

The logo for Tropical Pacific Observing System 2020 (TPoS 2020). It features the letters 'TPoS' in a stylized font. The 'T' and 'P' are blue, the 'O' is a globe with blue and orange bands, and the 'S' is orange. To the right, '2020' is written in white on an orange rectangular background.

Tropical Pacific Observing System

Project Execution Plan

March 2016
RELEASED, V3

Project Website: www.tpos2020.org

Document Control Sheet

Version	Date	Author(s)	Changes Overview	Approval
0-0	11/12/14	McCurdy/Smith	Draft	Not scheduled
0-1	12/10/14	McCurdy	Draft: prepared for initial review	
0-2	01/15/15	McCurdy/Smith	Edits made in preparation for Stakeholder Consultation	
2-1	10/01/15	McCurdy	Modifying Workflow and Adding Travel Reporting	
V2-2	12/18/15	McCurdy	Update Reporting and Transition	
V3	03/08/16	McCurdy	Update Org Chart	

Contents

1. Project Purpose	1
2. Project Structure.....	1
2.1 Distributed Project Office and TPOS 2020 Organization.....	1
2.2 Distributed Project Office and TPOS 2020 Work Flow	7
2.3 Project Authority.....	8
2.4 Distributed Project Office Members and Roles	3
2.4.1 Senior Project Manager	4
2.4.2 Project Scientist.....	5
2.4.3 Associate Project Managers (Secretariats).....	6
2.4.4 Configuration and Interactive Tools Manager	6
2.4.5 Resource Specialist.....	6
2.5 TPOS 2020 Governance Structure and Roles.....	2
2.5.1 Project Executive.....	2
2.5.2 Steering Committee.....	3
2.5.3 Resource Forum.....	3
2.5.4 Task Teams.....	3
2.5.5. Sub-Project Teams.....	3
2.5.6 Workshops	3
3. Project Planning and Control Elements	8
3.1 Work Breakdown Structure (WBS).....	8
3.2 Integrated Master Schedule (IMS)	8
3.3 Monthly Status Report (MSR).....	10
3.4 Annual Work Plan (AWP)	10
4. Project Management Activities	10
4.1 Schedule Management.....	10
4.2 Change Control Management	11
4.3 Risk and Opportunity Management.....	12
4.4 Engagement Plan Management.....	12
4.5 Communication Management.....	12
4.6 Configuration Management	13
5. Cross-cutting Project Execution Guidance	14
5.1 Data Management	14
5.2 Validation	16
5.3 Quality Assurance and Quality Control (QA/QC)	16
5.4 Transition to Operations	16
5.5 Operations and Maintenance	16
5.6 Deployment and Acceptance.....	17

Project Purpose

The TPOS 2020 Project will evaluate, and where necessary change, all elements that contribute to the Tropical Pacific Observing System (TPOS¹) based on a modern understanding of tropical Pacific science. The project aims for enhanced effectiveness for all stakeholders, informed by the development and requirements of the operational prediction models that are primary users of TPOS data. TPOS 2020 embraces the integration of diverse sampling technologies, with a deliberate focus on robustness and sustainability, and will deliver a legacy of improved governance, coordination and supporting arrangements.

Project Structure

TPOS 2020 will operate as an independent Project and work through its sponsors to ensure all dependencies and links are appropriately managed. As such, four primary elements are included in the governance of the Project:

- A TPOS 2020 Steering Committee responsible for oversight and coordination.
- A Resources Forum drawn from sponsors and responsible for coordinating resources.
- An Executive populated from the leadership of the above and responsible for reporting.
- A Project Office focused on coordination activities supported and resourced by the sponsors.

TPOS 2020 is a focused, finite term project, beginning in 2014 and completing in 2020, with its primary outcome being an internationally-coordinated and supported sustainable observing system for the Tropical Pacific Ocean. The Project will work within the Framework for Ocean Observing developed by the Global Ocean Observing System (GOOS) and use this as a reporting mechanism to other relevant coordination mechanisms. A sustained TPOS will be its principle outcome and legacy for GOOS.

Since the TPOS does not and will not exist in isolation, the TPOS 2020 project welcomes partnerships with other global ocean observing communities, the meteorological community, and the operational centers that use TPOS data for ocean state estimates and forecast initialization; along with coastal and regional ocean communities. The Project must facilitate and embrace observing element contributions from multiple agencies and countries, through a coordinated portfolio of resources and high-level oversight of the scientific and technical design, sub-projects and interfaces to the user community.

Toward this end a TPOS 2020 Steering Committee (SC) was formed in 2014 and subsequently formed five Task Teams with the challenge of organizing activities. It is through this structure and partnerships that TPOS 2020 will design a modern, sustained tropical Pacific observing system that meets both science and societal needs.

Each team is chartered through Project Steering Committee vetted Terms of Reference (ToR). These are all provided on the project website: www.tpos2020.org.

¹ TPOS is used when referring to the observing system, and TPOS 2020 is used when referring to the project.

2.1 TPOS 2020 Governance and Distributed Project Office Organization

The following organization chart shows both the structure of the DPO, the TPOS 2020 Governance and how the two groups interface. The FTE equivalent of the DPO is between 2-3FTE, as the Associate Project Managers provide support for multiple Task Teams and Sub-Groups. DPO staff members are located in several stakeholder offices. Appendix 2 lists the DPO members, their location and contact information.

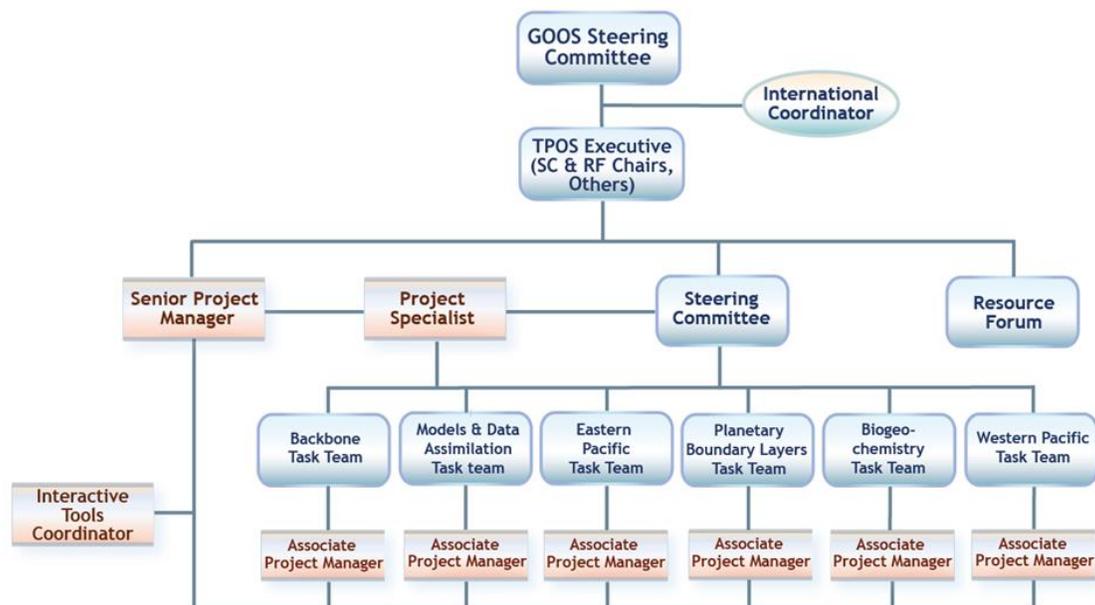


Figure 2.1-1 TPOS 2020 and DPO Organization Chart

2.1.1 TPOS 2020 Governance Structure and Roles

The core TPOS 2020 Governance is based on the following three bodies:

- A TPOS 2020 Steering Committee responsible for oversight and coordination.
- A Resources Forum drawn from sponsors and responsible for coordinating resources.
- An Executive populated from the leadership of the above and responsible for reporting.²

1.1.1.1 Project Executive Committee

An Executive Committee (Executive) will be formed and populated from the leadership of the Steering Committee and the Resources Forum. The Executive will primarily be responsible for oversight, reporting and communication. It is this body that will report progress and issues to the GOOS Steering Committee.

The TPOS 2020 Executive is also responsible for controlling scope changes. It is critical to the success of the program that scope be closely managed or adequately incorporated into the schedule such that the impact to the larger project is well understood. At the discretion of the Executive, the meetings of the SC and TRF and associated milestone reviews, the DPO will provide formal points for assessing and re-baselining of project scope.

² As of January 2015 the Executive is being primarily led by the SC Co-chairs. It is expected that the relationship among the SC and Resource Forum chairs will be more formally developed during 2015.

1.1.1.2 Steering Committee

The Steering Committee (SC) will provide scientific and technical oversight for the planning, system design, and implementation of the TPOS. To accomplish this it will assess the evolving set of requirements through dialogue with relevant users and stakeholders. The SC will coordinate a set of sub- and/or pilot projects and process studies designed to test and evaluate TPOS design elements and options. In addition, the SC will assess potential technology options for delivering a more effective and efficient TPOS; it will coordinate with other relevant scientific/expert panels and bodies, including those responsible for GOOS.

Together with the Executive and the Resources Forum, the SC will manage DPO communication and reporting. The SC will meet at least once per year but may meet more frequently if required.

1.1.1.3 Resource Forum

The Resource Forum will facilitate and coordinate the provision of resources by member institutions required to advance TPOS 2020 activities based on recommendations from, and in consultation with, the TPOS Steering Committee. It will also promote and encourage contributions from institutions in non-participating countries and expand membership of the TRF as necessary. As such this group will facilitate and coordinate resources that may be applied to the TPOS, including necessary research, observing technology development and testing, modelling and scientific analysis, observing infrastructure, DPO activity, and cross-project travel support.

1.1.1.4 Task Teams

Task Teams are responsible for conducting activities according to the ToR of their respective areas of focus. They are formed and disbanded based on the scientific needs of the project. During their lifespan each TT will interface with a member of the DPO. Activities will be directed by the TT Chair or Co-chairs.

1.1.1.5 Sub-Project Teams

Sub-project and writing teams will be formed throughout the duration of the project. These teams will be used to form new Task Teams, inform existing Task Teams, process studies, or workshops. Their ToR, duration, and relationship with the DPO will be determined and reviewed at the direction of project stakeholders.

1.1.1.6 Workshops

Throughout the duration of the project it may be determined that there is a need to convene workshops. These workshops may be used to form new Task Teams, inform existing Task Teams, process studies, or workshops. Their purpose and agenda will be determined and reviewed at the direction of project stakeholders. The role of the DPO in the planning and execution of workshops will be based on resource availability and the assessment of the SC.

2.1.2 Distributed Project Office Members and Roles

The project management team comprises the Senior Project Manager (PM), the Associate Project Managers (APM), and the Project Specialist (PS), and the Configuration and Interactive Tools Manager (ITM). The Project Manager is responsible for all project reporting, schedule maintenance, risk assessment and mitigation reporting. The APMs are responsible to attend

meetings, edit notes, post notes work with ITM and the PM to track and report changes. Generally, the role of each DPO member will be to respond to the needs of the project as articulated by the Project Chairs, Co-chairs, and the International Coordinator.

The project office will deliver a range of plans, reports, and manuals. As per the direction of the TPOS 2020 Project Leadership, planning documents are updated at least annually. These include the Integrated Master Schedule, the Project Execution Plan, and the Annual Work Plan. Each of these reports will be provided as specified by the Project Executive. (See Section 3)

In addition to proactive participation in their areas of key responsibility, the DPO members will also participate in the cross-organizational structure as required to fully utilize sponsor and stakeholder contributions. Each member will be obliged to comply with the project and policies as set forth in this document, to contribute to- and submit plans and reports as requested by the PM and project leadership, as well as adhere to the project document controls system.

2.1.2.1 Senior Project Manager

The Sr. Project Manager (PM) role is a .5FTE position. The PM reports to the Project Executive (Executive), the International Coordinator, and sponsors, and has day-to-day responsibility for managing the project. The PM also holds the ultimate responsibility for managing reporting, resources, and schedule status. The PM serves as principal point of contact for project Executive and provides leadership to the distributed team in the planning and execution of the project, the PM facilitates communication to the science community, project sponsors and all other internal and external stakeholders. In addition, the PM communicates to- and works closely with the Project Scientist.

Other tasks include oversight of project activities to ensure timely correction of problems, convening regular meetings of the entire project team, assessing project effort and work progress against plans and schedules, and maintaining up-to-date projections of the project status and progress.

PM Role:

- Interface to- and support the Executive Committee, Steering Committee, and Resource Forum
- Manage Project Management Processes, Team, Tools: Schedules, Risk, Change Process
- Manage and Support Engagement and Communications Activities

PM Tasks:

- Attend SC and TRF sessions and provide notes and Actions for Co-chair consideration
- Provide SC and TRF annual meeting report (In conjunction with Project Executive and Project Scientist)
- Support interim activities and sessions
- Support Sponsor Communications Requirements
- Manage weekly team calls
- Produce and manage approval of the Monthly Status Report
- Manage Communication Specialist and engagement messaging consultants
- Maintain and Manage Project Schedules, Risk Assessment and Mitigation, Change Control/Reporting
- Support TT, sub-project, workshops as required
- Manage Engagement and Communications Coordinator

- Manage the Master Schedule
- Facilitates communication to sponsors,
- Responsible for key project planning actions, including generation of all project-level plans.

2.1.2.2 Project Specialist

The Project Specialist (PS) position is an approximate .3-.5FTE position. At the direction of Project leadership the PS reports on the science, engineering, scheduling or other relevant activities of the Task Teams. The PS will provide the APM with drafted notes related to the specialist's, Actions required for tracking, and potential items requiring schedule, change control, or risk management consideration by the SC Co-chairs. The PS will also liaise with the International Coordinator to ensure the proper linkages to agencies and internationally coordinated efforts related to TPOS 2020. (This time commitment assumes that the TT will meet once per month with one special session per year and that some of the TTs will provide their own PS level support.)

PS Role as assigned:

- Work with Associate Project Manager to maintain integrity of recorded and published content
- Report to, and advise project Leadership on relevant Actions, status, issues, and risks
- As appropriate, coordinate with Project leadership and those with equivalent roles in international scientific and programs and projects

PS Tasks as assigned may include:

- Attend monthly TT calls
- Attend bi-monthly Co-chair calls
- Provide Assoc. Project Manager with Weekly Status report
- Provide Associate Project Manager with TT meeting notes and Approve Actions
- Work with Assoc. Project Manager to maintain integrity of TT Web Content
- Attend SC Annual Meeting
- Create SC Annual Meeting Report
- Attend TRF Meetings
- Coordinate workshops, cross-project and sub-project needs as required
- Coordinate with international endeavors as appropriate

2.1.2.3 Associate Project Managers

The Associate Project Managers (APM) supports the activities of Task Teams and Sub-projects with an estimated time commitment of .2-.25FTE per assigned group. Beyond the need for regular (nominal) reporting, the timecommitment may occur sporadically throughout the year based on the timing of TT sessions and/or calls.

APM Role:

Proactively Manage a Task Teams, (depending on need and resource availability this may also include some sub-projects); ongoing and intermittent business and activities.

APM Tasks:

- Attend weekly TPOS Team call (may become bi-weekly)
- Attend monthly TT calls and report on milestone status
- Provide Sr. PM and TT-Chair with Weekly Report
- Set up WebEx sessions and Agenda at the direction of the TT Chair
- Record TT Actions (and get TT-Chair/Secretariat approval)
- Edit and post meeting notes as per TPOS File naming and formatting conventions (notes to be taken at discretion of TT-Chair based on requirement for scientific recording)
- Maintain TT Internet and Intranet content
- Maintain communication with TT or group to maintain schedule requirements
- Coordinate travel and attendance at workshops and sub-project needs as required

2.1.2.4 Configuration and Interactive Tools Manager

Configuration and Interactive Tools Coordinator (ITM) is a .15FTE position. This person reports to the Sr. PM and interfaces with the APM as required to meet the project policy and reporting needs.

ITC Role:

- Support Web Presence: Internet and Intranet
- Respond to project management and communication tool requirements
- Help maintain consistency and integrity of meeting notes, project reports and plans

ITC Tasks:

- Update web presence as required
- Explore and provide 'help-desk' support for project tools
- Work with Associate Project Managers to ensure adherence to file naming and file formatting conventions
- Assist in the research and development of online project management and interactive tools
- Maintain Project Management tools and produce reports as required (schedule, risk, change control)
- Special Projects: Provide assistance to the project as requested by Sr. Project Manager

2.1.2.5 Resource Specialist

This is not currently a formal position within the DPO; the Resource Specialist (RS) at the direction of the PM will provide a financial status report for all sponsor funds and or resources.

2.2 Distributed Project Office and TPOS 2020 Work Flow

Good communication is the foundation of a successful project as it facilitates effective project coordination among all participants. A strong communication strategy recognizes the challenge of ensuring that information is effectively shared in a timely manner across a geographically-dispersed team. Well-defined communication channels within the team, with the Project Executive and Chairs, and with the external community is a necessity.

TPOS 2020 Workflow Diagram



Figure 2.2-1 TPOS 2020 Project Work Flow

The TPOS 2020 project will operate according to a regular schedule of meetings and working groups. These include but are not limited to:

- Annual Work Plan
- Weekly Project Office member reports
- Bi-weekly status meetings for the SC management,
- Regular (e.g. Monthly or bimonthly) Task Team meetings
- Monthly Status Report
- Regular (at least annually) SC and TRF meetings
- Annual SC and TRF meeting reports

The Project Manager, Associate Project Managers, and the Project Scientist are members of the Distributed Project Office (DPO) Team. The Project Manager meets weekly with each team member, or as needed to discuss project activities and issues. Weekly, or as directed the Project Manager or the Project Leadership, each DPO member will present a summary briefing that presents the current health and status of their area or responsibility including (but not limited to) major accomplishments, major tasks scheduled for the near future, resource & schedule status, program risks, interactions and corrective actions. Discussions may also include opportunities to evaluate performance, issues that need Leadership level attention, and other strategic topics. When considering issue resolution, and in the event that consensus is not reached on decisions, the Project Executive will negotiate a final and binding decision.

2.3 Project Authority

Once the TRF is fully formed, the SC and the TRF will be guided by Project Executive and their respective Terms of Reference (ToR). The Task Teams will be guided by their ToR and the SC. For all groups, the chairs and co-chairs are responsible for the division of labor and contribution of their group. The chairs also direct the activities if the Project Manager and the Associate Project Managers assigned to their group or Task Team. The primary role of the APMs will be to facilitate the communication and socialization of their group's activities, accomplishments, and setbacks that may or may not have an impact on the larger project.

The APMs will also coordinate their work to create the Master Schedule, monitor the critical path and to help mitigate risks to the goals of the project. With a focus on TPOS 2020 requirements contained within the project scope the APMs will ensure efficient and effective utilization of sponsor resources, through the monitoring and management of the project schedule.

Project Planning and Control Elements

The DPO activities and processes will be based on a Project Management "lite" approach.³ At the core of all DPO activities is the goal of providing a value-added resource to the project; especially given its need to maximize the benefit derived from the contribution of widely distributed, and potentially limited resources. Project planning and control elements and activities discussed in this report include all information needed to perform planning, organization, staffing, directing, coordinating, reporting, and tracking functions.

The Project Planning and Control Elements are based on requirements imposed by the scope of the project as defined by sponsors, along with system design and deployment requirements; in conjunction with the resource availability.

The four main elements which make up planning and control are the Work Breakdown Structure (WBS), Integrated Master Schedule (IMS), Monthly Status Report, and the Annual Work Plan (AWP).

3.1 Annual Work Plan (AWP)

The Annual Work Plan is used to reflect the definition and modifications to scope, schedule, technical baselines, and the role of the DPO. At the direction of the Executive the Project Manager is responsible for completion of an AWP that:

Defines the next year's major planning activities and milestones through the identification and definition of:

- "Events" – Program unique value added maturity measurement points such as anchor point milestones and increment deliverables
- "Significant Accomplishments (SA)" – Significant, natural, time-phased, product-oriented activity groupings that support an event
- "Accomplishment Criteria (AC)" – Standards to judge what must be done to complete an SA

³ "Lite" Project Management for TPOS 2020 reflects that the DPO will provide enough documentation to properly manage, with nominal burden on project resources. The focus will be on reporting objectives and breakdown of work, schedules and deliverables, and project cross-dependencies and risks.

Includes a master schedule that uses the events, SAs, and ACs as a framework to integrate tasks and sub-tasks that states the required resources to complete the tasks and accomplish the project goals.

It also includes a detailed project schedule which consists of the AWP covered tasks and subtasks. The Detailed Project Schedule provides a time-based view to support the activities in the IMS and AWP. Because of schedule volatility, the detailed project schedule is only populated for the immediate future; usually for the next six months. (The Project Manager is responsible preparing the Detailed Project Schedule and is reviewed and approved by the Executive and project stakeholders.)

3.2 Work Breakdown Structure (WBS)

The WBS provides a hierarchical structure for scheduling, and tracking the project resources and activities. It is effectively a list of all of the activities, products and services that will be conducted. The WBS has been generated in conjunction with the Executive to facilitate seamless reporting of schedule and status.

The WBS has an accompanying WBS Dictionary (Appendix3) which describes the tasking associated with each WBS element. There are several elements associated with the WBS:

- Preliminary elements: travel, meeting planning, process studies, engagement, resource management, etc.
- Preliminary hierarchy: 1. (project location) 1.1 (project year) 1.1.1 (tracked element/above).
- Preliminary level one project elements and numerical assignment:

1.-Executive Committee	2.-Steering Committee
3.-TPOS 2020 Resource Forum	4.-Backbone TT
5.-Models and Data Assimilation TT	6.-Biogeochemistry TT
7.-Eastern Boundary TT	8.-Planetary Boundary Layer TT
9.-Distributed Project Office	10.-Engagement and Communications
11.-Ship Time Dependencies (??)	##.-Sub-projects, Work groups

The Project Schedule is used for ongoing project reporting and modeled from the WBS. Within each level one project elements additional level two requirements will be categorized and tracked. Examples include personnel, travel, procured resources, specialized resources, ship-time.

3.3 Integrated Master Schedule (IMS)

The Integrated Master Schedule (IMS) covers all work defined in the scope of TPOS 2020 and is based on the WBS. The IMS defines the relationships between all of the work elements in the project, including those conducted by the DPO, partners, consultants, subcontractors and suppliers. The IMS will be developed based on the WBS taking the projected scientific need profile into account, personnel and facility resource constraints, order of work to be performed, reflecting the goal to support design and process study activity as soon as possible. Within the IMS, each task is linked to its predecessor and successor tasks, and thus workflow dependencies are clearly established. The critical path(s) are visible and management attention and risk assessment techniques will be focused in these areas.

The individual TT, project, the DPO, and governance groups schedules are developed and maintained using Microsoft Project such that the IMS is compatible with all TPOS 2020

scheduled activity. The IMS will be constructed shortly after submission and acceptance of the Project Execution Plan. (First Quarter calendar 2016)

After initial approval of the IMS, any potential changes will first be reviewed internally by the Steering Committee, or Executive, as appropriate and then reviewed by the relevant and interested project members and stakeholders before changes are incorporated.

3.4 Monthly Status Report (MSR)

Reporting across the project will play a critical role in the ongoing tracking and management of scope and sponsor resources. Each member of the DPO will provide a weekly report to the PM.⁴ The content of these reports will be culled into a Monthly Status Report (MSR). The Weekly Report form is provided in Appendix 4. The MSR outline is provided in Appendix 5, it will be prepared by the Sr. PM, reviewed by the Project Scientists, and approved by the Project Leadership. The MSR will show schedule variances as necessary, include discussions on technical progress per the SC, TRF, TTs and sub-projects. The report will also be designed to provide status on EOv and related readiness level activities to GOOS Expert Panel members. The MSR reports will be distributed via email, posted and archived on the TPOS 2020 website.

Project Management Activities

The following project management “lite” (for further description, see Section 3) activities are designed to track the progress of the project and when necessary change design, technology, management parameters, and mitigate risks. They are also designed to facilitate the effective communication of project activities and ensure that stakeholders are informed and prepared to meet the needs of the forward motion of the project and associated goals.

4.1 Schedule Management

Based on the completion and acceptance of the IMS, the timing of project events will be managed according to the schedule baseline. This parameter is used to gauge the relative progress of individual as well as interdependent components of the project. Project personnel assigned to task implementation or oversight will report the work performed monthly using pre-agreed to, objective inch-stones within each task to determine “% Complete.” When agreed to indices exceed the agreed upon thresholds, variance analyses will be conducted at lower levels of the project to determine the root cause.

The root cause of the variance will be evaluated to determine whether or not the schedule shift will have an impact on other aspects of the project. This is accomplished through an evaluation of the IMS critical path which is the composed of the milestones which must be met or risk having a negative impact on other project outcomes. Critical path assessment from the IMS will be completed periodically at the direction of the Executive. As not all project elements fall on the critical path all elements of the project will not be monitored at the project level, however, project activities on the critical path will be regularly monitored and managed. Some changes to the project that may impact the critical path will be managed through a Change Control process. (See section 4.2)

⁴ The practice of a Weekly APM report will be reviewed frequently to determine its need and effectiveness.

4.2 Change Control Management

Change control of the schedule baseline includes the preparation, justification, evaluation, coordination, disposition, and implementation of proposed program, engineering, and project management changes and or deviations. The systematic change management process is progressive and evolves with the maturity and complexity of the project. The Change control process is multi-level; with the applicable review and approval level conducted based on the potential impact to the program. Generally, TPOS 2020 changes made at the Task Team level will not require the consideration of the larger project. However changes to the mandate and scope of a sub-project may require broader consideration across the project.

Starting with the definition of the preliminary infrastructure the initial design and capability and baselines will be set. Change management will be conducted as required by the needs of the program. The change control process will provide advanced notification of the change to persons that will be required to evaluate and mitigate the changes. The DPO will work to manage change requests in a timely manner. The change management team will track, evaluate and document the requested change, evaluate the impact and alternatives to the system, and suggest appropriate risk and opportunity related actions. The DPO will document and communicate decision to all stakeholders.

4.2.1 Engineering and Design Changes

As appropriate requested changes must be evaluated for risk and impact on design, resource capability, schedule and project costs. In some instances the Change Control Process may be engaged should the change under consideration result in a need to increase or decrease scope, modify deliverables, technology complexity, engineering design, a change in funding, an unexpected or unforeseen event, vendor delivery problems, or from a variety of other avenues. When the Project Executive, SC, TRF, or TT leadership determines a schedule variance, or some other type of change will impact the overall outcome of the project, and therefore should be elevated for approval or agreement, they may elect to complete a Change Control Form (CCF), see Appendix 6.

Initially the CCF will identify the WBS elements to be impacted and any suggested changes as a result. It will also include a description of the resource, schedule and scope impacts from the requester's perspective.

Once a request for change has been submitted and appropriately reviewed and documented, the exposure of the project to Risks and Opportunities must be assessed and related and resource and schedule implications. Risks will be identified and managed during the project using the Risk Management Plan to be developed by the Executive, SC, TRF, and DPO. It will reflect additional management effort to revise the schedule, the impact to resources allocated, design of the system, the quality of the system and potential related costs of the system.

A document process will be managed and used for the formal processing of proposed changes. Each CCF whether or not the change is accepted or rejected (if appropriate) will be documented and the analysis made available to all impacted parties as appropriate. Additionally, the MSR will track the submittal of progress with respect to the changes being evaluated and its impact with respect to the schedule. This analysis will be prepared and delivered during the lifespan of the project.

4.2.2 DPO Annual Assessment and Changes

Annually, or at the direction of the Executive, the project leadership will guide an assessment of the DPO. This assessment will be designed to gauge the effectiveness, resource adequacy, reporting activities, and planning and process controls. The results of this assessment will be discussed as part of the annual SC meeting and as appropriate during the TRF meetings conducted throughout the project year. Based on this feedback the DPO will work with the Executive to make the necessary changes to its structure and activities. These changes will be reflected in the Project Management Plan, Project Execution Plan, and the Annual Work Plan.

4.3 Risk and Opportunity Management

Another key project-level activity is the Risk and Opportunity Management. This activity is responsible for reviewing all identified risks, status of mitigation plans, and current probability of occurrence. All recommendations for changes to a risk's severity, probability, and mitigation plans require consideration of the SC or the Executive as deemed appropriate by the SC Chairs.

Risk Management team will meet bi-annually or as required to discuss risk mitigation and reporting. Appendix 7 provides the Risk and Opportunity Form used to track and determine the need to begin mitigation procedures or to retire the risk. The PMO will create and maintain a Risk Assessment spreadsheet based on these forms and report status and changes via the MSR.

Risk to the project will be assessed given their impact on TPOS 2020's ability to address resource commitment and availability, along with others as directed by the SC and the Executive.

4.4 Engagement Action Plan Management

Critical to the project's ability mitigate risk will be the timely securing of resources required to design and implement the project. The project SC Co-chairs and the Executive is very concerned with the implementation of a highly targeted Engagement Action Plan (EAP) that will address the very specialized needs and requirements of TPOS 2020 members and stakeholders. To meet this need the DPO will work with a communications team and create an engagement strategy geared specifically toward maximizing the participation of the TRF members and organizations. These plans will be developed in a collaborative fashion with a great deal of input from SC members and experts.

In select instances the project may be able to take advantage of established communications channels with community members. As some of these channels likely will be functioning as the result of prior collaborations and professional networks of team members, the SC Co-chairs, the Executive, and the DPO will seek strategies to further enhance the effectiveness of these ongoing relationships.

The EAP and milestones will be developed in early 2015. This Plan will contain a portfolio of the individual profiles of each stakeholder/sponsor and reflect a needs assessment, tracked interactions, and an evaluation of communications and engagement effectiveness. Appendix 8 contains an example of a portfolio sheet that will be generated and maintained within the EP for each sponsor and stakeholder.

4.5 Project Communication Management

Communications Management is the means by which TPOS 2020 leadership, TT members, the DPO, and other stakeholders gain insight into program activity. This includes the monitoring, tracking, gathering, and dissemination of information. The Project Manager is the primary contact point within the DPO. The Co-chairs, APMs, and PSs, will attend regularly scheduled SC, RF, and TT meetings as required and/or appropriate to manage schedule changes and risk assessment. The objectives of an effective system include:

- Providing a robust platform for open communication, up, down, and laterally,
- Promoting morale and team spirit by keeping everyone informed of project status and accomplishments
- Properly explaining expectations, so team members are aware of current and upcoming activities, and
- Establishing an efficient forum for escalating and resolving issues.

An important element of effective communication is the techniques used. The selected technique must account for the subject being communicated, its priority, and its audience. Common techniques are:

- E-mail
- WebEx
- Video conferencing
- Teleconferencing
- Face-to-face interactions
- Regular Meetings
- Project reviews and assessments
- Project announcements/news
- Project plans/processes/work instructions
- Project Intranet

Information management, including project direction, internal and external communications, is enabled by a suite of collaboration tools based primarily on Google Docs. A project Intranet is maintained providing private collaborative spaces for the Executive, SC, TRF, TT and Sub-groups to work collaboratively while developing documents and reports while still in the formative stages, and for sharing complex spreadsheets and design drawings.

These tools, and others, are used to collect correspondence, reports, presentations, memos, documents describing the program, lessons learned, management reviews, performance reports, change packages, risk information.

4.6 Configuration Management

To facilitate the dissemination and discovery of project files and reports the DPO will provide guidance on the use of file naming, document classification, and formatting. These conventions are designed to allow for ready access to status reports, and the most recent versions of released documents.

- File Naming Convention:
The following naming convention shall be used to exchange and manage file progression and versioning. Adherence to this convention will allow stakeholders and sponsors to both monitor both scientific and development progress
 - File name: Short Descriptive Name, Lead Group, YYYY-MM_DD Ver#-##.ext

- Document Classification:
 - Draft: Preliminary, working version
 - Consultative Draft: Edited and mature version, ready for distributed review
 - Endorsed Draft: Approved by the SC, lead, and consultative authors
 - Released: Reviewed, approved and distributed for use
- Style and Format:
 - The PEP can be considered the template for document style and format.
 - Recommended components are a title page, tracking page, table of contents.
 - Each page is to be numbered and include the Project title, document name, revision level, and version number.

5. Cross-cutting Project Execution Guidance

The following are areas that will be monitored with documents controlled by the DPO. These areas represent cross-cutting needs of TPOS that will guide the successful implementation of TPOS 2020 and the governance structure needed beyond the timeline of the project:

5.1 Project Level Report Review Process

The Project will produce three Project Level Reports. While the focus and guidance of the Project Level Reports will be on the TPOS Backbone, they will also cover all activities of TPOS 2020, including key initiatives, outstanding science questions, and an indicative timeline for the remaining work of the Project. The reports will also provide an update on engagement and other activities of the Resources Forum. The Project Level Reports are listed below:

- Interim Report, published in 2016
- Mid-term Report, published in 2018
- Final Report, at closure of the Project in 2020

The reports will be reviewed in alignment with the process followed by the Intergovernmental Panel on Climate Change (IPCC). As such there will be 3 to 4 stages in the drafting and review process, from a zero-order draft and outline, through 1st and 2nd drafts with different levels of review, and a final draft approved by the SC. The zero and 1st order drafts would largely be managed at the task Team level, while the 2nd order and final draft would be coordinated at the level of the Steering Committee.

Author teams will be identified for each of the Project Level Reports. Coordinating Lead Authors will be drawn from SC and TT members along with supporting Lead Authors drawn from the TTs; representing a diversity of views and expertise. As appropriate additional TT members, members of the SC, and other experts will be called upon to contribute.

The adoption of the IPCC procedures is designed to provide a level of formality around the authorship and responsibilities, and to deliver clarity and transparency for stakeholders.

Draft: Most, if not all, TTs will be involved with the drafting of Project Level Reports, with any number also choosing to be part of the review process. Review of the 1st draft will be restricted to scientists and stakeholders with a strong connection to the subject matter (that is, experts in the field). The experts will be selectively drawn from the community, including key research groups; the review of the 1st order draft will not engage the broad stakeholder community, but it

will also not bar any interested party who wishes to provide input. A window of around 6 weeks will be provided for this phase of reviews.

Consultative Draft: During the 2nd review cycle the Steering Committee will progressively take the lead for the process (but not as Authors). The Review will be more extensive and reach out to all external and internal stakeholders, as well as to focal points identified through the TPOS 2020 Resources Forum. The process will employ a level of traceability and transparency to provide assurance that comments have been adequately adjudicated. This review cycle will be roughly take two to three months and conclude at an interval allowing for sufficient time for initial consideration of the comments prior to the annual SC meeting (traditionally scheduled for late October).

Endorsed Draft: This short review cycle will allow for final stakeholder review, and possible comment once the SC has reached consensus on contentious issues prior to final release.

Released: A small 'executive team' may be needed to guide the final stages of publication. The DPO in concert with Project Leadership will ensure that the process is orderly and transparent and that expectations are managed appropriately.

5.2 Design Guidance

The Interim and Update Reports will progressively guide stakeholders on recommended changes, with indications on the degree of confidence (certainty). Within this context of phased reports, the Backbone Task Team will be regarded as the focus of consolidation and prioritization, with the other Teams leading innovation and change. The Interim Report will contain initial recommendations for the design of the Backbone but also a synopsis of initial results and plans for the various initiatives to be sponsored by TPOS 2020.

The closure of the Project will be accompanied by a Final Report, including the benefits of the redesigned TPOS and its governance structure. While the Final Report (and the Project Level Reports leading to the Final Report) will focus on the Backbone design, it should also be noted that the various initiatives sponsored by all the Task Teams (or the SC) their new ideas and tests, (approaches, technology, etc.) will be documented and provided as additional foundation for change. More importantly the reports will also provide points of governance and engagement with the scientific community and users.

5.3 Data Policy Management

As TPOS 2020 redesign matures issues related to data product interoperability, dissemination will become a higher consideration.

- **Interoperability Management** - To insure that the TT and related subsystems are fully integrated component of the TPOS 2020 Project, it will become a task of project team members to describe and manage the interoperability of the appropriate projects and systems. The Program Office will recommend project appropriate tracking and management of TPOS interoperability activities.
- **Integration and Verification Management** – As the TPOS as redesigned matures it will be the role of the TPOS 2020 Executive to recommend a project appropriate Integration and Verification Plan.
- **Requirements Management** - TPOS system requirements may be divided into four major categories (functional requirements, performance requirements, common requirements and interface requirements), and then further sorted into categories that are consistent with the

Backbone architecture. As the Data Management Plan matures these requirements will be further articulated and as appropriate milestones will be incorporated into the IMS.

- **Documentation** – The TPOS 2020 will also recommend the appropriate level of documentation for data management, archiving, discovery, and dissemination.

5.4 Test Plan Management

At the discretion of the project sponsors and the Executive, a system Test Plan may be established which articulates the criteria or metrics that may be used to validate the system by asking “was the right system built?” It may include evaluation of the system in the context of the use-case scenarios that help define the societal need and the science user requirements. As appropriate the Task Team chairs and the Project Scientist will be responsible for development and implementation of the Validation Plan.

5.5 Quality Assurance and Quality Control (QA/QC)

At the appropriate time during the project the Project Executive along with the Task Team Chairs will guide the Project Office in the creation of a policy for the determination and maintenance of a QC Plan or set of policies to ensure QA/QC for TPOS going forward.

5.6 Transition to Operations

At the appropriate time, the Leadership, Sponsors, will work in concert with TPOS stakeholders including GCOS, GOOS, the Joint Technical Commission for Marine Meteorology (JCOMM), Climate Variability and Predictability Program (CLIVAR), among others, to consider and/or draft an TPOS Transition Plan seeking to define all of the elements required to support the system throughout its life cycle.

The transition process may be initiated around the time of the publication of the Interim Report (late 2016). Change management and transition should be in place in parallel with the staged delivery of advice. From that point onward, a variety of stakeholders will be contemplating, and reacting to recommendations; despite their nature as “interim” advice. Implementation is likely to lag the recommendations on design by around two years, with the handover of responsibility occurring progressively from 2016 through to 2020.

The Final Report will include both the completed design along with research and technical initiatives, and collaboration arrangements that will transition to other governance arrangements. The Transition Plan will identify and manage risks associated with the transition process, such as insufficient overlap of old and new networks and inadequate resources for transition. In addition, governance responsibilities will be clarified with TPOS 2020 sharing responsibility with the community responsible for implementation (e.g. JCOMM). While the form of the governance arrangements beyond 2020 is unknown it must be of a form that will maintain strong cooperation leading to sustained observation in the Tropical Pacific region.

5.7 Operations and Maintenance Management

While not in the scope of the TPOS 2020, at the appropriate time during the project the Executive, Sponsors, and stakeholders may work in concert with JCOMM, GOOS and other groups to generate an appropriate version of an Annual Operations Plan. This plan is an annual work plan for operations and maintenance.

5.8 Deployment and Acceptance Management

While not in the scope of the TPOS 2020, at the appropriate time during the project the Executive, Sponsors, and stakeholders may work in concert with JCOMM, GOOS and other groups to generate an appropriate version of a Deployment and Acceptance Management Plan. This Plan describes the documentation that allows the system to make the transition to operations and specifies the training required for operations personnel.

Appendix 1: Glossary of Abbreviations and Acronyms

Acronym	Definition
AC	Accomplishment Criteria
FTE	Full Time Employee
ILS	Integrated Logistics Support
IMS	Integrated Master Schedule
PEP	Project Execution Plan
PM	Project Manager
QA	Quality Assurance
PY	Project Years
QC	Quality Control
ROM	Risk & Opportunity Management
SA	Significant Accomplishment
SOW	Subcontract Scope of Work
SPI	Schedule Performance Index
TC	Tools Coordinator
TTOP	Transition to Operations
VAR	Variance Analysis Report
WBS	Work Breakdown Structure

Appendix 2: DPO Members, Contact Information and Location

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Appendix 3: WBS Dictionary
Under Development



Appendix 4: Weekly Report Form

TPOS 2020 Distributed Project Office

[NAME]
[Title and Function]

Weekly Status Report

Week Ending [DATE]

Summary

General Changes – if no changes please list as No Changes.

Activities and Accomplishments

1. Numbered items listed in priority order

Plan of Activities and Accomplishments

1. Numbered items listed in priority order

Issues or Concerns

1. Numbered items listed in priority order

Travel/Vacation

- For upcoming 3 months or as known (Flag new items in red)

Project Documents Update

- Provide document status (Draft, Consultative Draft, Released) and location. (Some documents will only be available to appropriate project members.)

Project Actions Update

- Action tables being tracked listed below with flagged updates in red

ACTION ##-#:

Date	WBS	##-#	Ownership/Activity/Comments	Due:[Date]
##/##/##	TBD	Text: Based on needs of TPOS 2020 governance group		Status
Owners:			<i>Owners here</i>	
			<i>Activity and Comments Here</i>	
			...	

Appendix 5: Monthly Status Report Outline

TPOS 2020 Monthly Status Report (MSR) Outline

TITLE PAGE

- Date
- Prepared by [drafted, reviewed]

INTRODUCTION

- Brief overview of project goals and status
 - o Timeline
- Link to online Prospectus

KEY ACCOMPLISHMENTS AND PROJECT MILESTONES

- Steering Committee
 - o Standard Intro and Link to ToR
 - o Activities in past month
- Task Teams and Sub-Groups/Workshops [listed individually]
 - o Standard Intro and Link to ToR
 - o Activities in past month
 - Listing EOV related activity as appropriate
 - Providing maturation information as appropriate (EOV, technology, data)
- Resources Forum
 - o Standard Intro and Link to ToR
 - o Activities in past month
- Executive Committee
 - o Standard Intro
 - o Activities in past month
- Distributed Project Office
 - o Standard Intro and Project Plan
 - o Activities in past month

CROSS-PROJECT DEPENDENCIES AND STATUS

- Ship Availability and Status
- TPOS 2020 Related Funding and Grants
- Technology Development and Deployment Updates
- Integration and Testing
- Risk Mitigation and Change Control
 - o Risk Table

FUTURE ACTIVITIES

- Upcoming Month
 - o Schedule excerpt
 - o Relevant Actions [Reference complete Actions Table Appendix]
- Two to Six Months
 - o Schedule excerpt
- Seven to 12 Months
- 12 – 24 Months
- ... as appropriate

APPENDIX ONE: Actions Table

- List, status, comments on current Actions
-

Appendix 6: Change Control Form

TPOS 2020 Change Control Form

Change Number: <i>TPOS 2020-1</i>	Associated Action or WBS:	Date Originated:
Requestor(s):		
Requestor(s):		Contact Name(s):
Phone:	Email:	Link:
Change Overview		
Description:		
Reason for Change:		
Benefit or Risk (Description):		
Impact (As Known and/or Applicable)		
Scope:		
Schedule:		
Cost:		
Recommended Reviewers and Contact Information		
Name:	Email:	Phone:
...		
...		
Reviewer Comments		
...		
...		
Suggested Resolution or Summary of TPOS Impact		
...		
...		
Status or Resolution		
Date:	Description:	

Appendix 7: Risk Assessment Table

TPOS 2020 Risk and Opportunity Table

Risk Number	Project Location(s)	Risk Name			Opened Date	Impact Date
	(SC,TT,TRF)					
Status	Likelihood	Impact	Analyst:			
(open date)	(percent)	(high-low)	Email:			
(review date)			Phone:			
Descriptions						
Description (If)		Description (Then)		Description (Detail)		

Appendix 8: Stakeholder Engagement Tracking Sheet

Engagement Action Plan Portfolio Sheet

Stakeholder: Agency, Group, Project, etc.

Completed by xx
 Completed by yy
 Completed by zz

First introductions to primary stakeholders (tbd)
 Engagement with Category 1 (tbd)
 Engagement with Category 2 (tbd)

Contact Person(s)	TPOS 2020 Contact/responsibility	Category & Rationale	Schedule	Dependencies & Dates	Supporting Material
		<i>Scientific Partner? Investor/beneficiary? Short sentence on why.</i>	<i>When to meet/brief. Where.</i>	<i>(Are there actions that need to proceed the next action?)</i>	<i>Project plans; prospectus; Reports; etc.</i>