

Agenda

- Review action items from October meeting
- Achievements and Milestones
- New Management Processes
- Self Evaluation
- Analysis of Alternatives (AoA)
- Work Plans
- 5 Year Budget and Resource Plan
- Plan Forward Assumptions and Risks
- Software Administration Move to PMO
- Software to be Released
- Quality Assurance and Control
- Questions

OOI 2.0 CI October Meeting: Risk Mitigation - Status

- ✓ Temporary extension of development resources to retain the expertise to cover majority of CI functions
- ✓ Grow 'in house' development resources and knowledge
- ⚙ Bring documentation up to a level where it's useful to on-boarding technical resources
- ✓ Build internal expertise in raw data preparation (MIOs)
- ✓ Coordinated approach across functional areas
- ✓ Establish process and procedures that foster collaboration across technical resources and stake holders
- ✓ Target high value tickets early
- ⚙ Develop repeatable method for system and data metric reporting
- ⚙ Introduce formalized and uniform data quality program

OOI 2.0 CI October Meeting Roadmaps - Status

- ✓ Tactical Roadmap: 2 – 3 months (Oct – Dec)
 - ✓ Stabilization
 - ✓ Self evaluation
 - ✓ High priority issues and defects
- ⚙ Tactical/Strategic: 4 - 5 months (Jan – May)
 - Data input prior to ingestion
 - Mature user interface for entering and maintaining data (asset management, recovered and cruise)
 - Raw data repository maintenance
 - Reduction of .csv and manual scripts, clean-up and redesign of storage for processing assets
 - ⚙ Data quality scripts, automation and reporting
 - ⚙ User Interface and website
 - ⚙ Documentation
- ⚙ Strategic
 - ⚙ Analysis of Alternatives (AoA)
 - ⚙ Version upgrades
 - ⚙ Data model redesign – analyze structure to simplify data maintenance
 - ⚙ Design and development of original mission critical requirements not currently implemented

OOI 2.0 Software Achievements

- Software

- Stabilization

- Cabled data replay with ability to target time
 - Ingestion heartbeat
 - Parser bad data detection and bypass (instead of stopping)
 - Data Portal query governor
 - Real-time ingestion monitoring
 - HYDBB data mapping in Data Portal

- User Interface

- Restructure of instrument data display
 - Simplification of filters
 - Introduction of site tour
 - Preview of data download size and time to delivery prior to committing to download

- Metrics

- Number of ingestions or data requests in queue
 - Number of particles entering the system on a 30 second interval
 - Tracking of Data Portal requests

OOI 2.0 CI Milestones

- New Processes
 - ✓ Formalized ticket review process at PI/PS/PM level
 - ✓ Data Management Working Group
 - ✓ Sub-group focus strategy
 - QARTOD
 - Communications
 - Redmine redesign
 - ADCP
 - ✓ Instrument approach strategy
- Strategic
 - ✓ PI/PS review of outstanding enhancements and requirements gap
 - ✓ Self Evaluation
 - ⚙ Analysis of Alternatives
 - ⚙ Over arching data flow diagram from instrument to user
 - ✓ Development roadmap

OOI 2.0 CI Ticket Review Process Details

- Redmine ticket review process
 - Enhancement and defect tickets will be stored in a google sheet for review and reference
 - All open enhancements have been reviewed
 - PMO disposition of new tickets will be reviewed every other week by PIs and PMs
 - Enhancements will be reviewed to determine if they are mission critical based upon published criteria
 - DDM will classify each new ticket as “Reject”, “Accept” or “Discuss”
 - The PI/PM team must review all Tickets marked “Reject” or “Accept” prior to scheduled review meeting
 - All tickets will be reviewed for completeness

Self Evaluation

- Controlled Document: ECR 1300-00634 was approved 4/17/19
- Used as input to the AoA process
- Research of document consisted of interviews, documentation review, Recommendations of 1.0 to 2.0, Deep dive into Redmine tickets
- Document was distributed for input and comments prior to ECR process
- Updates from feedback prior and after ECR were applied

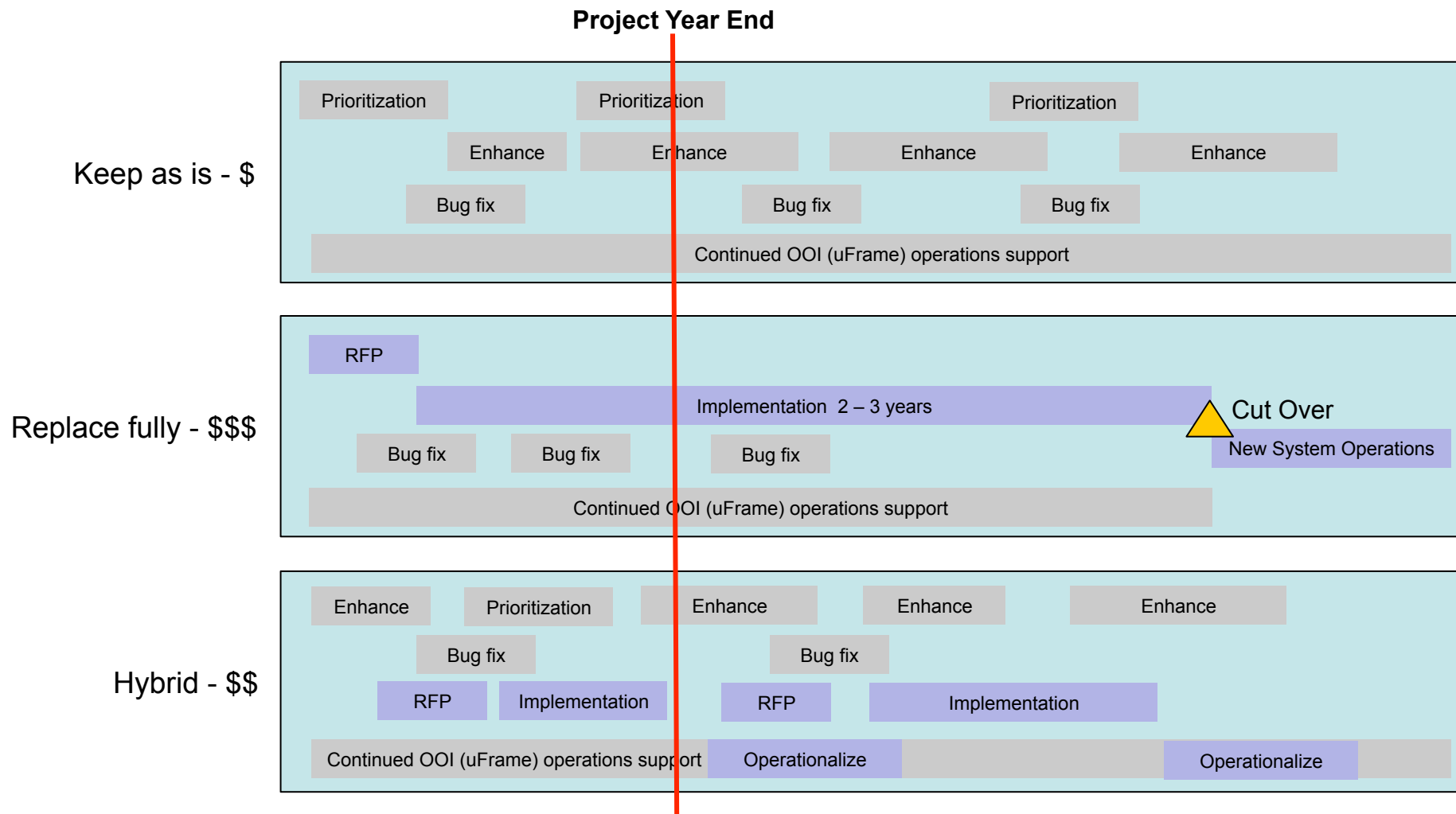
1 Mission	
Provides functionality as originally specified	Excellent
Communicates effectively to all OOI stake holders	Good
Available to scientists and enthusiasts of all levels	Excellent
2 Infrastructure	
Data is available on a consistent and reliable basis	Excellent
System is easy to maintain and extend functionality	Good
Technology is up to current standards and not at risk of being out of date	Excellent
3 Data Store	
Large breadth of data representing a wide array of instruments	Excellent
Data is easily entered into the system	Excellent
Data is available in a timely manner	Excellent
4 Data Delivery	
Data is easy to find and provides the user with a good experience	Good
There are multiple methods to retrieve the data	Excellent
Data consumption and analysis is flexible	Excellent
5 Quality	
The overall quality of the data is considered good	NA
There is a coordinated process to measure and communicate data quality	Needs Improvement
There is a plan in place to communicate data changes to the user community	Good

Excellent
Good
Needs Improvement
Poor
Fails to meet basic standard
NA
Unknown

Analysis of Alternatives

- Work to date:
 - Selected study participants. Evaluation team consists of 1 voting member from each IO, PMO and DDCI representation
 - Set scope, goals, roles and procedures
 - Determined evaluation criteria and socialized with program
 - Built list of alternatives (including OOI CI)
 - Researched alternatives – produced short list
 - Arranged vendor presentations
 - Determined list of alternatives to formally evaluate
- Current status
 - Documenting findings
 - Finishing evaluations
 - Determine recommendation(s)
- Recommendation report will be ready for June 15th
- Statistics
 - 34 vendors, technologies and reference resources researched
 - 6 will be measured by evaluation matrix
 - 7 have been determined not appropriate for replacement but good technologies to watch for future integration
 - 17 have been determined to not be a fit
 - 3 have a neutral status

AoA Implementation Timeline - Illustrative



CI Work Breakdown over 3 years

- 14,853 hrs of planned work
 - 5,353 hrs for mission critical enhancements, identified as mission critical by the PI/PS team (75 tickets as of 3/21/19)
 - 5,220 hrs for Redmine bug ticket remediation
 - Hours were estimated using the following formula $(194 \text{ bug tickets} \times .9) \times 30 \text{ hrs}$
 - The .9 represents a 10% challenge for duplicates and bugs that are OBE
 - The 30 hour estimate was derived by analyzing 23 bugs (12%) and the estimated effort to resolve them
 - 1,040 hrs - QA/QC: Development of QARTOD server, metrics tracking, corrective action and communications
 - 320 hrs - ERDDAP redesign and implementation
 - 800 hrs - Asset Management. AoA may impact this estimate
 - 800 hrs - Data Portal User Experience improvements. This includes a migration to a more modern platform, reducing complexity, improving maintainability and future proofing new features.
 - 520 hrs - Completion and release of key CI documents defining CI software and maintenance
 - Maintenance and system stability
 - 1,280 hrs - Upgrade of uFrame, underlying Free and Open Source (FOSS) applications, CentOS operating system and Python
 - 240 hrs - Raw data server restructure
 - 160 hrs - User metrics and system management dashboard
- Not included in the 14,853 hrs of planned work
 - AoA impacts – The estimations and/or the tickets being worked may change based upon the recommendations put forth by the committee by 6/15/19. If this is the case, a re-assessment of the work breakdown will be performed.
 - Disaster recovery and back-up strategy – estimate due July 1, 2019. PY2 or PY3 implementation based upon cost.
 - Archiving strategy – estimate in process. PY2 or PY3 implementation based upon cost.
 - Architecture improvements which increase stability and maintainability but do not necessarily add features and functions (ex. Parsers). These will be sized and presented for review, via the Redmine ticket review process, as opportunities present themselves.
 - Strategic research and projects to improve usability in the future (ex elastic search across platforms). These will be sized and presented for review, via the Redmine ticket review process, as opportunities present themselves.

Source: Redmine tickets, Functional Capabilities document and Data Integrator and Data Manager OOI 2.0 Recommendations

OOI 2.0 CI PY I Work Plan

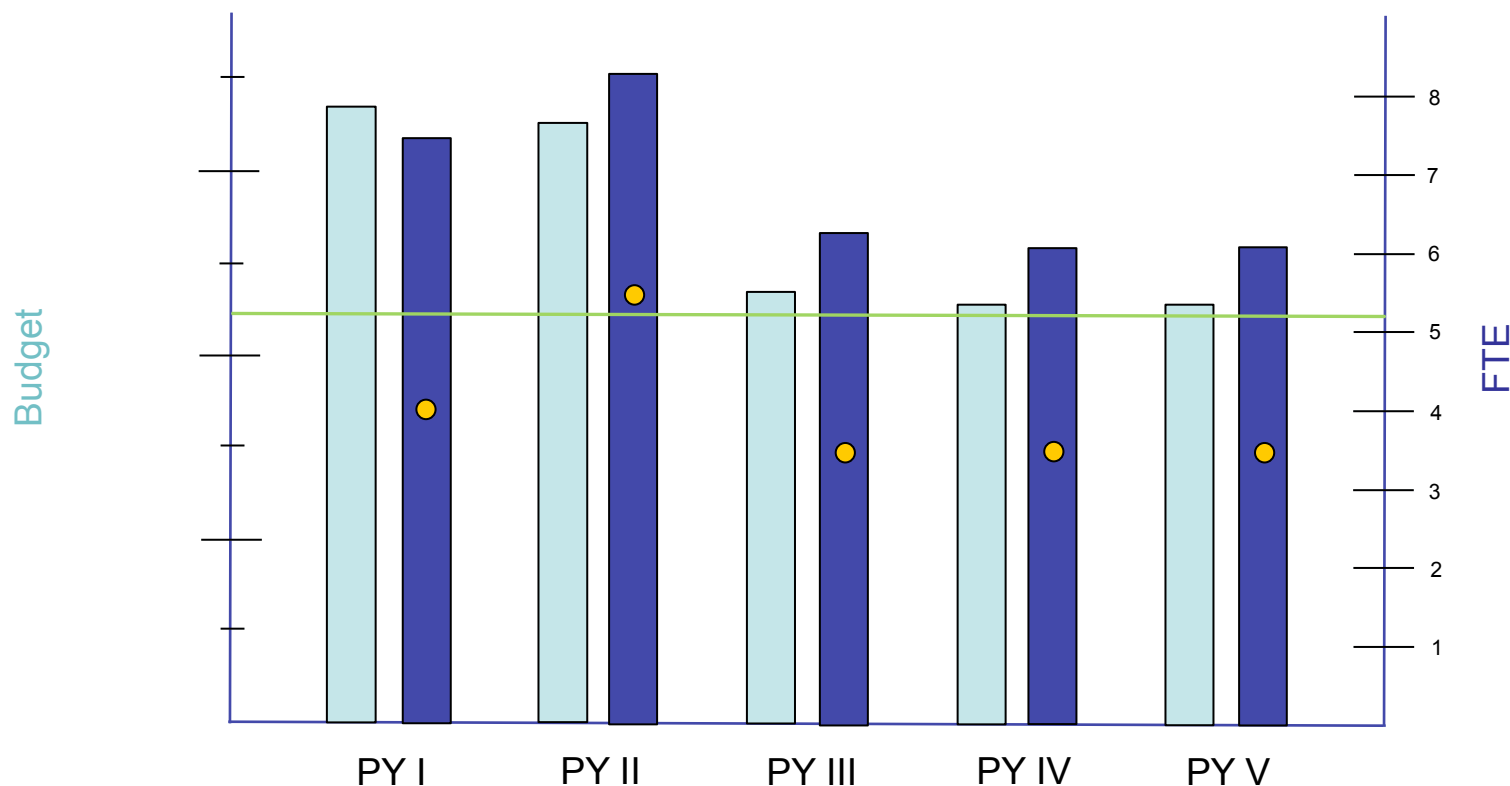
- Apply 2,586 hours to prioritized mission critical enhancements
 - 34 Redmine tickets from the PI/PS reviewed ticket list to include:
 - Acoustic file (HYDBB) processing and presentation
 - BOTP Data products
 - Multi-media extensions to Data Portal to display pictures, sound and videos in a searchable easy to use format
 - uFrame and Stream engine reporting enhancements
 - Non ticketed work (tickets will be added as work is planned)
 - QA/QC – implement tests and initial QARTOD server set-up
 - ERDDAP re-deployment
 - Metrics reporting
- Apply 986 hours to Redmine bug tickets
 - Instrument-based Approach
 - ADCP
 - PCO2
 - HYDBB/CAMHD
- 520 hours to complete and release marked documentation through CCB
 - 2100-10001 Software Subsystem ✓
 - 2100-10002 Database Overview
 - 2100-10051 System Maintenance Manual
 - 2100-10052 System Design Description
 - 2100-10053 System OPS Manual ✓
 - 2100-10000 CI System Overview
 - 2100-60030 Ingest Request Service User manual ✓
 - 2100-60001 Data Ingestion Procedure ✓
- Support hours

OOI 2.0 CI PY II Work Plan

- Apply 5,327 hours to prioritized mission critical enhancements from the PI/PS reviewed ticket list to include*:
 - Fill values (analysis completed in PY I)
 - Data Portal user experience improvements (analysis completed in PY I)
 - Annotation indicators
 - Asset Management improvements (analysis completed in PY I)
 - Data Management – be able to maintain database entries more flexibly
 - Digital Object Identifier (DOI) on raw data
 - QA/QC – continue implementing QARTOD logic and communicating QC results (dashboard)
 - Raw data annotations
- Apply 4,234 hours to bugs
 - Instrument Approach
 - Review QC output and coordinate fixes on an instrument by instrument focus
 - ZPLSC approach
- Support hours

* Note PY I work not yet entered into Redmine ticketed work is assumed to have been reviewed and ticketed

OOI 2.0 CI 5 Year Budget and Resource Plan



Legend: PY \$ Budget PY Total FTE PY Total Dev FTE PY I – PY V Original Budget

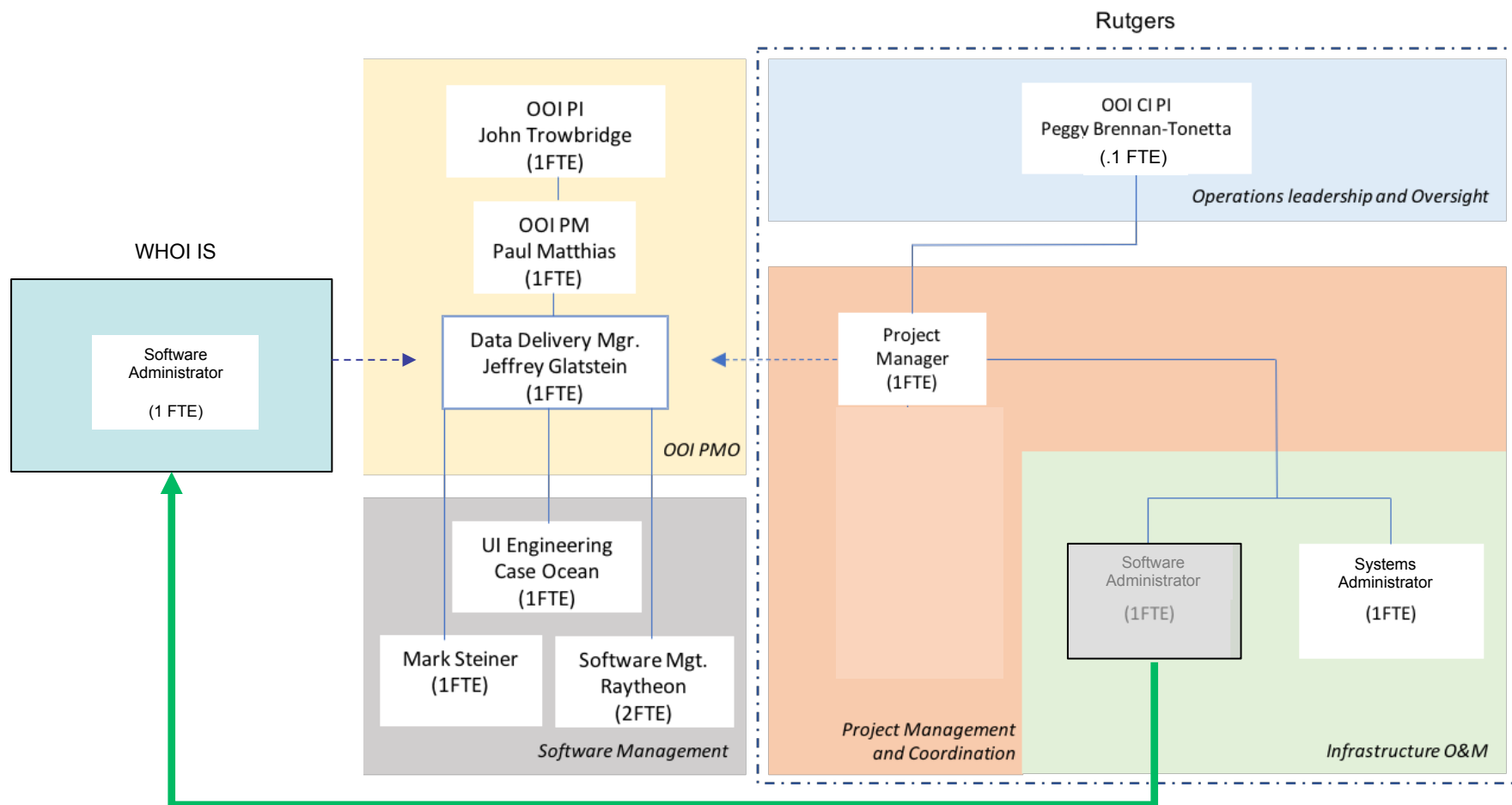
OOI 2.0 Plan Forward - Assumptions, Risks and Opportunities

- Assumptions
 - Enhancement list does not grow. All new enhancements will be approved through new review process.
 - Analysis of Alternatives (AoA) recommendations will require rework of plan and priorities if substantial changes are outlined. The impact could be across years.
- Risks
 - Resource loss and/or difficulties recruiting
 - Extensive operational tasks divert development resources
 - QA/QC process findings increase defect tickets significantly
- Opportunities
 - Replacement and/or enhancement of problematic areas
 - Asset management
 - User Experience
 - Quality
 - Reduce reliance on external resourcing
 - Introduce more modern technologies and reduce complexity
 - Quicker burn down of Redmine ticket backlog

OOI 2.0 Software Administration Move to PMO

- ECR 1300-00633 *Transfer scope & budget for CI Software Administration from RU to WHOI* has passed review and was approved by NSF 5/3/19
- CI Software administration transferred from RU to WHOI
- Transitioning
 - Software stack migration PY1 will include 18 packages supporting uFrame
 - Software stack migration PY2 will include 3 packages supporting work tools
 - Activities associated with migration are:
 - Software/System monitoring
 - Issue resolution
 - Physical migration of code
 - Upgrades and patches
 - User notifications
 - Asset management updates
- Benefits of change
 - Closer developer relationship with production events for support
 - Appropriate privileges to support issue research
 - End to end oversight will reduce latency of diagnosis and solution implementation
 - Advantages that a matrixed organizations brings

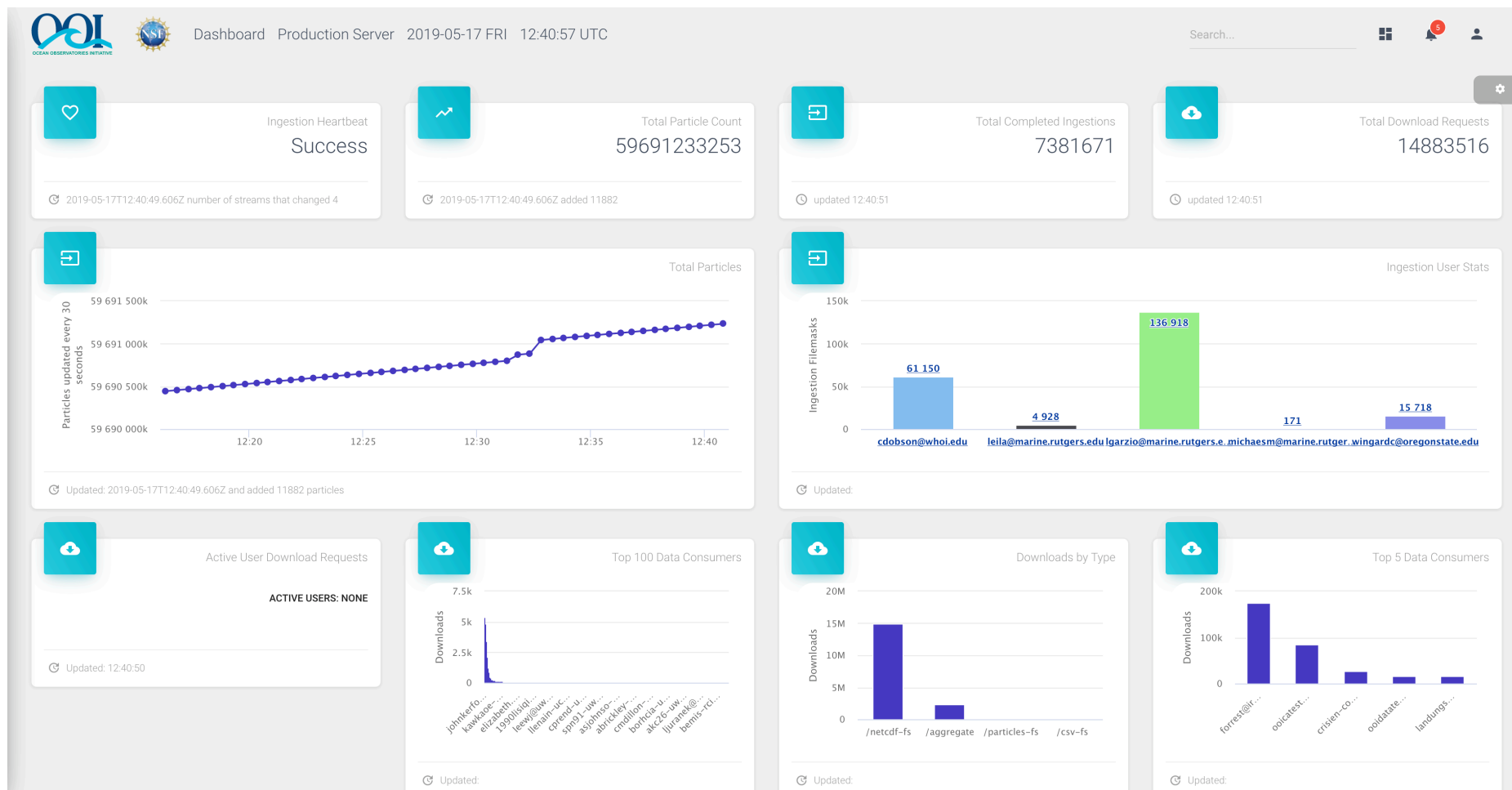
OOI CI 2.0 Organization



OOI 2.0 Software to be released

- June Release:
 - Tracking of actual data download size and time to deliver
 - Email of completion (or issue) to ingest owners
 - Track synchronous data requests
 - ADCP bin depth fix (collocated pressure)
 - CAMHD file mapping in Data Portal
- July
 - Metrics dashboard - Beta
 - Trend reporting - Tableau Proof of Concept (POC)
 - Data Portal stress test

OOI 2.0 CI Management Dashboard - ALPHA



Quality Assurance and Control: kick-off meeting January 2019

- Cross MIO, PMO meeting 2nd week in January 2019 at UW
 - Defined QA/QC
 - Document instrument lifecycle
 - Document testing processes
 - Establish common ship-based verification format
 - Metadata review and process
 - Mapped out data touch point using system level data flow diagrams
 - Determine data scope (L0,L1,L2)
 - Strawman corrective action and communication plans
 - Documentation plan
 - How to align with QARTOD
 - Review data touch points for CTD to drill down into specific measures and tests

Quality Assurance and Control – actions and decisions

- Decisions/Action items
 - Creation of working groups
 - Review and check existing metadata for accuracy
 - Instrument (CTDBP) iterative approach to program development
 - QARTOD ‘logical’ server to run common tests across all data
 - Common communication and corrective action plans
 - Review Alfresco and Git hubs to streamline information
 - Review and alter existing QA/QC documentation
- Working groups
 - QARTOD implementation
 - Determine relevant tests
 - Determine codes to be used
 - Outline stream and look-up values
 - Data Communications
 - Communications inventory
 - Mapped event to communication action
 - Determine information/code to store

Questions