



PEA Job Description

1. Position Identification	
Position Number	991090, 991689, 991801, 991800, 991849, 991882, 991883, 992078, 992079, 992114, 992229, 992692, 992697
Position Title:	Data Steward
Department:	Ocean Networks Canada
Reports to:	Manager, Data Stewardship
Number of Direct/Indirect Reports	Direct _____ Indirect _5+__
Classification Level	SG12
Last Updated	Nov 2021

2. Position Summary
<p>Ocean Networks Canada (ONC) is a world-leading organization supporting ocean discovery and technological innovation for science, society, and industry. ONC monitors the west and east coasts of Canada and the Arctic to continuously deliver data in real-time for scientific research and discovery and technological innovation.</p> <p>ONC operates and manages innovative cabled observatories that supply continuous power and Internet connectivity to various scientific instruments located in coastal, deep-ocean, and Arctic environments. ONC's cable arrays host thousands of sensors distributed in, on and above the seabed along with mobile and land based assets strategically located, instruments that address key scientific and policy issues (subsea earthquakes and tsunamis, ocean acidification, marine biodiversity, etc.) within a wide range of environments.</p> <p>ONC is a Major Science Initiative funded by the Canada Foundation for Innovation (CFI) and is governed as a not-for-profit society that operates world-class innovative cabled observatories on behalf of the University of Victoria.</p> <p>ONC's Observatory Operations' division is mandated to ensure the acquisition, curation and delivery of high-quality data to a global research community. As a department within Observatory Operations, Data Stewardship supports this mandate through the critical activities of metadata and data curation, and the provision of geospatial services and operations support. Curation activities enhance metadata and data discovery, retrieval, provenance, quality, archival, and interoperability. Geospatial services focus on maps, geodatabases, notices to mariners/shipping, and bathymetric/navigational data management. Operations support ensures that the extensive and complex workflows that guide the preparation and deployment of underwater instruments are conducted in a manner that maximizes the probability success and the delivery of quality data to the global research community.</p> <p>The Data Steward is primarily responsible for acquiring, verifying and maintaining metadata and data for ONC. Properly curated data is critical for scientific and non-scientific users to understand, interpret and analyze the information collected via the instruments on the network operated by ONC. ONC's primary mission to maintain long time series data sets cannot be achieved without robust and accurate metadata. Secondary duties include field and at-sea support during infrastructure maintenance operations that occur multiple times a year for up to four weeks duration, or day and multi day trips.</p> <p>This position is required to work designated shifts through extended hours, 24 hours a day, 7 days a week when supporting expedition operations.</p>

3. Key Responsibilities and Expectations		
Key Responsibilities.	time	Expectations:
Metadata Curation 30%		<ul style="list-style-type: none"> • Compiles, evaluates and maintains complete and compliant metadata that describe infrastructure, datasets and field operations • Coordinates and proposes metadata schema and processes, adopting existing recognized standards when appropriate • Organizes, classifies and stores instrument documentation (e.g., manuals, calibration sheets, pictures and reports) and software that have been produced by manufacturers, data providers or staff; these documents are maintained in Alfresco or on wiki pages for staff and external users to access • Develops metadata integration and quality assurance procedures • Monitors and influences the development of community metadata standards and trends such as controlled vocabularies, schemas, identifiers (working groups, governance systems, mailing lists, etc.) • Verifies metadata is accurately represented in data products • Monitors and influences standards and best practices for data exchange, reuse and interoperability • Prepares internal and end-user documentation describing ONC metadata procedures and guidelines for operational consistency and provenance • Interacts with third party data providers to obtain and maintain accurate metadata for their datasets, crucial to data interpretation • Manages third party data agreements and implements resulting data restrictions and attributions
Data Curation - Acquisition, Ingestion and Distribution 30%		<ul style="list-style-type: none"> • Performs corrective actions for data quality including data file manipulations, data reprocessing and archive parameters • Develops procedures and executes tasks for autonomous, expedition and third-party data ingestion (file name standardization, data conversions, archival, and post-processing) • Provides requirements and verifies new data acquisition software (e.g., instrument drivers, parsers, schedules) for heterogenous and often complex instrument types, platforms and contexts (e.g., radars, gliders, hydrophones, gliders, navigation, etc.) • Coordinates with other teams within ONC, instrument manufacturers, principal investigators and data partners to ensure quality and utility data collection • Collaborates with data partners and researchers for data publication and citation of curated datasets • Oversees planning and implementation for dynamic data citation, including considerations for versioning, granularity and metrics • Determines, implements and documents instrument settings such as configurations, calibrations, routines and scheduling that enables and directly impacts data collection • Implements and document data distribution configurations such as data product mappings, discovery metadata, and web services (e.g., ERDDAP) that influence data access • Facilitates data exchange with linked data relationships (e.g., PNSN, OBIS, IRIS, OTN, CIOOS, GTS, etc.)

<p>Expedition Support 30%</p>	<ul style="list-style-type: none"> • Administers workflows for instrument deployment, maintenance and recoveries • Executes data stewardship tasks within the instrument workflows including setup for data acquisition framework and commissioning • Reviews and updates ROV dive plans • Executes 24/7 dive logging of dive operations, observations and science activities, both at-sea and ashore • Ensures that dive logs are complete, accurate and adherent to observatory conventions • Trains guest and student dive loggers in SeaScribe and SeaTube • Tracks collection, post-analysis results and protocols for physical samples • Manages metadata and documentation for experiments, acoustic and visual surveys • Updates and distributes expedition documentation such as site layout diagrams, marine configuration diagrams, and platform diagram following procedures regularly refined by annual consultation with stakeholders • Collects, organizes and stores field documents including pictures, dive plans, and records • Coordinates with ship and ROV contractors to collect and provide feedback on data deliverables
<p>Miscellaneous 10%</p>	<ul style="list-style-type: none"> • Generates metadata summaries and reports as required • Completes peer-reviews of tasks completed by other team member to ensure metadata and data integrity • Creates content for designated sections of ONC website • Attends and presents at conferences and workshops • Attends training sessions and webinars relevant to instrument type responsibilities and data stewardship best practices and standards

4. Classification Factors:

Problem-Solving:

This position requires careful consideration of metadata management choices based upon input from staff, scientists and the ocean data community. Reaching consensus is challenging given the heterogeneity of the problem (instrument types, data sets, data collection methods, and end-user expectations) and the evolving state of ocean metadata and data standards. The Data Steward uses their knowledge of best practices, standards and criteria to guide data solutions ensuring that these principles and criteria are adhered to. The oceanographic community has yet to converge on many facets due to the complexity of the problem. Thus, the position requires someone who can combine big-picture and detail-oriented thinking when developing solutions. The impacts of wrong decisions can be significant as it can impact data quality and interoperability. An excellent ability to identify patterns, assess limitations and compare options is essential.

The complexity of the ONC data framework demands that the Data Steward have an exhaustive knowledge of the system if they are to be effective in resolving metadata and data curation issues. During support to operations, many issues are time sensitive, and decisions must be made quickly and with limited information. Effective decision making requires attention to detail, analytic skills, and the understanding of scientific concepts across multiple disciplines. The Data Steward needs to be able to accept a constantly changing environment, intense time pressures and must be able to manage complexity.

Responsibility for Financial & Material resources:

This position does not have responsibility for budget or materials expenditures but has shared responsibility for maintaining metadata and data integrity of all ONC’s observatory infrastructure and third-party data-sets hosted by ONC. These assets are of significant importance and value to the organization, and to the national and international scientific and research communities.

Responsibility for Human Resources:

The Data Steward works under the general supervision of the Manager Data Stewardship. Since many team tasks have direct and lasting impact on metadata and data, the Data Steward will conduct and receive peer-reviews to reduce errors and improve methods. The Data Steward will also instruct non-team members on metadata, raw data and documentation related tasks to support operations in the field and is expected to occasionally supervise short term staff. When assigned to a project involving multiple teams within the organization, data stewards are expected to provide metadata and data related requirements for aspects like new software, data partner service agreements and operational procedures.

Impact of Decisions and Actions:

The Data Steward has a critical role in maintaining the integrity of ONC metadata and archived data. ONC’s primary mission of long time-series data sets cannot be achieved without meticulous documentation and verification of metadata for ONC infrastructure, datasets and operations, and proper preparations and archival of raw datasets. In this capacity, the Data Steward is expected to closely interact with other ONC staff, research and professional scientists at national and international education institutions, government laboratories and international partner organizations. When new situations are encountered, the Data Steward gathers internal metadata/data requirements and coordinates efforts with international scientific metadata experts and relevant ocean data providers to identify and recommend suitable appropriate procedures and standards for ONC. Since ONC is continually expanding its operations, existing processes will need to be continually evaluated and new processes will need to be established. The implementation of robust, internationally recognized metadata standards and procedures by ONC will ensure the long-term usability and accessibility of ONC data for scientists and other end-users both in Canada and around the world.

Independence:

The Data Steward makes independent decisions around the solutions and requirements generated to complete assigned tasks. The Data Steward is expected to ensure their decisions and actions are in alignment with the strategic guidance proved by the Manager Data Stewardship, University policies and procedures, federal and provincial regulations, and department policies and procedures. Resolving metadata discrepancies or omissions will rely upon the Data Steward’s expert judgment and often requires close collaboration with the Science, Marine Operations and Software Engineering teams.

5. Summary of Qualifications:

The successful candidate will have at a minimum a master's degree in Information Science, Computer Science or related field, and 3 years of experience working in a related discipline.

An equivalent combination of education and experience may be considered.

Experience requirements:

- Demonstrated experience with metadata schemas, controlled vocabularies, linked data
- Experience with web-services for scientific data discovery and delivery
- Experience with digital content management tools
- Experience with metadata and data manipulation

Knowledge requirements:

- Expertise with geospatial and oceanographic community conventions and standards
- Familiarity with XML, RDF, NetCDF tools and formats
- Ability to program in Python, Matlab, R, or other scripting languages
- Fluent in the use of SQL-based database access tools
- Basic knowledge of scientific instrumentation and measurements
- Familiarity with international meta data standards and practices and their creation

Competencies requirements:

- Strong problem-solving skills
- Strong organizational skills
- Ability to deal with multiple parallel projects involving several stakeholder groups, and consistently meet deadlines
- Ability to effectively prioritize tasks and to effectively manage assigned work during periods of peak demand
- Strong oral communication and writing skills
- Ability to work in a team-oriented, multidisciplinary environment.

Assets:

- Demonstrated interest in ocean sciences and/or Earth sciences
- Familiarity with problem and project tracking software such as Jira, Bugzilla or equivalent
- Experience with oceanographic expeditions