



NESDIS Satellite Data Product Strategic Changes:

Empowering User-Focused Value

NOAA
**Satellite and
Information
Service**

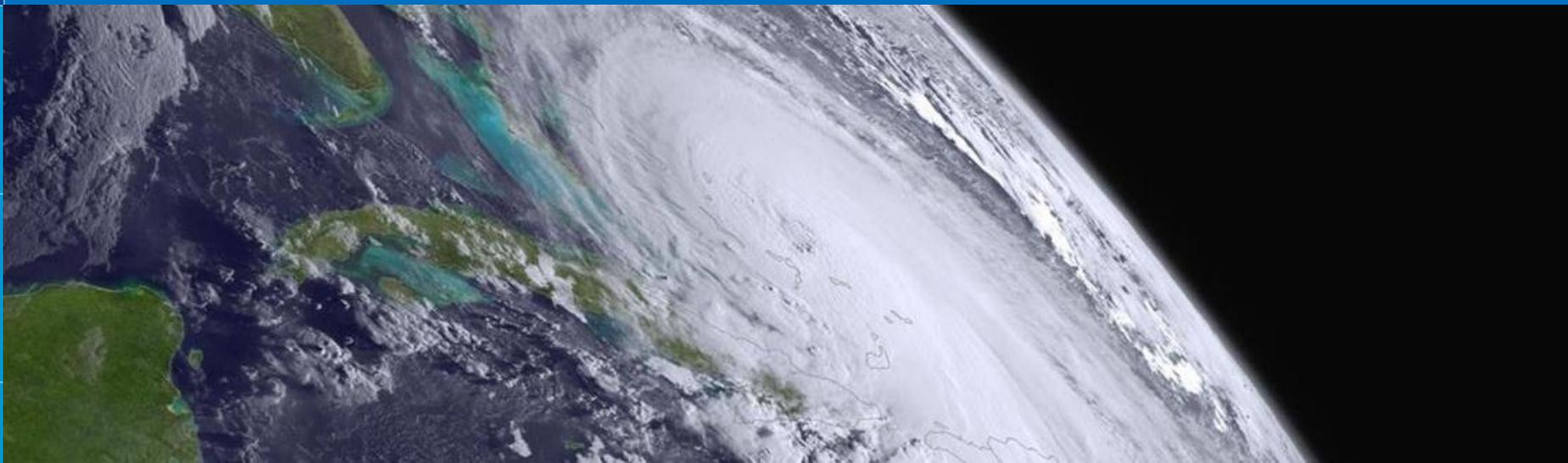
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Outline for Discussion

- Motivation for Product-Focused Change
- Requirements to Enable
 - NESDIS-Level Requirements
 - Product Baseline & Product Continuity 5 Year Plan
 - Impact-Focused Prioritization
- A New Way to Manage Centered Around Products
 - Product Portfolio Management
 - Enterprise Initiatives
 - Linkages to Users
- The Way Forward



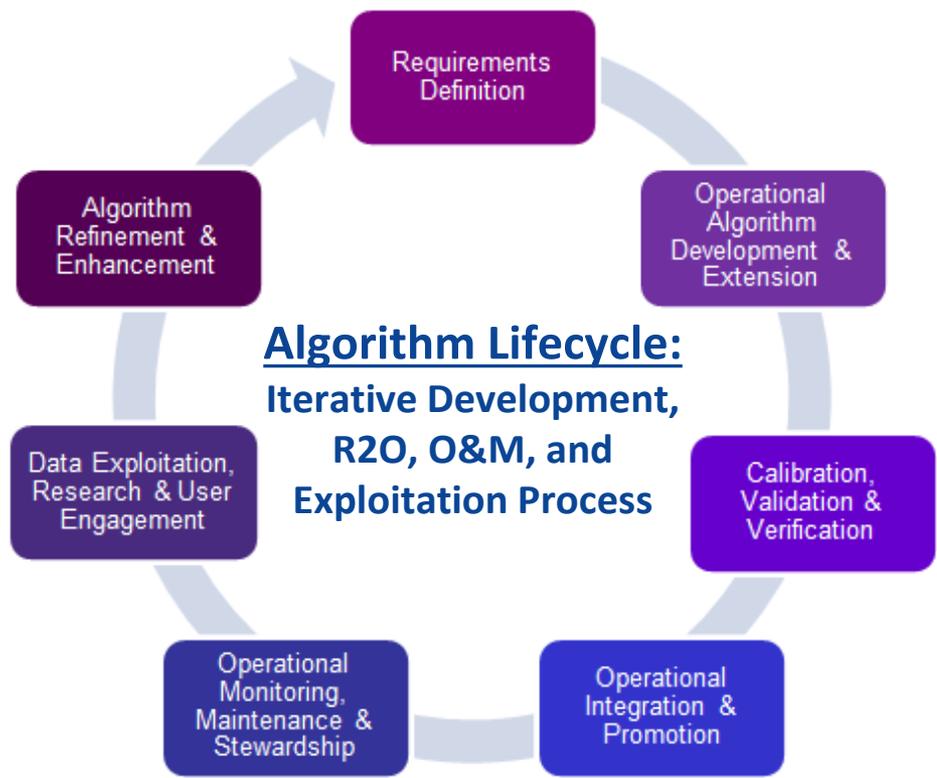
Motivation

- Sustained operational observations and data products are the drivers for NESDIS satellite acquisitions and stewardship functions
- User needs, new technological opportunities and scientific improvements change on an annual basis
- Therefore NESDIS needs a more agile, adaptive process to make the best products and services for its users and stakeholders

Satellite Mission Lifecycle



A Satellite has a finite life but a NESDIS Product is sustained





Enabling a Stable Products Future

NESDIS is changing how it creates products and services

- Flip the script - instead of defining the products after a new observing system is greenlit for development, think first to the high priority products that need sustainment and then align to observing system
- Define high-level requirements that enable sustained products without specification of implementation
- Creation of Product Portfolios to incentivize iterative development

Product portfolios will help NESDIS better support user needs:

- Allows NESDIS to link product decisions with supporting user impact
- Five-year planning horizon for products will ensure clear communication for stakeholder utilization
- Creates central teams support engagement with the users from the strategic NESDIS User Engagement Council to development reviews



NESDIS Level Requirements (NLR) Create Product Categories

Foundational

- Imagery
- Sensor Data

Geophysical

Atmosphere	Cryosphere	Land & Surface Hydrology	Oceans, Freshwater & Coasts	Space
Atmospheric Composition and Air Quality	Lake and Sea Ice	Fires	Topography and Bathymetry	Solar
Volcanic Eruption Characteristics	Snow and Glaciers	Flood	Surface Height	Heliosphere
Atmospheric Water Vapor		Surface Moisture	Water Temperature and Salinity	Ionosphere
Atmospheric Temperature		Surface Temperature	Biology and Biogeochemistry	Magnetosphere
Clouds		Vegetation	Water Pollution	
Precipitation				
Lightning				
Radiation Budget				
Tropical Cyclone Characteristics				
Winds				

NLR REQ-001: NESDIS will provide environmental data, information, products, services, and reports in the Foundational, Geophysical, and Analytical thematic product areas.

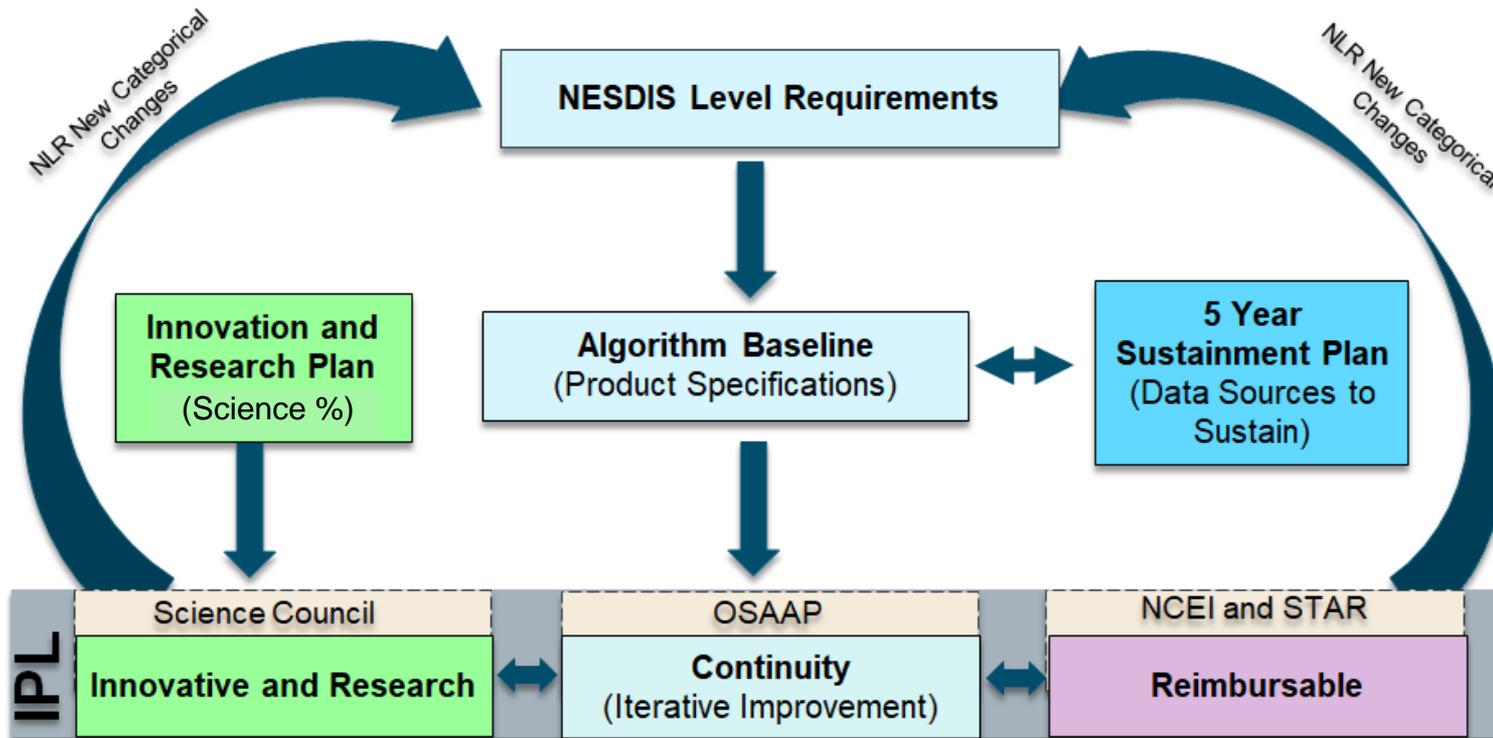
Analytical

- Climate
- Weather
- Oceans, Freshwater & Coasts





NESDIS Level Requirements Empower Product-Based Planning



The NLR and Baseline describe the types of products and associated level of service provided - implementation and priorities are aligned to budgets in the 5 Year Plan



The NESDIS Product Baseline & 5 Year Continuity Plan

- **The Product Baseline defines threshold level of service for NESDIS satellite and information products**
 - Defines threshold level of service commitment for NESDIS in perpetuity
 - Sets the foundation for the 5-Year Product Continuity plan threshold level of service NESDIS will provide for each product type around:
 - Geographic area of need
 - Refresh of data (time between observations)
 - Timeliness of the product (how old the data is)
- **The 5 Year defines the product sustainment strategy for the next five years based on user impact**
 - Specifies the data sources needed to sustain NLR and Baseline commitments
 - Provides the roadmap for the on ramps for new data sources and the off ramps/ retirements of older or redundant sources
 - Guides budget decisions and prioritization of products portfolios
 - Align low priority to a threshold level of service defined in the Baseline
 - Additional budgets and data sources to sustain higher priority products

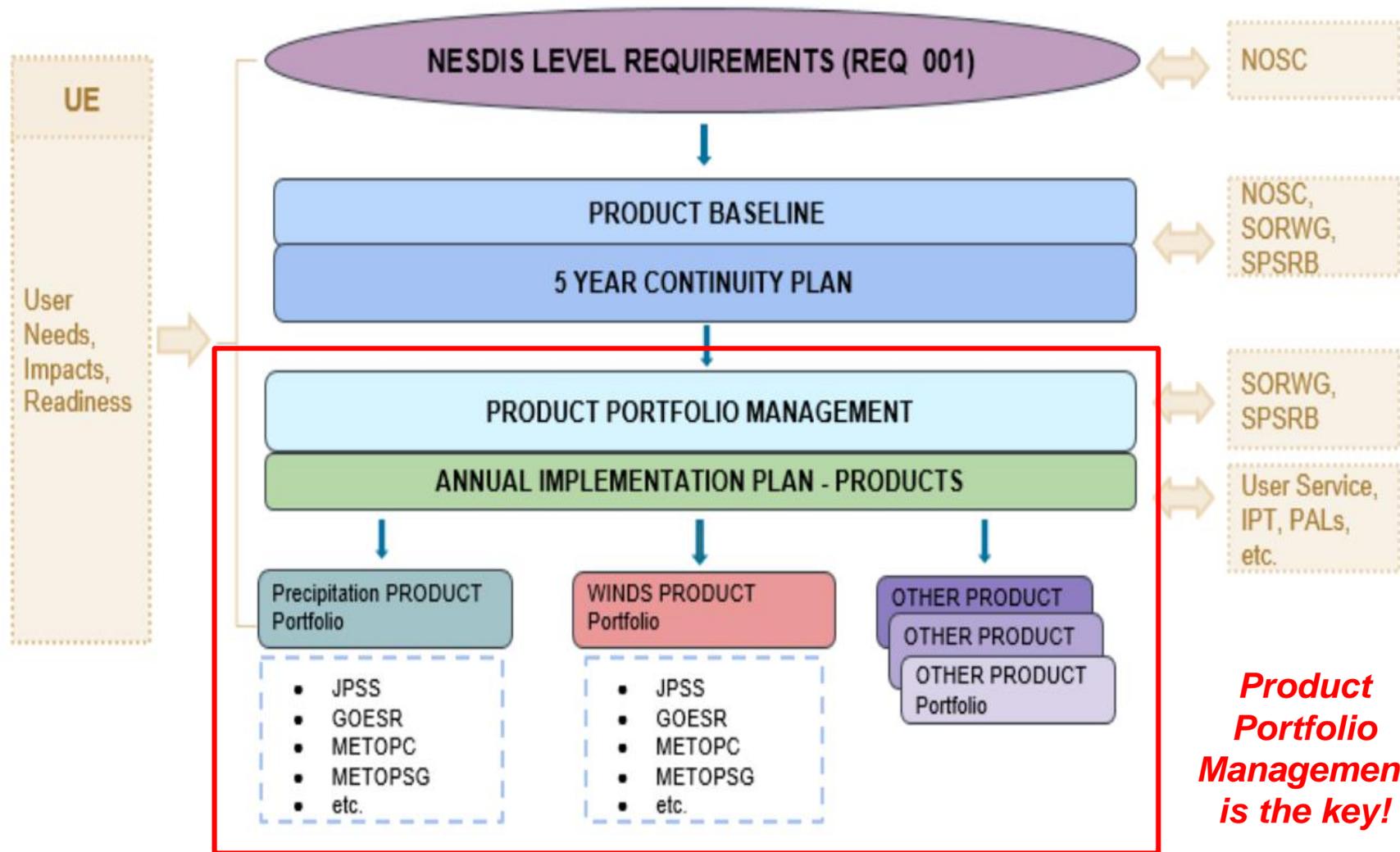


Product Priorities Based on User Impact

- **Prioritization should have a level foundation**
 - Impact-based priorities are derived from user impact studies
 - Users impacts must be categorized and prioritized against one another
 - NESDIS can leverage the user-impact priorities done by the TPIO NOSIA study
- **Prioritization should be across the entire NESDIS enterprise**
 - Develop the 5 Year Product Continuity Plan for all NESDIS products
 - Inclusion of all NESDIS products should be considered, beyond just satellite products
 - Priorities are of the product type, not the algorithm implementation or data source
- **Prioritization must be aligned to full product lifecycle budgets**
 - IT investment decisions will flow from support of product portfolio priorities
 - Create a portfolio management process that is reactive to changing user needs
 - The product sustainment recommendations will be prioritized and funding estimates/totals will be vetted internally and confirmed with the user community



Enterprise Products Management – How NESDIS Will Implement New Processes



Product Portfolio Management is the key!

Product Portfolio Management Team Coordination



- **User Engagement and Readiness**
 - Support NESDIS User Engagement Group:
 - Coordinate with the Data Management Working Group
 - Monthly status meetings to align projects with user readiness plans
 - Interface Coordination with IIA, satellite mission managers and NCEI developers
- **Requirements**
 - Guidance flows from NRL and NESDIS Baseline Requirements
 - Implementation strategy in Five Year Plan (updated annually)
 - Flows to mission Level 1 and science implementation requirements
- **Proving Ground**
 - Coordination with Program Scientists to ensure innovation has a clear pathway to operations and it is baked into planning
 - Prioritization of new innovative opportunities at the Annual Business Reviews
 - Assessment of R2O readiness and contribution to operational user needs.
- **Engineering**
 - Work with OSAAP to appropriately flow product requirements
 - Coordinated GOES R and JPSS management processes in FY 21
 - Leverage Satellite Products and Services Review Board (SPSRB) review and development standards

NESDIS Product Enterprise initiatives



01

Science Development

Ongoing, about 20% of overall development effort for next 5 years

- Calibration/Val of the new sensors
 - MTG, MetopSG, H9, GOSAT, Sentinel 3C
- SWFO Space Weather product formulation
- Refinement and evolution of existing continuity suite

02

Exploitation & Enhancement

- Expand on underutilized capabilities such as Hyperspectral IR radiance assimilation
- Continue migration to enterprise algorithms with a common science base

03

Integration & Tailoring

Ongoing, about 80% overall development effort

- Integration of new data into Enterprise Algorithm
- Tailoring of data/algorithm to run in the Cloud
- Optimizing algorithm for cloud environment

04

Migration to Cloud

FY 21-25, FY23 GOAL: 50% in cloud

- Migrating enterprise algorithm into Cloud computing environment
- Ingesting non-NOAA data source securely
- Retirement of on-premises systems

05

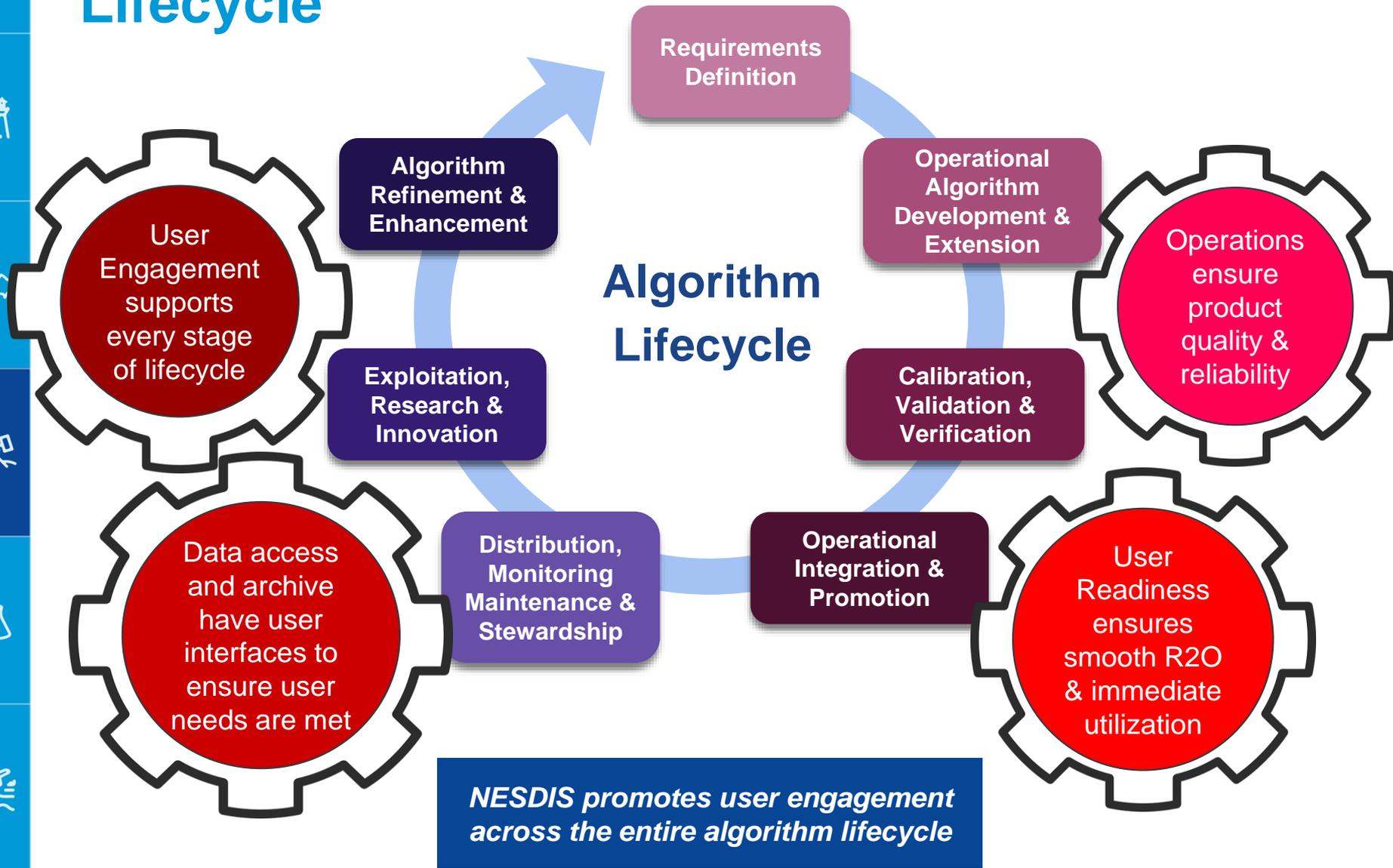
Sustainment & Operations

FY23 Goal: Stable Funding sources for lifecycle support

- Maintenance and long term monitoring of Orphan sensor data
- Regular algorithm updates to account for sensor aging and seasonal variations
- Full utilization of cloud computing services for product generation



The PPM Team Manages the Algorithm Lifecycle





The Way Forward

The overarching portfolio approach to managing products and infrastructure in order to efficiently and effectively support our operational users:

- Enterprise level user engagement and investment management
- Data management from a products vs. mission perspective to achieve data agnosticity
- Migration to a common cloud environment
- Link product/data decisions with supporting user impact
- Five-year planning horizon for products aligned to priority

Sustain a user-impact driven suite of products and services through innovation and iterative development on a NESDIS common cloud infrastructure



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Thank you

Please reach out to Kathryn.Shontz@noaa.gov and Walter.Wolf@noaa.gov with any additional questions

