product development solution and implementation that satisfy the operational need.

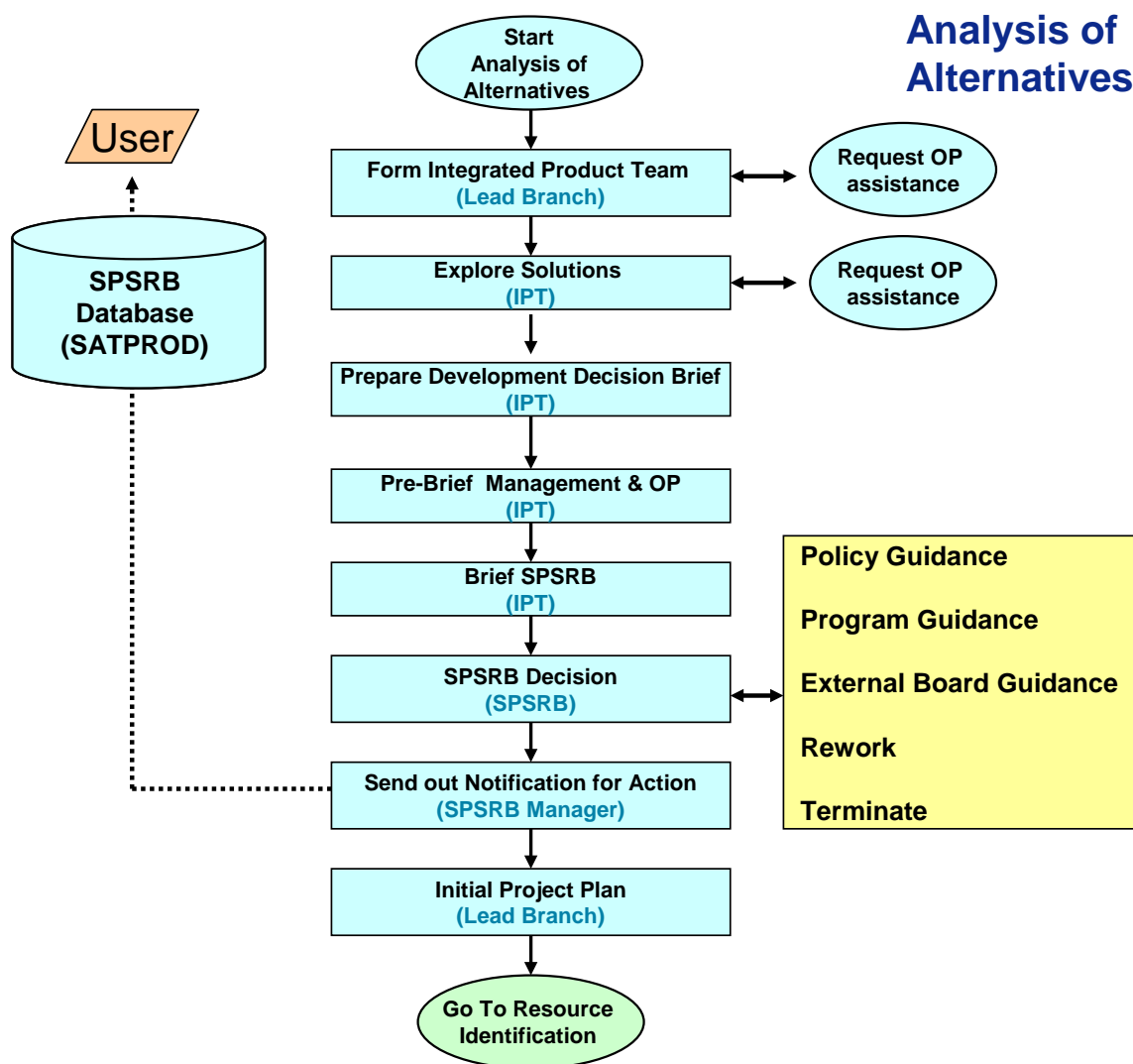


Figure 5: Analysis of Alternatives

The lead branch assembles NESDIS scientists, product area leads, and users as members of the IPT. If archive is required, a NESDIS data center member will be part of the IPT. The Lead Branch, IPT and OP/POP(s) explore alternatives. After all viable solutions have been identified and evaluated the lead branch leads the effort to draft an SPSRB “Proposal for Product Development” (see http://projects.osd.noaa.gov/spsrb/dec_briefs.htm for the briefing template). The lead branch reviews the proposal for product development and arranges for a pre-brief to the appropriate STAR and OSDPD division chiefs. After passing their division chief review, the lead branch arranges for the briefing to be presented at an SPSRB meeting.

If appropriate, the analysis of alternatives should assess resources required to archive the proposed product at a NESDIS data center. The Proposal for Product Development template needs to be updated to address this item.

There are a number of outcomes possible from the SPSRB:

- (1) The user request may be terminated or returned to the user with a request for clarification.

(2) The user request and/or proposal for product development may require policy guidance from management.

(3) If the product development research is not mature enough for transition into operations, the user request along with the SPSRB recommendations will be sent to STAR with a request to estimate when the research can be done and how long it will take.

(4) The SPSRB provides an endorsement or modifies the recommendation for product development. If the product development method is approved, then the following will be done:

a. The SPSRB Manager takes the appropriate actions to document the SPSRB decision in the database via the SPSRB web page.

b. If a proposal for product development is approved by the SPSRB, the Lead Branch will be directed to develop the “Initial Project Plan” and seek funding through the appropriate NESDIS Project Manager and/or NOAA Program Manager. The lead branch will use the project plan briefing template found at http://projects.osd.noaa.gov/spsrb/proj_plan.htm. The project plan will be approved by the Office Lead for the project and coordinated with OSD, STAR and/or OSDPD as appropriate.

In all possible outcomes, the SPSRB Manager will update the SPSRB database and update the user on the status of their request.

The “proposal for product development” will be attached to the user request and placed in the SPSRB database, so any one querying the user request can view this briefing.

Management will be able to query the SPSRB database and generate reports related to user requests. For example, a report on all polar-orbiting or geostationary satellite related proposals approved by the SPSRB and seeking funding could be generated.

The SPSRB will define a project priority using a “to-be-determined” methodology. Products receiving a high enough priority or a user commitment to ensure its execution will move to the next step: resource identification.

3.4 Resource Identification

The purpose of the Resource Identification step (**Figure 6**) is to identify the resources needed for the product development, long-term maintenance and archive. Since the SPSRB has no funding authority, normally the SPSRB will recommend that a project plan briefing be sent by the lead branch to the appropriate NOAA Program Manager and/or NESDIS Project Manager(s) for funding consideration.

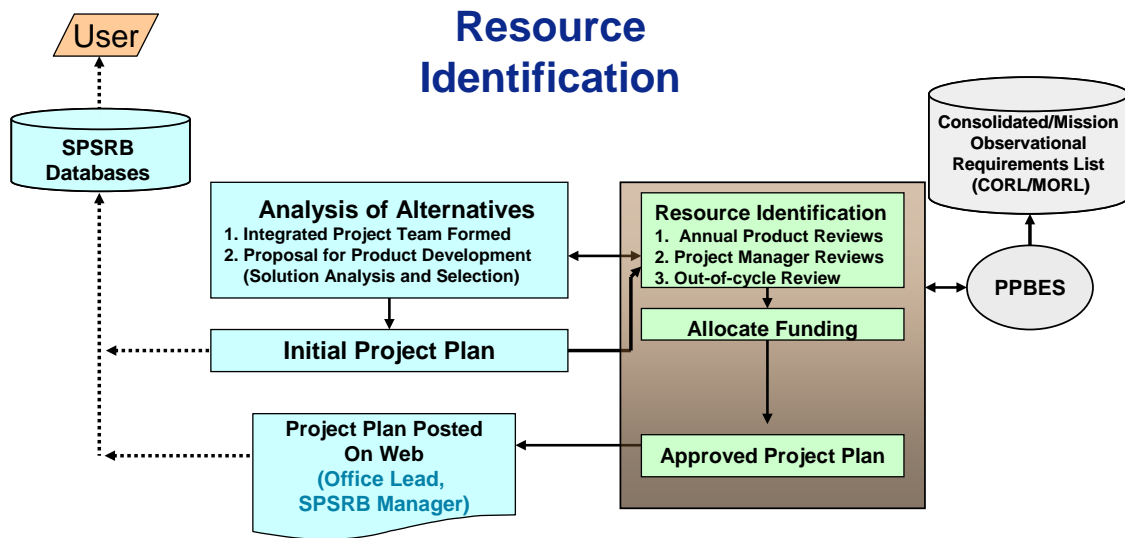


Figure 6: Resource Identification

Resource identification is critical and a complex step. The primary NESDIS funding sources for product development are:

- a. STAR base (e.g., Ocean Remote Sensing, etc.)
- b. OSDPD base (e.g., non-NOAA Satellite Products, etc.)
- c. OSD's:
 - (1) Polar-Product System Development and Implementation (Polar-PSDI)
 - (2) Geostationary-Product System Development and Implementation (Geo-PSDI)
 - (3) GOES Improved Measurements and Product Assurance Plan (GIMPAP)
 - (4) POES and GOES Ground Systems
 - (5) NPOESS Data Exploitation (NDE)
 - (6) GOES-R

Proposed project plans are reviewed every August at the Annual Review for Satellite Product Development. This review is the primary means for determining which satellite development projects are funded. Projects proposed for transition from research to operations are reviewed. An Executive Board made up of STAR and OSDPD deputies, and program manager with product development funds meet after the annual review and determine the funding allocations for the next fiscal year. The Executive Board also provides guidance for modifying proposed projects. The NESDIS Satellite Product Manager works with project leads to finalize the project plans. Once the project plans are finalized they are frozen for a year and the project leads begin the process to submit purchase requests and the product development process begins.

Prior to committing resources the office and/or project lead will transform the recommended implementation solution approved by management into the final “Project Plan”. A goal is to have a project plan for all new and enhanced product development efforts responding to a user need that involves a transition from research to operations. These project plans will describe how development will transition from research into operations and will be updated at least annually.

An IPT lead or Project Lead will be responsible for the development of a product with oversight provided by the lead branch and appropriate OP/POP.

Once resources have been identified, the NESDIS Satellite Product Manager will update the SPSRB Manager. The Manager will update the status of user requests within the SPSRB database and generate an email message updating all parties, including the user, on the status of the request.

The NESDIS Satellite Product Manager will ensure that the “project plan” briefing is kept current.

3.5 Product Development

The purpose of the Product Development step is to develop and implement the approved technical solution in accordance with the defined product or service capability, requirements, cost, schedule and performance parameters.

Product Development

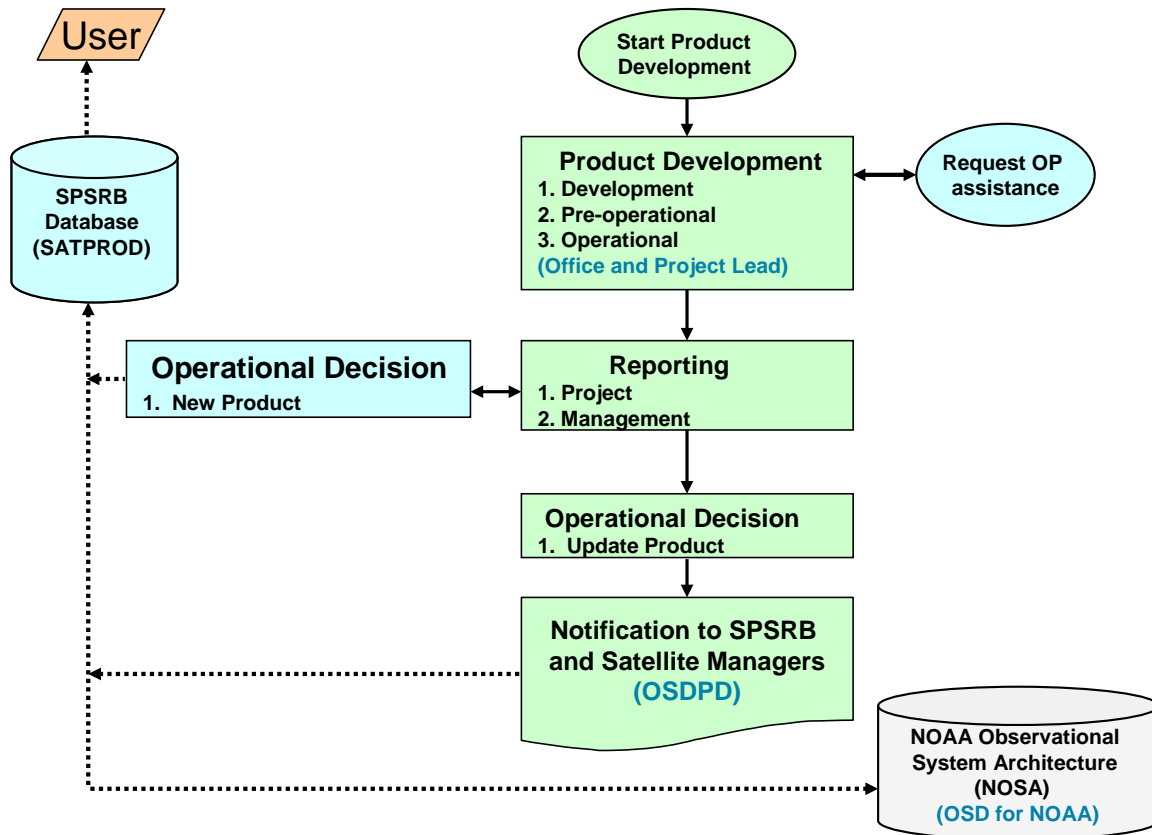


Figure 7: Product Development

Product development proceeds through three phases: development, pre-operational and operational. The tasks under each phase can vary because the level of effort for a new versus an enhanced project can be quite different. The tasks described below should be considered by project leads as they progress through their development efforts.

Development Stage

The IPT uses the Project Plan as the basis for directing and tracking all major tasks for the Development phase milestones as defined on the Product Development Certificate. Major tasks to be accomplished during this phase include:

- IPT Lead informed to begin product development
- Initial Archive Requirements identified
- Quality Monitoring Concept Defined
- Long-term Maintenance Concept Defined
- Preliminary Design Review
- Development processing system defined
- Initial Information Technology (IT) Security concept defined
- Test case processed
- Critical Design Review
- Code is prepared for implementation

- Final Archive requirements identified
- Operational and backup processing defined

In this step the initial and final archive requirements are identified. The initial data submission agreement questionnaire is drafted by the OSDPD IPT member using the template found at http://projects.osd.noaa.gov/spsrb/arch_docs_temp_ex.htm and submitted to the archive requirements working group. This process should be modified in the future. The archive IPT lead should draft the initial data submission agreement during this stage of development. The final data submission agreement might be done in the pre-operational stage of development.

When a project is ready to transition from the Development Stage to the Pre-Operational Stage, the IPT lead will report the completion of the product stage through the bi-monthly reports to the STAR/OSDPD/OSD management team. The management team can assess whether the project has met the user's needs and all Developmental Stage milestones have been satisfied as required.

Pre-Operations Stage

This stage allows the IPT to begin routine processing for the purpose of complete testing and validation of the product. This phase also allows for limited beta testing of the product by selected users. User feedback is then used to help refine the product and ensure product formats are documented properly and are compatible with defined requirements. Tuning of coefficients, if required, may also occur during this phase. The IPT uses the Project Plan as the basis for directing and tracking all seven Pre-Operations Stage milestones as defined on the Product Development Certificate:

- Operational and backup processing capabilities in place
- Final IT Security Concept Defined
- Pre-operational product output evaluated & tested
- Code transitions to operations; all documentation is complete
- Operational and backup capabilities reach ops status
- Brief SPSRB capability is ready to go operational

When a project is ready to transition from the Pre-Operational Stage to Operations Stage, the IPT lead will report to the STAR/OSDPD/OSD management team through the bi-monthly reporting process. The management team can assess the operational readiness of the project including the completion of evaluation and testing, transition of all software code; completion of documentation; and the validation that operational and back-up capabilities are functional as required.

Operations Stage

OSDPD will make the decision to transition enhanced products into operations. Once the OSDPD division chief approves the enhanced product for operations, the OSDPD IPT lead will notify the SPSRB Manager and OSD Satellite Product Manager. The SPSRB Manager will update the user request and the SPSRB database. In the near future, the SPSRB database will be able to generate reports on the enhanced products that went operational.

For new products STAR/OSDPD management will jointly work with the IPT's to make the final decision on whether products are ready to be transitioned into operations. With STAR/OSDPD management team approval, the IPT prepares and presents a SPSRB decision brief using the briefing template "Declaring A Product Operational" found at http://projects.osd.noaa.gov/spsrb/dec_briefs.htm. The SPSRB secretary will invite end users to participate in the SPSRB briefing, ensuring user satisfaction and feedback can be given in the operational decision. This briefing gives the SPSRB an opportunity to assess whether the project has met the user's needs, the user is prepared to use the product and the product can be supported operationally by OSDPD. The IPT uses the Project Plan as the basis for directing and tracking the Operations Stage milestones as defined on the Product Development Certificate:

- SPSRB declares product operational
 - SPSRB Secretary/Manager update the SPSRB product metrics web pages
 - OSD updates Satellite Products database

The SPSRB endorsement to transition the product to operations alerts the SPSRB Manager to perform the following steps: 1) update the SPSRB Database; 2) provide feedback to the user; and 3) provide an update to the NOAA Observational System Architecture (NOSA) database.

The user may provide feedback on the new product. If the user identifies a significant new requirement or a desired enhancement to an existing product, the user will be asked to submit a new User Request Form and the process begins again.

Reporting

Reporting is usually done at project and management levels.

Project Reporting: Project leads within STAR and OSDPD normally request updates from their contractors on their development efforts. This can be weekly or monthly reports and are used to track the progress on contract efforts.

OSDPD/STAR/OSD Management Reporting:

The STAR/OSDPD/OSD management team developed a process to report the progress of all product development activities on the secure SPSRB web page. The IPT leads within research and operations office provide an update on their project plan execution and status. The appropriate OP/POPs will be kept informed through these management reporting updates. These project updates are essential for the STAR/OSDPD/OSD management team to ensure the IPT's meet cost, schedule, performance and final capability criteria as defined by the project plans.

For all active projects the product phases are entered into the SPSRB database by the NESDIS Satellite Product Manager and the STAR and OSDPD project leads provide a red/yellow/green assessment of cost, schedule, capability, performance and overall for each product development effort. When the effort is assessed to be yellow or red, the project lead will explain the issue, courses of action they are exploring to resolve the issue and when appropriate the recommended course of action. STAR/OSDPD/OSD management team periodically meets to review product development status and provide assistance and guidance

when appropriate. The management team will also track and validate all steps of the product development certificate for each project is completed.

SPSRB Emergency Response Process

Occasionally events or requirements may require an expedited SPSRB process. Examples might be when upper management directs a product development occur quickly, fallout funding is available for product development, etc. These situations will be classified as “emergency response” events. In emergency response events, the SPSRB processes can be streamlined through use of email and special meetings. However, the key processes (e.g., technical assessment, solution analysis, product development, etc.) will be followed as time permits. SPSRB co-chairs will identify if a situation warrants an emergency response.

4. NESDIS Program/Project Management Developments and the SPSRB

Larger NOAA projects, such as NPOESS and GOES-R, assign product development responsibilities to a NESDIS project manager. These project managers respond to validated requirements and identify resources and shortfall through the NOAA Planning, Programming, Budgeting and Execution System (PPBES) process.

NESDIS project managers should keep the SPSRB involved and informed on satellite product development efforts. In addition, NESDIS project managers can use SPSRB tools in defining and overseeing their acquisition efforts. For example, the SPSRB can help project managers by developing “Proposals for Product Development”. When project funding has been identified for product development, the SPSRB can help oversee development by ensuring that Project Plans are developed. Bi-monthly updates to the STAR/OSDPD/OSD Management and updates to the SPSRB can be an effective management oversight tool that will help transition products from research into operations.

SPSRB User Requests falling under a NESDIS Project Manager’s responsibility will be forwarded to the appropriate project manager. In addition, the SPSRB will request periodic product development briefings to the SPSRB.

5. Product Divestiture or Retirement Phase

The purpose of the Product Retirement or Divestiture phase (**Figure 8**) is to identify products that are no longer needed and can be terminated or the responsibility for production can be divested or transferred to another organization. This process provides for the opportunity to obtain user feedback and for the evaluation of that input by several levels of management and key decision-making points leading either to the cessation or transfer of the production of that product or service.

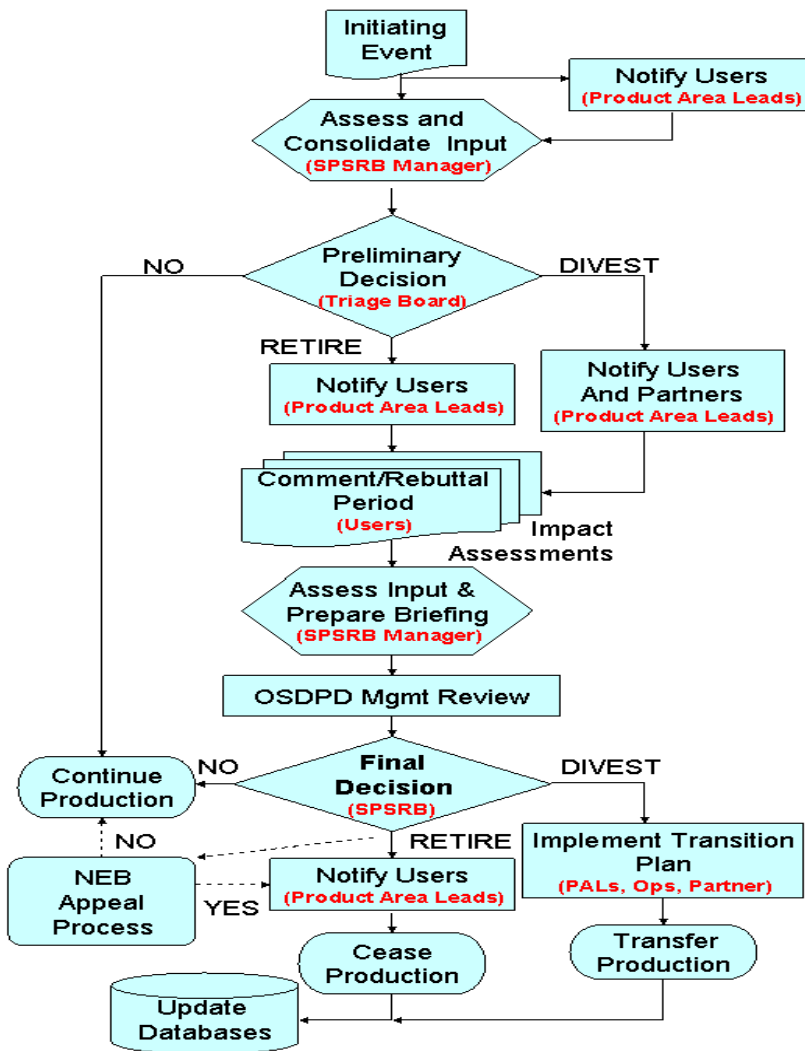


Figure 8 – Product Divestiture or Retirement Phase

5.1 Initiation of the Retirement/Divestiture Process

There are three broad categories of initiating events that may lead to a recommendation for product retirement or divestiture. These include: system-driven, user-driven, and fiscally-driven events. System-driven events include the failure, upgrade, or replacement of a satellite platform, satellite instrument or IT system. User-driven events result from evolving or new user requirements. Fiscally-driven events are those that necessitate ceasing or transferring production based on limited resources or changing organizational missions. It is recognized that for each initiating event, there must be a responsible party and criteria for originating a specific product retirement or divestiture process. Responsible parties may receive recommendations for product retirement and or divestiture from any entity in the SPSRB process including the user, OP’s, Product Area Leads (PAL’s) and scientists, program managers, NESDIS Data Centers, STAR/OSDPD/ OSD management and internal or external oversight boards. Descriptions of initiating events and responsible parties can be found below in Table 1.

Initiating Event	Initiating Criteria	Responsible Party
System-driven		

Satellite instrument failure	Degradation or unavailable data	OSO; STAR; OSDPD
Satellite platform failure	Unavailable data	OSD; OSDPD
New satellite instrument/ platform	New and possibly improved data	OSD; STAR; OSDPD
New, improved product	Improved quality; new algorithm; new parameter	OSDPD; STAR
New IT systems	New production system	OSDPD
User-driven		
Annual product re-validation	Revalidate original user requirement; continuous customer satisfaction plan	OSDPD
Objective product-use metrics	Metrics indicate no interest in product by user; continuous customer satisfaction	OSDPD; STAR
Established decommissioning date	Agreement with user for divestiture or retirement	OSDPD
Fiscally-driven		
Reduction in fiscal or personnel resources	Annual ORF funding not adequate; automation of products realized	OSDPD
User ceases funding for production	PPBES or external product development/implementation funding not realized or terminated	OSDPD
Not part of mission	Re-focus of assets; identical product produced by other agency	OSDPD

Table 1

Responsible parties will initiate a retirement/divestiture request through the use of a web-based form on the SPSRB web page much the same as the product User Request Form. The Retirement/Divestiture Request Form will require information such as the reason for retirement/divestiture, objective data supporting the recommendation, the responsible Product Area Lead (PAL), and the impact of the recommendation (resources saved, etc.). Product divestiture will require input from partnering discussions between OSDPD and the prospective production agency. It is envisioned that a divestiture commitment and transition plan will be required prior to submission of the divestiture request. In most cases, this transition plan will include details on the transfer of any necessary data, software, algorithms, and corporate knowledge to the partnering organization. Future enhancements to divested products will be handled via user request submitted by the partner organization. The SPSRB Manager will be responsible for checking the submitted Retirement/Divestiture Request Form for completeness and accuracy and making initial inquiries to the originator about the submission. The Retirement/Divestiture Request Form is then routed to OSD/STAR/OSDPD for technical review and comment prior to review by the SPSRB.

5.2 Preliminary Decision on Suitability for Retirement/Divestiture

This preliminary decision on the suitability for retirement or divestiture of a product will rest with the SPSRB. The SPSRB Manager will present any retirement/divestiture inputs including OSD/STAR/OSDPD management review comments to the SPSRB.

Depending on the SPSRB decision, one of three paths will be taken next. If the Board determines that there is not sufficient justification for the process to continue, the SPSRB Manager will close the tracking item and notify the initiating party of the Board's decision to continue production. This notification should occur within 5 working days. If the Board votes for retirement and/or divestiture then the next step in the process is to notify users and to obtain user feedback on the impact of retiring or divesting of the product.

5.3 User Notification and Impact Assessment

Feedback will be obtained from two groups of users: primary and secondary users. Primary users are those customers that are well-known to the Product Area Lead (PAL) and may very well be the originator of the product's User Request. Most likely, primary users will be NOAA or other Government organizations. Secondary users are those users who utilize the product but may not be known as users by the PAL. This lack of awareness is often attributable to distribution methods such as web pages or ftp sites that lack accountability. In the case of primary users, the PAL, having been notified by the SPSRB Manager of the intent to retire/divest of a product (ideally within 5 working days of the Board's decision), will contact the primary user(s) of the product and inform them of the intent to retire/divest the product. At that time, the PAL will inform the primary user(s) of the reasoning behind the intent and direct them to the SPSRB web site to fill out a Retirement/Divestiture Impact Assessment form. The PAL will also inform the primary user(s) that they have 30 days to complete the Impact Assessment and that no input by the end of that time period will be construed as consent to retire/divest the product.

In order to ensure notification to secondary users, an announcement of intent to retire/divest the product will be placed on the appropriate OSDPD and NESDIS Data Center web pages. The announcement will include a link to a page within the SPSRB web site that includes amplifying information (i.e. why retiring/divesting, replacement product or new producer for product, etc.) and also a web-based form that users can use to provide an Impact Assessment on the decision to retire/divest of the product. This announcement and amplifying information page should be posted within 10 working days of the SPSRB decision. The responsible party for this action is the PAL, who will be provided all relevant information by the SPSRB Manager within 5 working days of the Board's decision. In the case of divestiture, the PAL will liaise with the identified operational partner who has agreed to assume responsibility for the production of that product. The PAL will inform them of NESDIS' intent to cease production of the product and can point the operational partner to the SPSRB web site for submitting an Impact Assessment if they desire. In most cases, the coordination to transfer production responsibility to another agency should have already occurred.

At the conclusion of the 30-day Comment and Rebuttal period all Impact Assessments from both primary or secondary users will be collected by the SPSRB Manager, who will in turn review them for completeness and make any necessary inquiries to the submitting parties. The SPSRB Manager will transfer the information from the Impact Assessments, along with any supporting information from the retirement/divestiture initiation, into a Final Product Retirement/Divestiture briefing template for final review by OSDPD management.

5.4 Final Decision on Retirement and/or Divestiture

The decision to retire or divest a product will reside with the SPSRB based on the recommendation and presentation by OSDPD management. The SPSRB will decide to either continue production or retire/divest the product. A simple majority vote will carry the opinion of the Board. The SPSRB voting membership is the appropriate body for making this decision as it consists of representatives from the NESDIS satellite services organization, the NWS, and the NESDIS data centers. The NWS and NESDIS data centers are the foremost consumers of NESDIS satellite data and, therefore, have the greatest stake in the continued production or retirement/divestiture of a product.

One possible outcome from the SPSRB voting membership could be that they require additional information to make a decision. In this case, the SPSRB Manager will solicit this additional information from the necessary source. The SPSRB Manager will have 30 days to obtain this information and deliver it to the SPSRB. With the additional information in hand, the SPSRB should make all efforts to render a decision within 10 working days by proxy vote, if necessary.

5.5 User Notification and Implementation of Decision

The decision of the SPSRB will be carried out during the Notification and Implementation Phase. If the Board decides that the product in question should stay in production, the SPSRB Manager will close the user request action notify the initiating party of the decision.

If the decision of the Board is to RETIRE the product, the implementation of this retirement will occur within 30 days of the SPSRB decision. During this 30-day period, three actions must be completed.

- First, the SPSRB will notify all users, including pertinent NOAA Program managers, of the decision to retire the product. This notification will take two forms. First, within 5 working days, the SPSRB Manager shall notify the appropriate PAL of the decision to retire the product. The responsibility for notifying primary users will then shift to the PAL. The SPSRB Manager will also ensure that an announcement is posted on an appropriate OSDPD web page that informs secondary users of the plan to retire the given product on a specified date (30 days from the SPSRB decision date).
- Second, the SPSRB Manager will notify the appropriate point of contact within OSDPD to “turn off” the product. That individual will then assume the responsibility to ensure that the designated product is removed from production on the specified date.
- Third, the SPSRB Manager will update all necessary databases (i.e. SATPROD) of the product’s retired status. This step will occur on the specified retirement date.

If the decision of the Board is to DIVEST a given product, the implementation of this divestiture will also involve three actions that need to be completed. Two of the three will be similar to the retirement actions: the notification process and updating of databases. The actual divestiture will be more complicated as it will involve an organization outside the NESDIS umbrella. The responsible parties within NESDIS for coordinating the divestiture process will be the applicable PAL and an appropriate point of contact within the OSDPD operational organization. The SPSRB Manager will notify these individuals within 5 working days of the Board’s decision to divest the product. This notification will include applicable information on the organization who is assuming production responsibilities. The PAL and

OSDPD individuals will assume responsibility for ensuring a smooth transition of production to the new, external partner. It is assumed that the product transition plan, previously approved by both organizations, will specify a time period complete the product divestiture. It is recommended, however, that all parties strive to carry out the process in an expeditious fashion with a goal of completing the transition within 90 days of the SPSRB decision.

5.6 Appeal of SPSRB Decision

An appeal can be made to the NEB and further carried to the NOAA Observing Systems Council (NOSC) if the NEB elects to do so. The NOSC provides recommendations to the NOAA Executive Council (NEC) and the NOAA Executive Panel on requirements, architectures and acquisitions to meet NOAA, national and international observing needs. Appeals can be submitted only by NOAA Mission Goal Program Managers and the SPSRB Manager must validate the origin of the appeal. The appeal process must be initiated by the concerned party within 30 days of the SPSRB decision by notifying the SPSRB Manager of their desire for an appeal using a simple web form. This web form should contain the point of contact information for the originating authority, the reference number for the decision to be appealed, and space for the originating authority to comment on their reason for appealing the SPSRB decision. Once a request for appeal is filed, all retirement/divestiture activities will cease until a decision is rendered by the NEB.

The appeal process would involve taking the same information and briefing that was given to the SPSRB voting membership and have a designated member of the SPSRB present that information to the NEB. At that point, the NEB can request additional information to aid in its decision-making. The NEB is charged with deciding whether to uphold the SPSRB decision, overturn it or forward it to the NOSC for consideration. The NEB decision will be final and binding. All comments, discussion, and votes shall become a part of the permanent SPSRB record.

6. Critical Shortcomings in the Current SPSRB processes

- Automated SPSRB web processes
- SPSRB link to the resource identification
- Product development efforts not documented in Project Plans
- Archive processes
- Product development reporting
- Training of STAR and OSDPD staff

7. Roles and responsibilities (see appendix A)

8. Role of External NOAA Boards and/or Working Groups (see appendix B)

9. Link to Planning, Programming, Budgeting and Execution System (PPBES) (see appendix C)



Appendices

Appendix A – Roles & Responsibilities

Appendix B – Role of External NOAA Boards and/or Working Groups

**Appendix C – Link to Planning, Programming, Budgeting and Execution System
(PPBES)**

Appendix A: Roles and Responsibilities

SPSRB

- Co-Chaired by the STAR and OSDPD Office Deputies
- Voting Principals include the OSDPD and STAR Deputies, OSD Program Managers, NESDIS Data Centers and the NWS
- Provides overall management oversight and guidance on all new or enhanced product development and operational implementation projects in NESDIS
- Responsible for reviewing, assessing and validating user requests and requirements for new or enhanced products
- Responsible for final evaluation of technical feasibility of new or enhanced algorithms and potential products and services
- Provides management oversight and makes decision to approve and prioritize user requests forwarded to Analysis of Alternatives phase
- Makes decisions on product development solutions for new or enhanced product requests
- Makes decisions on suitability to transition a new or enhanced product into operations
- Provides final decisions on product divestiture or retirement

Management Team (OSDPD/STAR Division Chiefs)

- Responsible for providing management oversight for facilitating and implementing product development solutions; identifying resources for project support, and ensuring adherence to agreed cost, schedule and performance criteria during product development phases.
- Makes recommendation to transition new or enhanced product into operations.
- Conducts periodic joint reviews of operational products and services with users to assess product quality, set priorities for new/enhanced products and identifies potential products suitable for retirement or divestiture
- Reviews reports from IPT's on a **bi-monthly** basis (STAR & OSDPD)
- Provides project updates to SPSRB on **quarterly** basis organized by Atmosphere, Ocean and Land categories.

Oversight Panels

- Oversight Panels (POPs) are normally jointly chaired by an STAR scientist and OSDPD Product Area Lead
- Members include other scientists, contractors, representatives of other NOAA Line Offices, representatives of outside agencies, NESDIS Data Center representatives, OSD representatives, users and branch managers
- Provide end-to-end technical oversight for the feasibility assessment, development, and operational implementation of new, enhanced and existing satellite products
- Oversees the science quality of observing system performance within assigned product areas
- Serves as the science and operations technical authority for SPSRB, and IPT functions
- Supports emergency anomaly identification and correction
- Notifies the SPSRB manager and SPSRB executive secretary when division chiefs approve changes to OP co-chair assignments

- Reports to Branch and STAR/OSDPD/OSD management team
- Helps to identify potential IPT members to the lead branch and/or STAR/OSDPD/OSD management team
- Assists NOAA Satellite Program Managers with scientific and operational issues

SPSRB Executive Secretary

- Actively participates in the SPSRB process
- Works closely with the co-chairs, voting principals, the SPIWG Chair, the SPSRB Manager, the web page manager and the oversight panels
- Schedules meetings, room reservations, and telecon reservations
- Distributes calls for briefings and meeting announcements
- Moderates SPSRB meetings and coordinates audio/visual logistics
- Coordinates gathering and review of meeting material between speakers and SPIWG
- Prepares and posts meeting minutes
- Prepares and tracks action items
- Maintains list of current POP co-chairs on the SPSRB internet web site
- Announces recent news including delays in operational promotion of SPSRB-approved products, changes to staffing of POP co-chairs and SPSRB staff
- Provides backup for SPSRB Manager responsibilities and 2nd backup for SPIWG Chair responsibilities

SPSRB Manager

- Performs the initial assessment on all incoming SPSRB user requests by ensuring they contain the information required to perform technical assessments.
- Ensures linkage of all user requests and prospective new or enhanced products to NOAA mission goals and CORL/MORL
- Tracks all SPSRB requests for new and enhanced satellite-derived products and services through the SPSRB process
- Forwards user requests to SPSRB technical assessment leads for initial technical assessment, leads the technical assessment discussion and documents SPSRB guidance
- Forwards request to the appropriate lead branches to perform analysis of alternatives and solutions
- Ensures that solutions recommended for product development are sent to the appropriate NESDIS Project Managers for consideration for implementation.
- Keeps users updated on NESDIS actions to address their needs
- Tracks projects that are funded for product development
- Ensures the SPSRB web page request and project databases are updated
- Keeps the executive secretary aware of the user requests, so that backup may be provided
- Provides support to the Management Team and the SPSRB by tracking and reporting the end to end product development information needed to effectively provide long-term management oversight, including product divestitures/retirements
- Manages content of both the SPSRB internet web site and the SPSRB Request Tracking System and coordinates suggestions for development and maintenance with the web page manager and associated contractual support
- Provides backup for both the SPSRB Executive Secretary responsibilities and the SPIWG Chair responsibilities

Integrated Product Team (IPT)

- Assembled by the lead branch to guide product development project
- With guidance from the OP, submits a solution recommendation to STAR/ OSDPD management team review and approval
- Present Product and Service Development decision briefings to the SPSRB
- Guides development through the three product development stages (Development, Pre-Operations and Operations)
- Provides **bi-monthly** project updates to the STAR/OSDPD/OSD management team
- Represents the stakeholders in all phases of the product/service development and implementation life-cycle
- Provides technical continuity from the solutions analysis/selection phase through all steps in product development
- The IPT is disbanded once the product is declared operational

Web Page Manager

- Provides overall management of both the SPSRB internet web site and the SPSRB Request Tracking System (RTS)
- Manages contractual support for modifications to both the web site and the RTS

SPIWG

- Composed of STAR, OSDPD and OSD principals, SPSRB Executive Secretary, SPSRB Manager, and SPIWG Chair
- Develops recommendations to enhance SPSRB operating and reporting procedures, including development of templates for the SPSRB process
- Recommends changes to the SPSRB Charter

SPIWG Chair

- Schedules SPIWG meetings, room reservations, and teleconference reservations
- Distributes SPIWG meeting announcements and agendas
- Moderates SPSRB meetings and coordinates audio/visual logistics
- Gathers briefing material from any guest attendees
- Prepares and distributes SPIWG meeting minutes
- Prepares and tracks SPIWG action items
- Provides 2nd backup for both the SPSRB Executive Secretary responsibilities and the SPSRB Manager responsibilities

Appendix B: Role of External NOAA Boards and/or Working Groups

In each step of the SPSRB process, guidance may be required from external boards, working groups or other organizations.

NESDIS Executive Board (NEB)

The NEB provides financial oversight and guidance on executing the NESDIS budgets. In addition, the NEB establishes standard policies for NESDIS. Product life cycle decisions like the final technical assessment, the solution selection and any major product retirement may require briefing and approval by the NEB.

Archive Working Group (ARWG)

The ARWG establishes procedures, policy and guidance for archiving data at one of the three NESDIS Data Centers. Requests for archival services for all new or enhanced products must be coordinated with the ARWG. The ARWG processes are under development. The current procedures can be found at <http://arwg.nesdis.noaa.gov/>. Requests for archival services approved by the ARWG are forwarded for consideration by the NOAA National Data Center Directors. With their approval, a formal data archival submission request can be submitted by the IPT to ensure that an operational product is permanently archived.

Scientific Data Stewardship Committee (SDSC)

The SDSC is a NOAA level committee that establishes policy and guidance for archiving data with NOAA.

NOAA Observing System Council (NOSC)

The NOSC provides oversight and policy guidance on NOAA observing systems. Key SPSRB activities, such as NPOESS or GOES-R product development, may occasionally be briefed to the NOSC. No standard reporting requirements exist today.

Appendix C: Link to Planning, Programming, Budgeting and Execution System (PPBES)

The PPBES links NOAA's strategic vision and Program Mission Goals with budget development and annual operating plans. NOAA's Satellite Services Program incorporates five end-to-end capabilities required to provide continuous and critically needed environmental satellite observations. These observations support all five NOAA strategic goals (Ecosystems, Climate, Weather and Water, Commerce, Transportation, and Mission Support) and are vital to ensuring the safety, health and welfare of the nation. The capabilities of the Satellite Services Program are as follows: command and control of the spacecraft; ingest and processing of satellite observations; product research, development and readiness; operational production of products and services; and ensuring 24x7 operations. These capabilities allow for the Satellite Services Program to serve as a "bridge" between NOAA's Geostationary and Polar Satellite Acquisition Program and NOAA's Mission Goal Programs.

The SPSRB process, through the Resource Identification phase, links to the PPBES process by identifying funds required to support the development, implementation and long-term operations and maintenance of validated products. The SPSRB process is a critical piece of PPBES because it provides NESDIS with the tools and procedures to effectively manage the satellite products that in turn satisfy the satellite observational requirements of users within each NOAA Program. This product approval process includes the development and operational implementation of new or enhanced products and the retirement or divestiture of existing ones.