

Sensor development templates: Specification Document

*(Name of the sensor)*

Version xx

Document ID

Authors1

1Author Affiliation

Year

|  |  |  |  |
| --- | --- | --- | --- |
| Version log | | | |
| Issue Date | Revision N° | Author | Change |
|  |  |  |  |
| DD.MM.YYYY |  |  | Ex: first version/ review by xxx /accepted version |
|  |  |  |  |
|  |  |  |  |

Contents

[1 Purpose & Scope 4](#_Toc72423597)

[2 Design Authority 4](#_Toc72423598)

[3 Specification Overview 4](#_Toc72423599)

[3.1 Status in the design process. 4](#_Toc72423600)

[4 Requirements 5](#_Toc72423601)

[5 Design 5](#_Toc72423602)

[5.1 Operating principle (e.g. analytical technique) 5](#_Toc72423603)

[5.2 Operating details e.g. assay or analytical approach 5](#_Toc72423604)

[5.3 Schematics 5](#_Toc72423605)

[5.3.1 Method flow diagram 5](#_Toc72423606)

[5.3.2 system design (how components work together) 5](#_Toc72423607)

[5.4 Components 5](#_Toc72423608)

[5.4.1 Analytical components (e.g. detectors, transducers, optofluidic fluidic chip) 5](#_Toc72423609)

[5.4.2 Control Electronics, Software & Vehicle Interface 5](#_Toc72423610)

[5.4.3 Interfaces 5](#_Toc72423611)

[5.4.4 Mechanical / Housings 5](#_Toc72423612)

[6 Testing and validation data 5](#_Toc72423613)

[6.1 Errata log 5](#_Toc72423614)

[6.2 Analytical / functional approach testing 6](#_Toc72423615)

[6.3 Component testing 6](#_Toc72423616)

[6.4 System testing (lab) 6](#_Toc72423617)

[6.5 System testing (environment) 6](#_Toc72423618)

[6.6 Validation / demonstration 6](#_Toc72423619)

[7 Manufacturing and documentation 6](#_Toc72423620)

[7.1 Software and firmware 6](#_Toc72423621)

[7.2 Electronics schematics and layouts 6](#_Toc72423622)

[7.3 Manufacturing drawings 6](#_Toc72423623)

[7.4 Recipes and methods 6](#_Toc72423624)

[7.5 User Manual 6](#_Toc72423625)

[7.6 Engineers Manual 6](#_Toc72423626)

[8 Invention Disclosure 6](#_Toc72423627)

# Purpose & Scope

This is the formal specification for the xxx. It presents the current design that has been developed to meet the application / technological requirements with links to detail such as data, models, testing and other considerations that were used to reach key design decision. It is not a scientific paper, it contains only sufficient detail to ensure that a skilled technologist can understand the technology and can evaluate the evidence for design decisions when reviewing or further developing the technology. It should link to all detail available on the current design (such as software code, engineering drawings, manuals etc.) and when complete should provide the basis of an information pack for continued manufacture, application, use or further development of the technology by persons currently unfamiliar with the technology. However, this document should be kept as brief as possible and therefore should hyperlink to this level of detail rather than repeating that here. This will also aid version control and consistency of the documentation.

This specification will not be varied without all relevant parties being involved and a new version of this document being issued by its design authority.

# Design Authority

**Please specify here an individual or body that is responsible for the technology and who can certify that this is the agreed specification to best address the requirements.**

# Specification Overview

Overview of the design / specification

## Status in the design process.

Please see summary of the design process [here](https://nercacuk.sharepoint.com/sites/NOCOTE/Shared%20Documents/OTE%20General/OTE%20Training/SOPs%20guides%20best%20practice%20and%20training%20docs/SOP%20etc%20Content/OTE%20Engineering%20Process.docx). Note this process is not linear. For example if at detailed design stage (5) or on testing (7) a failure occurs it may be necessary to reopen the specification at earlier stages e.g. to repeat brainstorming (2) or preliminary design (3). In extreme cases the requirements may need modification (in agreement with stakeholders / users).

|  |  |  |
| --- | --- | --- |
| Stage | Link to latest at each stage, state “this document”, or none if not started yet | Status (e.g. open, started, complete, not started, reopened) |
| 1: Science / Application Review | [Requirements document](https://nercacuk.sharepoint.com/sites/NOCOTE/Shared%20Documents/OTE%20General/OTE%20Training/SOPs%20guides%20best%20practice%20and%20training%20docs/SOP%20etc%20Content/Requirements%20Document%20Template.docx) | open |
| 2: Technical Brainstorm /  Concept Design | This document | Not started |
| 3: Preliminary Design | None | Not started |
| 4: Component Prototyping | None | Not started |
| 5: Detailed Design | None | Not started |
| 6: Manufacture | None | Not started |
| 7: Test, Optimisation & Documentation | None | Not started |
| 8: Validation / Deployment | None | Not started |

# Requirements

Link to [requirements document](https://nercacuk.sharepoint.com/sites/NOCOTE/Shared%20Documents/OTE%20General/OTE%20Training/SOPs%20guides%20best%20practice%20and%20training%20docs/SOP%20etc%20Content/Requirements%20Document%20Template.docx)

# Design

## Operating principle (e.g. analytical technique)

## Operating details e.g. assay or analytical approach

## Schematics

### Method flow diagram

### system design (how components work together)

## Components

### Analytical components (e.g. detectors, transducers, optofluidic fluidic chip)

### Control Electronics, Software & Vehicle Interface

### Interfaces

### Mechanical / Housings

# Testing and validation data

## Errata log

This [errata](https://nercacuk.sharepoint.com/sites/NOCOTE/Shared%20Documents/OTE%20General/OTE%20Training/SOPs%20guides%20best%20practice%20and%20training%20docs/SOP%20etc%20Content/Erratum%20template.docx) document keeps track of any issues (problems) identified during testing and tracks follow up actions.

## Analytical / functional approach testing

## Component testing

## System testing (lab)

## System testing (environment)

## Validation / demonstration

# Manufacturing and documentation

## Software and firmware

## Electronics schematics and layouts

## Manufacturing drawings

## Recipes and methods

## User Manual

## Engineers Manual

# [Invention Disclosure](https://nercacuk.sharepoint.com/sites/NOCOTE/Shared%20Documents/OTE%20General/OTE%20Training/SOPs%20guides%20best%20practice%20and%20training%20docs/SOP%20etc%20Content/Invention%20disclosure%20form_NOC.docx)

Statement here about the completeness and maturity of the design for exploitation and state of the invention disclosure form (e.g. rough draft)

**OBPS Metadata table (non-journal contribution)**

**Document Data Sheet v5** (for submissions to [www.oceanbestpractices.net](http://www.oceanbestpractices.net/)**)**

 We recommend including this document data sheet into your Best Practice document. **Please do not change any formatting, entries in the left column, or the table structure.** The format below will allow automatic ingest of the data in this table into the [OceanBestPractices](https://www.oceanbestpractices.net/) Repository. Enter data only in the right-hand column.

Mandatory fields are indicated with **\*\*** but we strongly recommend that you provide data (if applicable) for all the metadata fields requested; this will allow you to unambiguously declare what your best practice is about and help our indexing technology make it more visible.

|  |  |
| --- | --- |
| **Practice  type \*\***  Choose up to 2 entries from the list (delete the rest) to indicate what BP type you consider your document is. Separate two entries with a semicolon (;)  ·      Best Practice: a best practice is defined as a methodology that has repeatedly produced superior results relative to other methodologies with the same objective; to be fully elevated to a best practice, a promising method will have been adopted and employed by multiple organizations  ·     Manual (incl. handbook; guide, cookbook): a document giving instructions or information  ·     Standard: something set up or established by a recognized standards authority as a rule for the measure of quantity, weight, extent, value, or quality.  ·     Standard Operating Procedure: established or prescribed methods to be followed routinely for the performance of designated operations or in designated situations  ·     Training and educational material: an item, document, video etc intended to be used for instruction or training purposes | Best Practice;    Manual (incl. handbook; guide, cookbook):   Standard;   Standard Operating Procedure:   Training and educational material: |
| **English-language document title \*\***  Entries should be in English.  If applicable, include a sub-title after a colon (:) and version number after the title text (e.g. Version 3.2). |  |
| **Non-English document title**  If the title was not originally in English, please include it in its original form here. If applicable, include a sub-title after a colon (:) and version number after the title/subtitle  text (e.g. Version 3.2). |  |
| **Author Last, First Name(s)  \*\***  Separate multiple entries with a semicolon (;)  e.g.: Smith, Joseph; **Jones, H.**; (enter the name/s as it appears in the document) |  |
| **Author ORCID(s)**  eg. 0000-0002-4366-3088.  Visit<https://orcid.org/> to register  Separate multiple entries with a semicolon (;)  The order of these entries should correspond to that of the names above |  |
| **Editor Last, First Name(s)  \*\***  Separate multiple entries with a semicolon (;)   (enter the name/s as it appears in the document)  eg: Buttigieg, Pier Luigi; Simpson, Pauline; |  |
| **Editor ORCID(s)**  e.g.: 0000-0002-4366-3088  The order of these entries should correspond to that of the names above.  Separate multiple entries with a semicolon (;) |  |
| **Corporate Author \*\***  Where there is no personal author or editor enter the organization, project or team name responsible for creating the best practice,  eg. CleanSea Project |  |
| **Contact person - Last, First names**  e.g. Smith, Joseph |  |
| **Contact person -  Email \*\*** |  |
| **Date of Issue (yyyy-mm-dd) \*\***  e.g. 2018-05-21 |  |
| **Recommended Next Content Review Date (yyyy-mm-dd)**  Please indicate the date which you believe the document should be revised and updated |  |
| **Pages  or Extent**   e.g.: 57pp.  Use straight through pagination of document  e.g.  39pp. & Annexes   Use pagination of the document body  e.g. 12 mins  (for video) |  |
| **Publisher  Name(s) \*\***  e.g.: Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER)   Please state the Institute’s (Issuing Organization) name as it is specified in official communications. Separate multiple publisher entries with a semicolon (;) |  |
| **Place of Publication**  e.g.: Plouzane, France  This should correspond to the publisher name(s) provided above. |  |
| **Series Name and/or Document Number(s)**  If applicable, list creator document identifiers,  e.g.:  SIP Protocol Series 6;  e.g. JERICO-NEXT-W2-D2.1.-24112016-V2.0  Separate multiple entries with a semicolon (;). |  |
| **External identifiers**  e.g. DOI:xxxxxx ;  ISBN: xxxxxx  Separate multiple entries with a semicolon (;) |  |
| **Resource URL:**  Enter the official URL for each relevant category in the table opposite   |  | | --- | | **Organization, project etc  URL** | | **Code Repository**  If applicable, include URLs to any code repositories which are associated with this journal article, including digital notebooks (e.g. Jupyter or R Notebooks)  Separate multiple entries with a semicolon (;). | | **Dataset**  If applicable, include URLs/DOI to any datasets which are associated with this journal article | | **Other** | | |  | | --- | |  | |  | |  | |  | |
| **Abstract/Summary \*\***   Please provide a brief summary of your method/best practice including, as appropriate, a brief descriptions of what techniques your best practice is about, which ocean environments or regions it targets, the primary sensors covered, what type of data/measurements/observing platform it covers, limits to its applicability and note which the community of  practice developed the best practice. | FREE TEXT |
| **Refereed Status\*\***  Has this document been peer reviewed/refereed? Please enter YES, NO or UNKNOWN |  |
| **Maturity Level**  If applicable, note one of the maturity levels of the methodology in the document   * **N/A** where maturity level not applicable * **Mature**: Methodologies are well demonstrated for a given objective,documented and peer reviewed; methods are commonly used by more  than one organization (TRL 7-9) * **Pilot or Demonstrated:** Methodologies are being demonstrated and validated; limited consensus exists on widespread use or in any given situation (TRL 4-6) * **Concept:** A methodology is being developed at one institution(s) but has not been agreed to by the community; requirements and form for a methodology are understood  (TRL 1-3) |  |
| **Spatial Coverage**  If applicable, please specify the region where the best practice is applied. For regional term guidance usethe following link:<https://www.nodc.noaa.gov/worlddatacenter/regions.html>**.**  e.g. SW Pacific Ocean |  |
| **Sustainable Development Goals, Targets, and Indicators** \*\*  If applicable, please specify if the best practice has application for a sustainable development goal. Target number is required and should be entered  e.g 14.3  Add Indicator if applicable eg.  14.3.1  Refer to this page for more information:<https://sustainabledevelopment.un.org/>  Separate multiple entries with a semicolon (;)  **Enter N/A if not applicable** |  |
| **Essential Ocean Variables (EOV)\*\***  Copy and paste standard variable names from the list on [this link](https://gcos.wmo.int/en/essential-climate-variables/ecv-factsheets).  Separate multiple entries with a semicolon(;)  **Enter N/A if not applicable** |  |
| **Essential Climate Variables (ECV)**   Copy and paste standard variable names from the list on [this link](https://gcos.wmo.int/en/essential-climate-variables/ecv-factsheets) (e.g for atmospheric variables not already under EOVs)  Separate multiple entries with a semicolon(;)  **Enter N/A if not applicable** |  |
| **Essential Biodiversity Variables (EBV)**   Copy and paste names from [this link](https://geobon.org/ebvs/what-are-ebvs/)  Separate multiple entries with a semicolon(;)  **Enter N/A if not applicable** |  |
| **Supporting Variables**  Please indicate here any supporting variables, this refers to variables observed or known from instrumentation or identified in the text and used to calculate the desired EOV, ECV or EBV.   Separate multiple entries with a semicolon(;)  **Enter N/A if not applicable** | FREE TEXT |
| **Sensors**    If applicable, please indicate here the type of sensor/s and manufacturers that are mentioned in the best practice, e.g. Water sampler General Oceanics.    Separate multiple entries with a semicolon (;).  **Enter N/A if not applicable** | FREE TEXT |
| **Environment(s) of relevance**  If applicable, please, indicate here the environment(s) of relevance for the best practice, e.g. Abyssal plain. Select from the (ENVO) terminology on this [link,](https://www.ebi.ac.uk/ols/ontologies/envo/terms?page=1)   Separate multiple entries with a semicolon (;).  **Enter N/A if not applicable** |  |
| **Other Keywords**  Add any other key words, e.g. Melt pond; Diatoms; Absorption coefficient   Separate multiple entries with a semicolon (;). | FREE TEXT |
| **Bibliographic Citation \*\***     Enter the form in which you would like your  article cited. For  example, consider this report   citation format:  Author/Editor (Year) Title.  Place of Publication, Publisher,  Pages.  (Series Name, Document ID). DOI: |  |
| **License \*\***   (click to view license)   Choose one of the following:  ●       All rights reserved  ●       Public Domain   (CC0)  ●     [CC BY-NC-SA 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/)  ●     [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)  ●     [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)  ●       Other (please specify)  ●       No Creative Commons License  [CC=Creative Commons](https://creativecommons.org/licenses/) |  |

**Version history for submissions to** [**www.oceanbestpractices.net**](http://www.oceanbestpractices.net/)

We recommend including a revision history with your document. Please order your revisions such that the earliest is at the bottom of the table.

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision**  We recommend using semantic versioning (e.g. 4.2.1) | **Date (yyyy-mm-dd)** | **Note on  modifications**  A very brief description of the changes made. A more developed account should be given in a preface to the document | **Lead Author**  Last name, first name(s) |
|  |  |  |  |