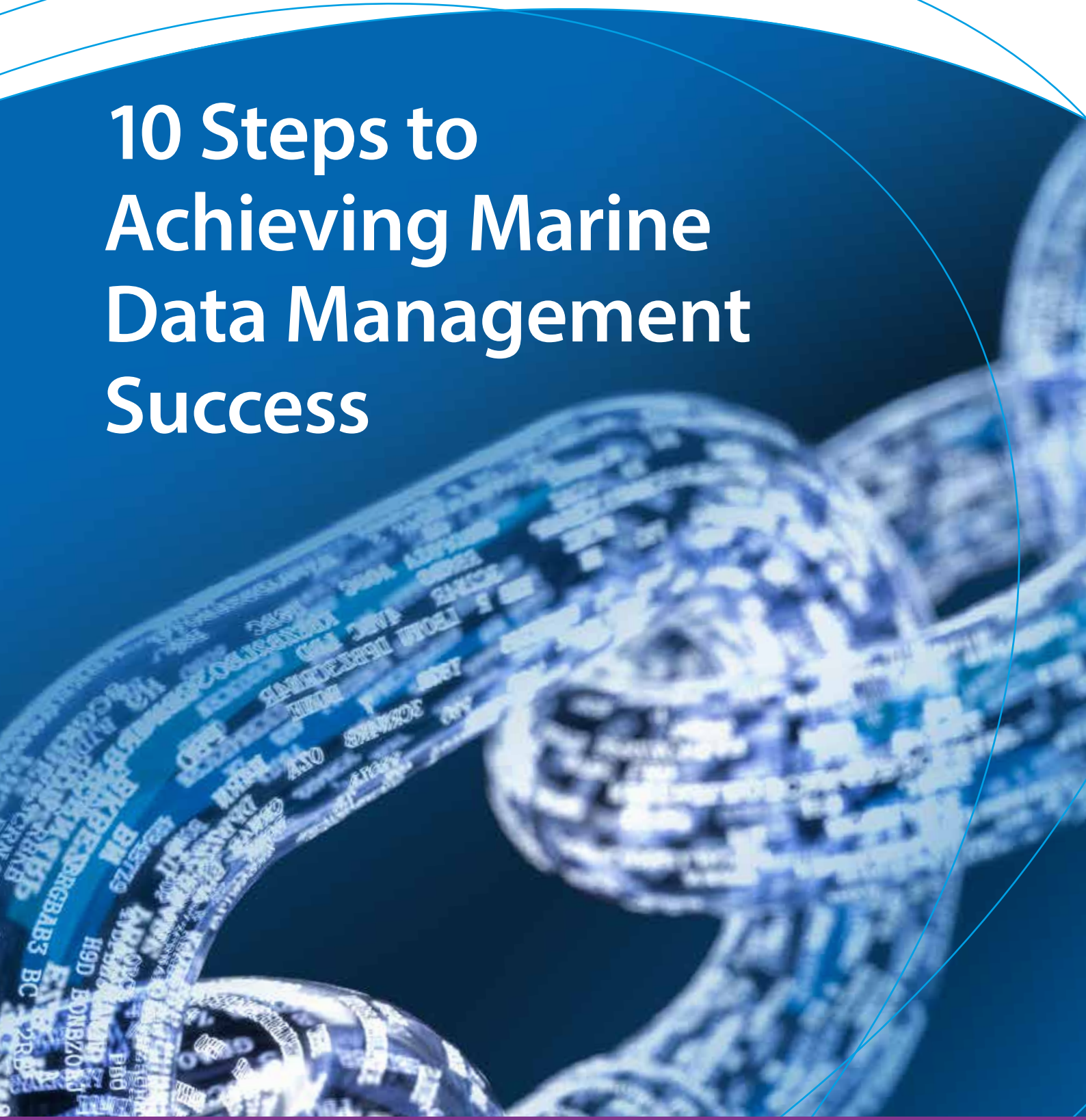
OceanWise

where your data matters

10 Steps to Achieving Marine Data Management Success



A guide to achieving marine data management best practice

Poor data management can put your business at risk

Here's our quick 10-step guide to success

1 Strengthen Your Existing Data

Let's **consider the data you hold**. This is important to guage, before you embark on the next steps.

Your data may require additional structure applied for future management and use. Such activities might include:

a) Capturing paper records in an electronic format
b) Data cleansing
c) Providing and / or improving metadata
d) Creating defined conventions for filenames and older/ file structures
e) Defining Licensing, Corporate IP and Copyright Policies
f) Creating a business model of the Data to be managed in future

2 Prepare Your Vision

A vision is an **aspirational description of what an organisation would like to achieve or accomplish** in the mid-term or long-term future and serves as a clear guide for choosing current and future courses of action. It will help you communicate your organisation's ambitions to employees and management in a single sentence or short paragraph.

In the case of data management, you can express the declaration of your intent to develop Data Management "best practice" in a manner that is understood and is seen as attainable.

3 Write a Data Policy

A Data Policy is **a crucial guide to support a corporate decision** to achieve desired outcomes in the way data is managed. It sets the ground rules that your organisation must follow in managing the data you hold. It details your commitment to the long-term management of the data and also outlines the roles and responsibilities of all those involved in collecting and managing such data.

Central to the policy should be a statement outlining how the data is accessed, shared, published and preserved for the longer term, and any terms and conditions associated with these activities.

4 Appoint a Data Manager

The Data Manager should not be confused with that of the Database Manager which is a traditional IT role.

The job of a Data Manager is **to make your organisation aware of the corporate risks associated with marine data** and its use and to help them manage those risks.

The Data Manager is responsible for design, development, and modification of the data management infrastructure that allows data analysis and reporting. They will implement the data policy and guidelines for management plans, operating instructions, procedures for data handling and archiving as well as providing guidance on data matters.

This role does involve working with the Database Manager in the selection, implementation and support of database design, functionality and changes.

The Data Manager is also responsible for the organisation's internal Master Data Register (MDR) which identifies ownership, location, status, rights and use of data through its life-cycle.

5 Perform a Data Audit

A data audit refers to new or existing data and is undertaken **to assess its quality or utility for the specific purpose within the organisation** and its onward use.

Auditing data, unlike finances, involves looking at key metrics, other than quantity, to create conclusions about the properties of a particular data set. During a data audit, the origin, creation or format of data may be reviewed to assess its value and utility.

A data audit is dependent on a registry, which is a storage space for data assets and should involve identifying the registry or repository, often in a specific business department or organisation. In academia, the idea of auditing research data has become an important work component as scientific information is now increasingly published as data or in a database format.

6 Develop Your Metadata

Metadata is **'data about data' and is an essential element for any future data publishing** or exchange. It provides important additional information about a (data) resource, to enable the resource to be better accessed, understood and used. Metadata is applied to "raw" (unrefined) and processed data as well as to data products and services. There are a range of uses for metadata but the two most common ones are:

- Discovery (describes the existence and overview of a data resource)
- Evaluation (describes how that data resource can be used in more technical detail)

Almost every product or service we purchase and use has metadata. For example; a tin of baked beans has a label containing information about the product such as its contents, weight, additives, etc. whereas a bathymetric survey contains information such as its geographic location, ship name, surveyor name, survey instrument, date, time etc.

7 Create a Master Data Register

Creating a Master Data Register (MDR) is a good way of getting to know all about the data resources you hold as it will contain data structures and lists of codes used in electronic information recording and exchanges among data producers, publishers and stakeholders.

A MDR provides the infrastructure and mechanisms required to manage and maintain any data resource and may typically include the feature concept, means of portraying the information and metadata, which in effect are managed lists or dictionaries of items. The product specifications register is a list describing meta-information about the content, purpose, version, location and availability of those product specifications.

A data registry allows for data to be used to agreed data standards such as those developed by bodies such as the Open Geospatial Consortium (OGC), the International Standards Organisation (ISO) or the International Hydrographic Organisation (IHO).

8 Invest in a Data Management System

Creating a Master Data Management (MDM) system **enables an organisation to link all of its critical data to one file**. This file is referred to as the Master Data Register or master file (see step 7). MDM streamlines the process of data sharing among people, departments and potentially other organisations and involves a number of technology solutions, including data integration, data quality, and Business Process Management (BPM).

It delivers a single view of the data from disparate, duplicate, and potentially conflicting information. Business rules allow you to identify the relationships among the data so you can combine data more easily. It will also provide a complete view of all interactions that have occurred with that data, product, customer, channel partner, or other data element giving you a complete view of that particular customer.

A good MDM should allow flexibility, scalability and data variability in order to handle multiple data types and to understand the relationships between different data.

9 Develop a Data Quality Management System

It is possible to have a data quality initiative without MDM, but every MDM project must have a Data Quality Management (DQM) element. We are all familiar with examples of the poor data quality that we are exposed to every day. For example, how many misspelt versions of your name appear on letters and bills sent to you?

Data quality management entails **the establishment and deployment of roles, responsibilities, policies, and procedures concerning the acquisition, maintenance, dissemination, and disposition of data**. For this to succeed, a partnership between the business and technology groups is needed.

The business areas are responsible for establishing the business rules that govern the data and are ultimately responsible for verifying the data quality. The Information Technology (IT) team is responsible for establishing and managing the overall environment such as architecture, technical facilities, systems, and databases, that acquire, manage, disseminate, and dispose of the electronic data of the organisation, with decisions made based on the data they have at their disposal.

The viability of the business decisions is contingent on good data, and good data is contingent on an effective approach to data quality management. This ultimately leads to providing data of a given quality to customers (both internal and external) as well as collecting quality data about the customer.

10 Consider Content and Document Management

As the volume of information grows in an organisation, the need for a formal management system for organisational documents and content becomes ever more important.

Document Management Systems (DMS) are **computer systems focusing primarily on the storage, retrieval and tracking of data** and/or images of paper documents and is designed to help organisations manage the creation and flow of documents through a centralised repository. The workflow of the DMS encapsulates business rules and metadata.

A DMS has some overlap with the concept of content management systems and is often viewed as a component of an Enterprise Content Management (ECM) system for digital asset management, document imaging, workflow systems and records management systems. However, as most organisations still have to deal with paper and electronic files, a well-designed DMS should make finding and sharing information easier.

It does this via sophisticated search tools and the adding of classification schemes (or taxonomies) to the document information being stored.

So what can you do now?

Enjoy the confidence of working with marine data experts

By now you'll realise that data is an extremely valuable asset to your business and you will take the necessary steps towards managing this asset in a 'best practice' manner.

By following our Data Management 10-steps to success, you can make the most of your data holdings.

OceanWise are marine data experts and support organisations and/or individuals with a wide range of marine data management challenges. We provide guidance, training and consultancy services at any stage of your journey.

Contact us for more information:

+44 (0)1420 768 262

info@oceanwise.eu

www.oceanwise.eu