Outline of OceanOPS Service Levels for GOOS Networks

Background

OceanOPS takes the pulse of the observing system and provides tools to assess its current and future state. This means monitoring and reporting on the status of the global ocean observing system and networks, supporting efficient observing system operations and enabling the transmission and timely exchange of high quality platform metadata. Currently, OceanOPS tracks over 10,000 observing platforms from the global networks delivering 100,000 observations a day.

With the restructuring of OceanOPS it has been agreed that Service Level Agreements (SLAs) should be developed between OceanOPS and the GOOS OCG Networks. The SLA agreements will define the services that OceanOPS will provide to each network and fall into three main categories (i) baseline, (ii) standard, and (iii) advanced services. These SLAs will assist in identifying priorities.

The Baseline Services are largely automated cross-cutting services applicable to all endorsed OCG networks and are underpinned by the core funding provided by IOC/UNESCO and WMO to OceanOPS and non-network specific contributions from some Members, including the host country.

The Standard Service builds on the Baseline Service and comes as a package of more advanced levels of tailored services that can be provided to those networks who provide funding into OceanOPS. Minimal technical coordination will be provided to ensure standard services delivery. A Standard Plus option enables the networks to secure services of a dedicated technical coordinator (from 0.25 to 0.5 FTE) and optional Project Office support.

The Advanced Services built on top of the standard services package, are network-specific and may include more advanced monitoring and reporting, data and metadata management, operational and technical support. They include further dedicated network support from the technical coordinators in OceanOPS (from 0.75 FTE). The level of the direct services and dedicated network support being agreed with each network reflects the level of financial support provided to OceanOPS by the network.

As some networks are organised through Panels (e.g. DBCP and SOT), the SLA with the Panel can be consolidated across its constituent networks but should be first worked out for each of its components.

The SLA Document, funding levels and specific services shall be reviewed every other year and success assessed. A letter of agreement (LoA) is required to outline the level of services by each Network. Non legally binding terms and conditions will be spelled out in the LoA and reviewed every few years.

Prerequisites

- Platform metadata exchange with OceanOPS is a requirement for all services provided, where metadata exchange should be machine to machine as specified by OceanOPS when possible and reasonable.
- Networks should have at least a real-time data delivery (on GTS/WIS2.0 of the WMO) and/or a global data node where OceanOPS can monitor data availability.

Responsibilities and expectations

The responsibilities of OceanOPS include:

- Ensuring the availability of services as defined by the SLAs;
- Monitoring and maintaining the service level objectives through defined performance metrics (including e.g. percentage of monthly maps produced, web/API uptime percentage, Report Card, frequency of Bulletin publication (2x/year), Percentage of reports delivered to networks, helpdesk/ticketing resolution statistics, percentage availability of data in OSCAR);
- Providing a yearly report at the GOOS OCG session on service performance (including work plan, budget, KPIs).

The responsibilities of the Network include:

- Providing access to required resources and information, and committing to unrestricted metadata and data exchange for all elements monitored by OceanOPS; Minimum metadata requirements are detailed in Annex 2 and can be provided to OceanOPS through a number of ways: via the GUI on the OceanOPS website, via an API allowing machine-to-machine input of metadata to OceanOPS, or by OceanOPS harvesting the metadata from a global or local data/metadata node in various formats (XML, CSV, JSON, netCDF).
- Providing the name of a focal point who will contribute in-kind to the services (technical coordination, project office, reporting and helpdesk) if any. Focal points should be updated in a timely manner.
- Promptly reporting any issues directly to OceanOPS with the services that are provided;
- Ensuring the timely payment for the applicable services rendered, according to commitments made (on a calendar year basis).

DESCRIPTION OF OceanOPS SERVICES

BASELINE SERVICES

The Baseline Services are largely automated, with minimal manual input and will be available to all emerging and mature GOOS OCG networks for general contributions.

Note that for emerging networks to link to these baseline automated services, OceanOPS (GOOS/WMO) will have some capacity to support this, step by step. Services may not be available immediately and are dependent on funds and capacity. To support faster integration emerging networks can provide funding in support of staff time and/or in-kind personnel support.

SERVICE LEVEL	DESCRIPTION	BENEFIT	REQUIREMENTS
Baseline Network Monitoring/Web	Routine monitoring products that are generated automatically by OceanOPS (e.g. status maps for varying criteria, KPIs). Updated maps, statistics and indicators (see Annex 2) on Network performance are automated and will be provided by OceanOPS to each network on a monthly basis.	All Networks are provided with a passport (WMO number). This service provides visibility of networks on the OceanOPS integrated website, allows maps and statistics to be embedded into external websites and automatically updated, and tracking of performance of networks (see Annex 2). Enables the network and GOOS OCG to regularly assess status and progress in a harmonized way, fostering transparency and engagement.	OceanOPS: To document a minimum set of standard maps, statistics and indicators (see examples in Annex 2). Networks: To regularly review and assess the usefulness of maps and indicators and web-based tools.
	Access to a suite of integrated web-based tools, including a search engine, list/edit/import/export platforms, metadata, statistics for national reports, programmes and contacts management. Tools are available for users to extract information on the network's implementation status.	The available tools (e.g. interactive maps) can be used for national, regional, or institutional monitoring, with potential for further development. This will allow networks to assess the status of their network, plot basic information, extract maps etc. beyond the automated quarterly updates.	

GOOS Reporting	Visibility of the networks (including Members, Institutions, and Operators) in GOOS Reports such as the annual GOOS Report Card and various others of IOC/UNESCO and WMO (e.g. State of the Ocean Report, WMO Bulletin, GCOS reports). The Report Card will be based on baseline service outputs aka what is active in the system.	This allows networks to demonstrate to stakeholders that they are part of the GOOS infrastructure, provide international recognition, visibility, and accounting of contributors, successes, and challenges. This is critical for the network's sustainability and securing future funding.	OceanOPS: Generate the report and products for the report card. Networks: To provide inputs for the report card on status/stories as required.
Baseline Platforms Metadata Management	Web based dashboard for management of platform metadata (e.g. unique identifiers, program/country, model etc.) through the dashboard/GUI[1]. OceanOPS provides standard platform metadata format including network-specific reference tables and controlled vocabulary. Metadata must be made available by the network operators update as agreed and, as far as possible, enabled for routine M2M[2] submission or harvesting.	Platform metadata serves as the foundation for most of OceanOPS services, including monitoring and performance analysis. Without accurate metadata, no accounting is possible, and platforms will not appear on maps, in statistics or bulletins. Operators, networks, OceanOPS, etc., rely on this metadata to plan, track the implementation, and assess instrumentation performance. By using the dashboard to plan, implement and monitor their operations, platform operators use the GUI within their workflows. Receive a passport (WMO number).	OceanOPS: Define and review the minimum/standard metadata requirements together with network experts and Data teams and the GUI for operators, OCG Data TT and Vice Chair Data Management. OceanOPS will track metadata completeness against minimum metadata (passport). Networks: Minimum metadata standards need to be adhered to by the networks in order to be submitted and/or harvested and to receive accurate baseline services.

[1] Graphical User Interface
[2] Machine to machine

Baseline Data Monitoring	Monitoring of data flow on identified global nodes (e.g. Web/GDAC, GTS/WIS 2.0) as designated by GOOS/OCG. Data are monitored periodically (real-time where possible) without specific reporting on performance or actions taken for problem resolution.	Provides an activity status for the platforms using a traffic light system, e.g. data are flowing recently, not since a certain date, or never. This aids in optimising the data availability to users by identifying the platforms that are not delivering data. This allows for problem resolution (errors of identifiers or headers in data transmissions, guidance for redeployment of platforms, etc.) and alignment between data and metadata records. An automated email goes to the network data focal point. Receive a passport (WMO number).	OceanOPS: Data will be monitored for GOOS overall requirements and any issues arising simply transferred to identified data focal points. Networks: Identified Global Data Node, with metadata available in appropriate format for m2m harvesting. Data focal point is identified (see OCG Data strategy).
API [3]Metadata Output	API for M2M extraction of metadata from OceanOPS in various formats, incl. CSV, JSON, XML.	Distributes harmonised, quality-controlled metadata to any user and enables refined extractions based on various criteria. Metadata delivered include operator inputs, enriched by OceanOPS relational database, controlled vocabulary, and connections to global data nodes (e.g. to provide a status tag).	OceanOPS: Maintain and improve the operational OceanOPS API and future expansion to API WIGOS/OSCAR and API IOC ODIS. Networks: Feedback on improvements needed.

[3] Application Programming Interface

FUTURE DEVELOPMENTS

These service levels are currently not established within OceanOPS; however, a timeline for the development of this will be provided.

SERVICE LEVEL	DESCRIPTION	BENEFIT	REQUIREMENTS
API WIGOS/OSCAR Integration	OceanOPS API to be WIGOS-compliant XML and include routine metadata submission to WIGOS/OSCAR.	In OSCAR, all observing systems are integrated from WMO Members and recognized entities like OceanOPS. OceanOPS holds a unique position and authority to submit integrated and quality-controlled metadata from GOOS systems to OSCAR. This metadata submission is crucial for data exchanges on the WMO Information System. It allows for the analysis of quality, coverage, and timeliness through the WIGOS GBON and Data Quality Monitoring System, providing high-level visibility on gaps for WMO Members to address. Network operators do not need to develop this capacity locally.	OceanOPS timeline to develop this capability. AMRIT EU project contract will secure 2 years of IT development to complete prioritized capabilities.
API Metadata Input	API for M2M submission of metadata to OceanOPS, including format checking and security measures.	The ID allocation API provides the foundational basis and once fully developed, all networks will be able to benefit in a manner similar to the API Metadata Output. Operators can make partial or bulk updates through the API, receive a log in return for potential errors, and this securely through an authorization.	
API ODIS integration	Routine platform metadata submission to ODIS[4], a digital ecosystem coordinated by IODE/IOC where a global community of organizations share and exchange their (meta)data to better understand and steward the ocean.	Enhances interoperability by enabling users to discover metadata from this key repository, extending beyond the GOOS domain. This connection is not yet established but will be implemented as a simple harvesting process from ODIS to the OceanOPS API.	
EOV based monitoring tools	Development of cross-networks variable oriented metrics (time, space, depth, quality).	Tracks the performance of the system as a whole to respond to specific applications. Provides a gap analysis capability at the variable level (vs application) to promote networks contributions and complementary nature. Fuel WMO RRR gap analysis and Codesign requirements.	

[4] Ocean Data and Information System

STANDARD SERVICES

The Standard Service builds on the Baseline Service and comes as a **package** of more advanced levels of services that can be provided to all networks who provide funding into OceanOPS. Minimal technical coordination will be provided through the pool of resources of OceanOPS to ensure standard services are delivered. This package of services does not include dedicated technical coordinator time, which is available as an additional option (Standard plus).

SERVICE LEVEL	DESCRIPTION	BENEFIT	REQUIREMENTS
Standard Network Monitoring/Web	Enhanced monitoring with additional tools for operations, instrumentation, and data flows, including (key) performance indicators.	Provides a refined capacity for monitoring, enabling the identification of gaps and trends.	OceanOPS: To document standard maps, statistics and indicators (see examples in Annex 2). Networks: To regularly review and assess the usefulness of maps and indicators and web-based tools.
	Monitoring dashboard pre-configured for the specific network, providing dedicated tools for refined monitoring.	Capacity to develop network-specific web features, including maps, statistics, monitoring tools, and key performance indicators.	
Standard Reporting to Network	Inclusion in Ocean Observing System Bulletin (published semestrial, http://www.ocean-ops.org/bulletin) for internal and technical communication on network status.	Provides networks with a status report before their annual session, highlighting members' contributions and analyzing gaps and trends for continuous improvement. The semiannual technical bulletin offers two additional opportunities for internal communication, addressing aspects in more detail such as spatial coverage and instrumentation performance.	OceanOPS: Network focal point to analyze monitoring tools and report as appropriate. Networks: Network focal point (e.g. if provided in kind and remotely) to liaise with OceanOPS and contribute to these reports. See Technical Coordination service.
	Standard yearly report on network status, covering implementation, instrumentation, operations, and data flows, with recommendations for network performance improvement.	Status analysis and recommendations are produced based on the support provided, including in-kind contributions. For more details, see the Technical Coordination service. [Add some structure for standard reporting: Implementation, Instrumentation (and parameters), Operations, Data/Metadata flows,]	

	Respond to ad hoc demands for a specific map or statistics extracted from the system backend (via IT team).	Processing of operators demand for statistics. To organize in helpdesk ticketing for overseeing.	
Standard Platforms Metadata Management	Management of standard metadata, considering evolving requirements by Networks, OceanOPS, GOOS, IOC, and WMO. Additional metadata attributes and reference tables are managed using controlled vocabulary (e.g. WIGOS, WIS, SeaDataNet).	Secure a metadata common denominator across various information nodes (operators, DACs, GDACs, GTS/WIS, WIGOS, Seadatanet etc). Increased metadata facilitates enhanced monitoring, reporting, and visibility capabilities.	OceanOPS: Define and review the standard metadata requirements together with network experts and data teams and the metadata management tools (GUI) for operators. Adapt metadata exchange to the nature of each operator strongly encouraging M2M. Report on the efficiency of this metadata exchange. Networks: Metadata formats must be adhered to by the networks in order to be submitted and/or harvested and to receive accurate standard services. Metadata must be made available through submission or harvesting. A Data Team (capturing recommendations, requirements, actioning OceanOPS)
	Development capacity is provided to evolve the standard and management tools (e.g. dashboard/GUI) in collaboration with the community.	Enables the community to identify and resolve more issues effectively. An evolving standard and tools are developed in response to growing requirements, with OceanOPS working with the network and operators/users community.	
	M2M harvesting can be conducted from multiple nodes (integration) and is quality-controlled using file checkers.	M2M metadata exchange will be continuously monitored and improved.	
Standard Data Monitoring	Comprehensive monitoring of data across all global nodes (e.g. web GDACs, GTS/WIS), depending on the nature of the network.	Provides both quantitative and qualitative monitoring, enabling continuous improvement of data quantity and quality across various distribution channels. Monitor and resolve errors in data flows (identifiers, headers, duplicates). Monitor data shared without metadata records and vice versa. Guide data centres for exceptions management (e.g.redeployment of platforms)	OceanOPS: To synchronize its information system with global data nodes. Networks: To clarify global data distribution nodes according to OCG data strategy.

	Includes tracking delays in delivery (timeliness) for both real-time and delayed-mode data.	Facilitates active participation in Data Teams to report and address issues effectively.	A Data Team (capturing recommendations, requirements, actioning OceanOPS)
	Tracking and resolution of data issues, including technical coordination and data brokering.	Facilitates participation of new partners brokering data processing needs across existing DACs through international cooperation.	

STANDARD PLUS TECHNICAL COORDINATION SERVICES

The Standard Plus Service builds on the Standard Services package and comes with some dedicated Technical Coordinator time. This is provided to those networks who provide sufficient funding into OceanOPS, enabling the additional services of a dedicated technical coordinator, and scalable from 1/4 to 1/2 FTE according to funding level. An additional Project office support option is enabled in this option and scalable from 1/4 to 1/2 FTE according to funding level provided. These services could be provided in-kind by the Networks.

SERVICE LEVEL	DESCRIPTION	BENEFIT	REQUIREMENTS
Standard Technical Coordination	Support/guidance for new operators integrating a Network and meeting its targets and operating principles. Support/guidance for networks integrating GOOS (OCG), meet its criterion. Support for network monitoring and reporting. Helpdesk services. Participation in yearly Network sessions (including travel to and reporting, see Standard Reporting service above). Maintenance of contacts points, programs, agencies, mailing lists, etc. Primary responsibility for metadata completeness and quality, for web monitoring tools outputs and functioning. Specify (functional) developments required by the IT team.	Provides dedicated staff responsible for delivering services as per the agreed SLA. Offers technical guidance, clearing house functions, integration, mediation, expertise, and network promotion. Cultivates connections between operators within the Network, and within GOOS/IOC/WMO to reach the defined targets. Support actively the integration of new operators in the Network (promotion, information, technical support, technical watch). Address a wide range of requests for technical support between program managers, operators, data managers, manufacturers, telemetry providers, IOC/WMO/GOOS etc. directly or connecting with proper Network experts. Log and process the requests through a helpdesk ticketing system.	OceanOPS: To secure the agreed FTE level Networks: To secure the funding commitment for the agreed FTE level See annex for costs estimation of FTE and travel budget
OPTIONAL SERVICE			

Standard Project Office	Organization of one yearly meeting, covering logistics and agenda. One or two newsletters per year, along with social media updates. Website hosting and content management. Participation in the development of outreach and educational initiatives. One travel opportunity per year to represent the network at a key event.	Provides essential secretariat support to ensure smooth operations and coordination of network activities. Ensures effective communication with stakeholders. Centralises and shares key information , enhances the network's visibility and engagement. Supports the development of educational initiatives that promote the network and extend its reach. Representation at key events to promote the network, foster partnerships, and attract additional support and resources. 1/4 to 1/2 FTE allocated based on funding provided by the network.	OceanOPS: To secure the agreed FTE level Networks: To secure the funding commitment for the agreed FTE level See Annex for costs estimation of FTE and travel budget

ADVANCED SERVICES

The Advanced Services built on top of the standard services with further services to be **tailored to network needs**. These services include more advanced monitoring and reporting, data and metadata management, operational and technical support depending on Network needs. They include dedicated network support (>= ¾ FTE) from the technical coordinators in OceanOPS. The level of the direct services and dedicated network support being agreed with each network reflects the level of financial support provided to OceanOPS by the network.

Services below are **examples** of potential enhanced services within the advanced SLA.			
SERVICE LEVEL	**DESCRIPTION**	**BENEFIT**	**REQUIREMENTS**
Advanced Web	In addition to standard services: provides **advanced tools** for **planning**, **performance analysis**, **EOVs gap analysis**, and more. Media management (photos/videos and news) Contact points management (mailing lists).	Enhances the ability to perform in-depth analysis, and planning, improving the identification of gaps in EOVs. Provides advanced insights and tools to address networks' challenges and drive continuous improvement.	
Advanced Network Monitoring / Web	Real-time tracking with more frequent updates (hourly to daily) and advanced statistics on implementation, instrumentation, operations, and data flows. Provides a report generator feature to report on network status from different criteria (time window, basin, national, regional, etc). Network specific web features can be developed on demand. Media management (photos/videos and news). Support for static website hosting. Contact points management (mailing lists).	Provides enhanced visibility and timely insights into the operational status and performance of the network. Facilitates identification and resolution of issues, minimizing potential disruptions and improving data flows and quality. Enables frequent updates and detailed analysis, supporting informed decision-making and strategic actions. Monitoring tools include advanced statistics and indicators on platforms and sensor performance (e.g. status, reliability, data quality trends) and extensive use of GIS analyses (e.g. spatial/temporal coverage by variable). Networks can benefit from OceanOPS IT development/hosting capacity to develop specific web features and host specific web sites.	OceanOPS: To document advanced maps, statistics and indicators (see examples in Annex 2). To include Network specific developments in its work plan. Networks: To regularly review and assess the usefulness of maps and indicators and web-based tools ideally through a dedicated task team. To update OceanOPS with contact points and media content.

Advanced Reporting to Networks	In addition to standard reporting: Provides advanced yearly reports to Steering Committees, Data Management Teams, Task Teams, and other stakeholders using advanced metadata and monitoring tools.	Delivers comprehensive and detailed yearly reports that address specific needs and priorities of different teams and committees and provide clear recommendations. Facilitates transparency and accountability through detailed network performance evaluations. Report on demand to contribute to national reporting needs on Networks and GOOS. [Add some structure for advanced reporting]	OceanOPS: Network focal point to analyze monitoring tools and report as appropriate. Report as well on action items and developments made in intersessional period. Networks: Provide appropriate time slots in yearly sessions for the OceanOPS focal point to report, and take note of recommendations. Identify any priority or action item for OceanOPS to consider in intersessional period.
Advanced Platforms Metadata Management	In addition to standard services: Manages advanced metadata (network-specific) with controlled vocabulary and active quality control. Provides advanced metadata management tools (e.g. dashboard/GUI) and machine-based upload features in multiple formats (CSV, XML, netCDF, JSON). Includes continuous metadata improvements through discussions with platform/sensor manufacturers and curation of updates.	Ensures high-quality and up-to-date metadata, enhancing data accuracy and interoperability across platforms. Facilitates integration of metadata from various sources and formats, supporting more efficient data management. Manage/govern controlled vocabulary code tables. Provides robust tools for managing complex metadata. Promotes collaborative improvement by engaging with manufacturers and addressing evolving community needs. Propagates metadata standard at the industry level. Harmonize controlled vocabulary between oceanographic (e.g. SEADATANET) and metocean (WIGOS/WIS) standards. Run regular surveys on some metadata attributes to make bulk improvements. Addressing historical metadata needs to fill gaps and support climate data initiatives.	OceanOPS: Document the advanced metadata standard for Network and provide appropriate means for submitting/harvesting. Work actively in defining code tables and controlled vocabulary (e.g. to avoid free string attributes). Networks: Discuss metadata standards at yearly Data Committee sessions and within OCG Data Task Team to continuously improve metadata quality within data flows. A Data Team (capturing recommendations, requirements, actioning OceanOPS)

Advanced Data Monitoring	In addition to standard monitoring: Provides comprehensive monitoring of data at all global nodes (e.g. web, GTS, WIS, mirrors) for both real-time and delayed mode. Includes regular audits of data flow performance (national/global, timeliness, quality, historical data). Tracking and resolution of data issues on multiple data channels, including technical coordination and data brokering. Set up code libraries on the cloud to facilitate data processing by emerging DACs. Propagate its metadata quality within global data nodes. Participate in WIS 2.0 pilots and GDAC services improvements.	Offers comprehensive oversight of data across all distribution channels, ensuring consistent performance and data integrity. Enables early detection of issues reducing data gaps and improving quality and timeliness. Provides valuable insights into data flow performance and historical trends, supporting strategic planning and performance improvement.	OceanOPS: To synchronize its information system with global data nodes. Networks: To clarify global data distribution nodes according to OCG data strategy. A Data Team (capturing recommendations, requirements, actioning OceanOPS)
Advanced Technical Coordination	In addition to the Standard Technical Coordination: provides participation in Network Executive Boards and Task Teams. One visit to national programs or manufacturers per year. Active advocacy for network development including new partners from academia, private, philanthropy and civil society. [¾ to …] FTE dedicated OceanOPS Technical Coordinator (WMO/IOC staff with proportional travel budget).	Provides a dedicated focal point hired by OceanOPS via IOC/UNESCO or WMO to support the network. Ensures the delivery of agreed network-specific services, with a fraction of FTE allocated based on funding provided by the network. Travel budget set up as needed and proportional to FTE allocated.	OceanOPS: To secure the agreed FTE level Networks: To secure the funding commitment for the agreed FTE level See Annex 1 for costs estimation of FTE and associated travel

Operations coordination	Web-based tools for planning & operating - including Cruise Information Centre (R/V schedules), network density mapping, etc. Participation to basin based (quarterly) meetings Development of ship opportunities and partnerships, including ad hoc charters/consortia (academic, sailing, fishing, shipping) Retrieval procedure for beached instruments. Identification of merchant ships to be recruited (agencies) to re-establish an XBT line, install an AWS or an underway system.	Support and complement Members/operators work. Enable new deployment opportunities. Improve network coverage and ease operator's logistics. Serve as a hub for instrument deployment by third parties (ocean racers, explorers). Use the potential of international organizations to ease custom regulations and help international cooperation. Side benefits: communication in mass media. Humanization of the GOOS (e.g. skippers advocacy)	OceanOPS: Metadata standard to manage cruises and synchronize m2M with existing standards (Marine Facility Planning e.g.) and national academic fleets management systems. Connect database with AIS global data to identify ships/agencies cruising in a particular area.
Notifications and alert systems	Alerts and notifications for a variety of instrument-related events (beaching, icing, end of life, retrieval, servicing, EEZ entrance, data/metadata flow, failure, etc.). Stickers for communication with coastal communities, including retrieval procedures (design/production/shipping) and vandalism mitigation. QR codes/mobile app for platform workflow tracking. Feedback loop from users to producers on data quality (e.g. WMO WDQMS) via web tools and archive. Standardization of "feedback metadata" across operational and scientific users (black/white lists, errors to model, routine and ad hoc scientific surveys)	Operationalize communications between actors on operations, data quality, transparency issues for efficient tracking and resolution, including by machines. Operationalize operators workflow for efficiency and human errors reduction. Ensures rapid actions and minimize instrument downtime and data loss. Effective communication with coastal communities and authorities to improve instrument retrieval and reduce vandalism. Enhances operational efficiency by providing up-to-date information on platform status and workflow. The feedback loop between users and producers allows for continuous data quality improvement, supporting higher data accuracy.	OceanOPS: Develop a subscription service for these alerts. Develop the necessary outputs for these alerts (emails, reports) with standard titles for machine processing. Networks: Address alert messages as defined by network operating principles (release data, correct data/metadata, secure beached instruments, report to coastal state etc).

Advanced Project Office	Organization of one yearly meeting, including logistics, agenda, abstracts, and report. Four newsletters per year, plus regular social media updates. Website hosting and content management. Participation in the development of outreach and educational initiatives. Two travels per year to represent the network at key events or with partners. Bibliography tracking on a yearly basis. Design and production of brochures, posters, and other communication materials.	Provides comprehensive secretariat support for organizing and managing the network's activities, ensuring effective communication and coordination across stakeholders. Increases the network's visibility and engagement through frequent newsletters, social media updates, and outreach materials. Ensures expertise and representation at key events, fostering new partnerships and enhancing network promotion. Supports dissemination and the tracking of bibliographic contributions. High-quality communication materials (e.g., brochures, posters) to enhance outreach and high-level communication efforts. > ½ FTE allocated based on funding provided by the network.	OceanOPS: To secure the agreed FTE level Networks: To secure the funding commitment for the agreed FTE level
Expertise/ Assistance/ Training	Expertise provided on data, metadata access, instrumentation and Law of the Sea issues. Organization of training workshops and webinars to build capacity and share knowledge. (e.g. SOT PMO workshop). Support of bilateral and multilateral donor programmes.	Provides expertise in critical areas, ensuring compliance with international laws and best practices in instrumentation use (necessary for EEZ notifications procedures). Support Marine Scientific Research clearance processes (national, regional). Support capacity building through training workshops and webinars.	OceanOPS: Contribute to capacity development initiatives Secure additional travel time for such events. Networks: Dimension travel time envisioned. 1 event / year ?

ANNEXES

ANNEX 1: SERVICE LEVEL AGREEMENT OVERVIEW [*Below is a summary of all services available across the three tier levels*]

SERVICES	BASELINE	STANDARD	STANDARD PLUS	ADVANCED
Network Monitoring/Web[5]				
GOOS Reporting				
Platforms Metadata Management[5]				
Data Monitoring[5]				
API Metadata Output				
API WIGOS/OSCAR Integration				
Reporting to Networks				
Dedicated Technical Coordination			[¼ to ½ FTE]	[¾ to 1 FTE]
Project Office[6]			[¼ to ½ FTE]	[¾ to 1 FTE]
Operations coordination				
Notifications and alert systems				
Cost estimation[7] (TBD)		$25-35k	$55-90k[8]	≥$135k[8]

Common service	Service in service level	Optional

[5] Scale up together from baseline through standard to advanced.
[6] Optional with extra costs (e.g., FTE, travel).
[7] Estimation does not include options and do not add up between service levels.
[8] Estimation includes travel, IT, metadata, and administrative support, scaled to base technical coordination FTE.

ANNEX 2: Metadata/Data/Monitoring products samples

Below is an overview of the specifications of the metadata and data requirements, and resulting monitoring products. Lists are not exhaustive, and offer a large flexibility to adapt to network specificities. The use of unique and persistent identifiers for observing platforms is fundamental to all services that OceanOPS delivers. OceanOPS holds a unique position and the delegated authority to allocate persistent identifiers (on behalf of WMO) for marine observing systems. OceanOPS issues unique identifiers (e.g. WMO numbers, ship SOT and cruise identifiers, and WIGOS identifiers) to network operators via its API (Application Programming Interface) and web-based GUI (Graphical User Interface). Unique IDs are essential for interoperability, avoiding duplicates, and ensuring the traceability of contributions to GOOS in data and metadata flows. WMO and WIGOS IDs are critical for tracking the use of such platform data in WMO products and services (e.g. assimilation into forecasting models).

SERVICES	BASELINE	STANDARD	ADVANCED
Metadata specifications See OceanOPS Metadata	Exchange: One metadata node to harvest - or basic Web GUI for operators to submit one standard OceanOPS formats (CSV, JSON)	Exchange: Multiple metadata nodes to harvest or network specific Web GUI for operators to submit multiple standard OceanOPS formats (CSV, JSON)	Exchange: Multiple metadata nodes to harvest or network extended specific Web GUI adapted to operators workflow and metadata requirements. any stable format (CSV, JSON, XML, netCDF)
	No integration No quality control Use of controlled vocabulary when exist	Integration Quality control Contribution to controlled vocabulary when exist	Integration Quality control Management of controlled vocabulary
	Requirements: - Unique ID - Platform model - Site/platform/(sub)network name - Program, lead agency - Sensor models[9] - Deployment/Installation date/lat/lon - Deployment ship/cruise[4] - Retrieval ship/cruise[4] - Identifier used for data distribution - Internal id, serial number[4] - Telecom type[4]	Requirements: - Sensors models - Deployment ship, cruise - Telecommunication type - agencies/role - contact/roles - *reasonable list of metadata attributes required/prioritized by the Network .*	Requirements - Sensor serial, specs, height/depth/exposure, variables, program (if different from platform), end/start dates, calibration dates - Configuration: cycles, sampling strategies - retrieval/servicing/deinstallation date, ship/cruise - All identifiers (serial, internal, data) - Telecom formats/services, backup - Battery type, pack - Controller board type, serial, firmware/software versions - Manufacturing date, batch

[9] Non mandatory - TBD

			- *Unlimited list of metadata attribute required/prioritized by the Network*
Data specifications	One global data node to harvest	Multiple global data nodes to harvest	Any data node to harvest, including mirrors
Monitoring Products specifications	Static and Interactive Maps: < 5 - by country, program - by network, sub network - by platform model	Static and Interactive Maps: < 20 - by sensors/variable - by deployment ship/cruise - by platform density - by observation, timeliness - by observation spatial/temporal coverage - by line sampling efficiency - by any metadata attribute available	Static and interactive Maps: unlimited Example: Argo Maps (>70 maps)
	Performance Indicators: < 5 - Implementation: activity - data: availability - International: diversity	Performance Indicators: <20 - Implementation: activity, density/coverage - data: availability/timeliness on multiple nodes - Instrumentation: diversity	Performance Indicators: unlimited - Implementation: activity, intensity, density, coverage; by basin, sub network, sensor/variable - Data: availability, timelines, quality on all nodes, DM QC quantity, black/white lists, uptake (bibliography) - Instrumentation:reliability for N cycles, mortality rate, half-life, survival rate, life expectancy, failure rate, age of failure, hot spots analysis - Operations: ship time, days at sea Integration of indicators produced outside OceanOPS. Example:Argo - KPIs (>170 KPIs)
	Monitoring tools are available through the dashboard and in standalone versions (embeddable on any website). Static Maps comes with a viewer to navigate across time and map types. Mostly available in "standard JCOMM projection" (Plate Caree , origin -150°). Interactive Maps comes with OGC standards layers (served via ArcGIS/ESRI API), through 13 different projections, for: Operational layers (deployment locations, latest locations, observations locations), Cruise/Ships, Reference (designs, lines,polygons) , Analysis (density/coverage), Commons (Maritime zones, Ice extent, Bathymetry), custom layers (CSV, KML,WMS, ArcGIS), etc.		

ANNEX 3: Expected Networks Service Level Agreement based on current contributions

NETWORK	SLA[10]	TARGET SLA	COMMENTS	ACTIONS
AniBOS	Baseline	Standard	Standard monitoring/metadata and advanced web	Confirm Technical support FTE level
Argo	Advanced	Advanced + all options	+EOV performance tracking	none
DBCP	Standard	Baseline ? Advanced ?	Basic services. No data monitoring.	Refine SLA by DBCP component (GDA, GTMBA, NMBA, TSU) and define %FTE for each.
FVON	Baseline	Standard ?	Basic monitoring/metadata and advanced web.	Confirm Technical support FTE level
GO-SHIP	Standard	Standard + options	Standard services - basic web - project office	Confirm Technical support or/and project office FTE level
GLOSS	Baseline		No answer	**Feedback needed**
HF Radars	Baseline		No answer	**Feedback needed**
OceanGliders	Standard	Standard	Standard service + advanced metadata	
OceanSITES	Baseline	Baseline	Standard service - advanced metadata	1) Funding from network members comes in 3-5k charges. Is dealing with these small charges acceptable for WMO? 2) Do we get a quotation for a specific service that run under "Standard" or "Advance"? (also linked to 1)) 3) What happened to the money that was paid on a sustained bases to WMO for support of a 33% TC position for OceanSITES (and 66% DBCP TC)
SmartCables	Baseline	Baseline	Support for setting up a data management strategy from existing pilots	Feedback through call OceanOPS/SmartCables

[10] As of Sept. 1st 2024, post OceanOPS restructuration, and according to resources provided to OceanOPS.

SOCONET	Baseline	Advanced	Estimated from funding commitments (US+EU)	**Feedback needed**
SOT-ASAP	Baseline	Baseline		SLA review by component for SOT Panel (VOS, ASAP, SOOP) Weights can be used for prioritization across components.
SOT-SOOP XBTs	Baseline	Standard	Standard services	
SOT-VOS	Standard	Advanced	Advanced services including standard project office	