

The logo for EARSC features the acronym 'EARSC' in a bold, blue, sans-serif font. To the right of the text is a semi-circular arrangement of seven grey stars of varying sizes, similar to the European Union flag. Below the acronym, the full name 'European Association of Remote Sensing Companies' is written in a smaller, grey, sans-serif font.

EARSC

European Association
of Remote Sensing
Companies

EARSC Guideline Document

EARSC EO Industry Certification Scheme

Document Requirements Definition for
Earth Observation Product Specifications

EARSC/CERT/DRD/2013/001

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This document contains a total of 17 Pages

Change Record Sheet

Date	Issue/ Rev.	Pages Affected	Description	DCR	Approval Authority
July 2013	1.0	All	First Issue		
January 2014	1.1	All	Minor revision following Pilot Certification Project Carried out 2014		

1 INTRODUCTION

1.1 Background

The European Association of Remote Sensing Companies (EARSC) is the European organization which – on a non-profit basis – coordinates and promotes activities of their members in the area of services based on the delivery of geo-information products on customer demand. Formed in 1989 EARSC has been acting for over 24 years on behalf of the geospatial services industries in Europe and especially those dealing in EO services. The members of EARSC are active on the growing market for the exploitation of EO data by converting these data in geo-information suitable and accessible for their clients. This conversion process, the customization of the products and the development and provision of services is characterized by addition of value for users/customers in the chain between data collection and exploitation of information.

During the period 2010 to 2013, the European Space Agency has financed a project to look into the feasibility of a quality certification scheme for the Earth Observation Industry. This project, with Hollidge Consulting Limited, has led to a close working relationship with EARSC and the founding of the EARSC Industry Best Practices Working Group.

As a result, the following documentation has been developed:

- A Scheme Description (RD03), based on the relevant ISO standards and Guidelines pertaining to certification schemes.
- Guide for the application of ISO9001 (AD01) focusses on the needs of the Earth Observation industry.
- Document Requirements Definition for Product Specifications (this document).

EARSC has now decided to issue this document as a guideline for the industry to be available for use by EO companies and their customers in order to ease the preparation of Product Specifications.

1.2 Purpose and Use

The purpose of this document is to enable organisations generating Earth Observation Product Specifications to produce documents of common content. This is designed to:

- Provide a common format for Product Specifications across the industry, enabling customers to request a common format across bidders and reduce the effort on the part of suppliers in producing 'bespoke' specifications for each customer
- Ease the process of Product Certification for both the Organisation and the Certification Body.



1.3 Changes to this Document

This document is intended as a living document that shall evolve as the requirements of the industry and its customers change. As a result, suggestions for changes to this document to improve its utility are welcomed. Suggestions for change shall be forwarded to the EARSC Secretariat for consideration.

2 SCOPE

The Earth Observation Industry Certification Scheme is designed to be applicable to any organisation providing a product or service based on Earth Observation data or data products.

This document provides the requirements for Product Specifications.

3 DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

For definitions and vocabulary relating to Quality and Quality Management Systems please refer to RD01. Similarly for Product Certification refer to RD02.

Applicable Document: A document that contains information required for the understanding of this document or for the execution of a process defined by this document.

Reference Document: A document that contains background or explanatory information

3.2 Abbreviations

The following abbreviations are used in this document:

DRD	Document Requirements Definition
EARSC	European Association of Remote Sensing Companies
EO	Earth Observation

4 RELATED DOCUMENTS

4.1 Applicable Documents

The following documents are applicable to this document:

AD01 EARSC/CERT/REQ/2015/002	Earth Observation Industry Certification Scheme – Management System Requirements for Earth Observation Data Based Products and Services
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4.2 Reference Documents

The following documents allow a better understanding of some of the issues raised by this document:

RD01 ISO9000:2008	Quality management systems – Fundamentals and vocabulary
RD02 ISO/IEC 17000:2004	Conformity Assessment – Vocabulary and general principles
RD03 EARSC/CERT/REQ/2015/001	Earth Observation Industry Certification Scheme – Scheme Description

5 DOCUMENT NUMBERING, CONTROL AND FORMAT

5.1 Numbering and Control

The Product Specification shall be subject to the following:

- The document shall be generated in accordance with any documentation process in place within the organisation
- The document shall be numbered uniquely
- Where possible, the document shall be reviewed by person(s), not directly connected with its generation, with appropriate experience and qualification
- The document shall be formally approved (by manual or electronic signature)
- The document shall be subject to formal change control: i.e.:
 - It shall have a defined issue state (for example Draft 1, 2, 3 for Drafts and Issue 1, 2, 3 after approval)
 - All changes to the document shall be recorded including
 - Source of change
 - Reason for change
 - Impact of change (documents and performance)
 - Whether a re-certification shall be required by the change
 - The changes shall be implemented in the design documentation AND the Product specification with the change AND changed document both being subject to review and formal approval
 - The document shall include a change control panel identifying all changes since the original issue.

5.2 Format

There are no requirements relating to the word processing application to be used. It is recommended that any document is issued in a non-editable format (for example PDF).

The document should contain headers and/or footers with the following information:

- Document Name



- Issue Status
- Reference Number
- Page number (may also have number of pages)
- Originating organisation
- Date

It is also highly recommended that the document contains the applicable copyright disclaimer.

Diagrams and Tables shall be labelled as such and numbered sequentially to allow ease of reference from the text. The placement of these items and whether separate index lists are used are totally at the discretion of the organisation.

6 PRODUCT SPECIFICATION CONTENT

Section	Content
TITLE PAGE	Name of the Product. The title page may also include any required signatures. If not, a Signature Page is to be included (Annex A)
CHANGE RECORD	Change reference, affected sections or pages and brief summary of the change. Possible change record table is shown in Annex A.
TABLE OF CONTENTS	Table of contents should include at least all titles to the second level. In addition, there shall be an indication of the number of pages on the Table of Contents page, and/or with the page number in the Header or Footer.
1. INTRODUCTION	Brief introduction for the company, its product range and the specific product under consideration.
2. SCOPE	Defines the scope of the document i.e. that it represents the Product Specification for a product and supports the certification of the Product
3. RELATED DOCUMENTS	
3.1 Applicable Documents	Lists documents that contain applicable requirements
3.2 Reference Documents	Lists documents that contain reference information
4. DEFINITIONS AND ABBREVIATIONS	
4.1 Definitions	This section lists specific definitions required for the understanding of the document. General definitions can be referenced via an applicable or reference document
4.2 Abbreviations	This section lists abbreviations used in the document.
5. PRODUCT DESCRIPTION	
5.1 Background	Brief description of the background for the Product, for example if it is derived from a science project or from a bespoke (customer driven) project.
5.2 Objectives	Defined the purpose of the product, how it benefits the customer
5.3 Design Approach	Brief description of the design approach used and any applied design standards
5.4 Product Use	Defined the intended purpose of the product, what it is used for. Can reference a user manual as an Applicable Document. Can reference a user manual as an Applicable Document.

Section	Content
5.5 Limitations	Defines limitations on the use of the product, the limits of its capability, accuracy. May refer to confidence limits.
6. REQUIREMENTS	
6.1 Customer Requirements	<p>Customer requirements are those requirements that are specific to an individual customer or customer group. These tend to be requirements that are domain or user specific. Can refer to a Requirements Document as an Applicable Document.</p> <p>Note: The identity(ies) of the customer(s) are normally NOT to be included in the document.</p>
6.2 Internal Requirements	<p>List requirements that have been identified by the Organisation (such as style guide or design review process) to allow full compliance with customer and other requirements.</p> <p>Can refer to a Requirements Document as an Applicable Document.</p>
6.3 Industry Requirements And Norms	<p>Lists industry requirements and Norms that with which the product is designed to comply.</p> <p>These may be requirements relating to calculations carried out within the product itself, or requirements relating to the Man-Machine interface or format in which results are presented.</p> <p>Where needed, this section may also state norms that may not have been adopted.</p> <p>Can refer to a Requirements Document as an Applicable Document.</p>
6.4 Regulatory Requirements	<p>Regulatory requirements are National and/or International standards or regulations with which a product has to comply to be able to be used. This section shall list those regulatory requirements with which the product is designed to comply.</p> <p>Can refer to Standards and/or Regulations as Applicable Documents.</p>
7. TECHNICAL SPECIFICATION	

Section	Content
	<p>This section, broken down into subsections as necessary contains the detailed specifications for the product. Alternately, the Technical Specification can be defined within a document that is referenced from the Product Specification.</p> <p>This section is totally driven by the product, its structure and the requirements it is intended to meet and, as such, no specific requirements can be defined by this DRD. A blank example is provided in Annex B, with an example completed form in Annex C.</p> <p>However, this part of the document shall include a description of any human interpretation that is used in the delivery of the product, including the necessary qualifications and training requirements for the person making the interpretation.</p>
ANNEXES	Contains documents, tables, diagrams, etc as may be deemed necessary for the understanding and use of the Product Specification.



ANNEX A - EXAMPLE FORMATS

Document Approval

Title	Issue	Revision
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Prepared by	Date
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Approved by	Title	Signature	Date
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Authorised by	Title	Signature	Date
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Change Record Sheet

Date	Issue/ Rev.	Pages Affected	Description	DCR	Approval Authority

ANNEX B - EXAMPLE SPECIFICATION SHEET

Content
Geographic coverage
Input data sources
<i>Input data:</i>
<i>Input data provided by Customer</i>
<i>Ancillary input data</i>
Methodology of classification
Spatial resolution and coverage
-
Minimum Width of linear features:
-
Coordinate Reference System
Accuracy, Constraints
Accuracy assessment approach
Methodology of aggregation
Frequency
Availability
Delivery/Output format
Data type
Raster coding



**Earth Observation Industry Certification
DRD for Product Specification**

Issue 1.1

Product Scale (image/mapping products)
Metadata
Quality Control Process Applied

ANNEX C: ICEBERG DETECTION EXAMPLE SPECIFICATION SHEET

Content
<i>Iceberg Surveillance (Detection) Product</i>
Geographic coverage
<i>West Greenland, Extent:</i>
West -67.498153 East -65.686973
North 75.987550 South 75.605711
Input data sources
<i>Input data: COSMO-SkyMed, Beam mode - Stripmap (HIMAGE) Orbit - Ascending Spatial Resolution - 5 m Polarization - HH</i>
<i>Input data provided by Customer: Local Weather conditions provided by Drilling Support Vessel</i>
<i>Ancillary input data: weather conditions and 3 day weather forecast provided by SOURCE</i>
Methodology of classification
<i>Constant False Alarm Rate Detection, CFAR rate 10^{-9}</i>
Spatial resolution and coverage
- 5 m resolution
- 40x40 km coverage
Minimum Width of linear features:
- Not Applicable for detection product
Coordinate Reference System
WGS-84
Accuracy, Constraints
<i>Location Accuracy: 5 m</i>
<i>Iceberg Size Accuracy: 5 m</i>
Accuracy assessment approach
<i>Based on georeferencing imagery to land-based ground control points</i>
Methodology of aggregation
<i>Not Applicable – single chart from single image</i>
Frequency
<i>Twice per week</i>
Availability
<i>Near real time</i>
Delivery/Output format

<i>ARC-GIS Shapefile</i>
Data type (abbreviated for illustration only)
<p><u>Fields</u></p> <p><u>DETAILS FOR OBJECT 20120910_091801_ICEBERGDETECTION_TAC</u></p> <p>* TYPE Feature Class * ROW COUNT 679</p> <p><u>FIELD DETECTION</u></p> <p>* ALIAS Detection_ * DATA TYPE String * WIDTH 4 * PRECISION 0 * SCALE 0</p> <p><u>FIELD CLASSIFICA</u></p> <p>* ALIAS Classifica * DATA TYPE String * WIDTH 7 * PRECISION 0 * SCALE 0</p> <p><u>FIELD TARGET_ID</u></p> <p>* ALIAS Target_ID * DATA TYPE SmallInteger * WIDTH 4 * PRECISION 4 * SCALE 0</p> <p><u>FIELD AREA_SQM</u></p> <p>* ALIAS Area_sqm * DATA TYPE Double * WIDTH 13 * PRECISION 12 * SCALE 6</p>
Raster coding
None (Vector Shapefile)
Product Scale (image/mapping products)
N/A
Metadata
<p>Iceberg Detection - Melville Bay - September 10, 2012, Shapefile</p> <p>Tags 2005, Melville Bay, Greenland, Downloadable Data, Iceberg Detection</p> <p>Summary The Iceberg Detection product was generated to report on iceberg conditions in Melville Bay. The product is used for supporting tactical field operations and developing an understanding of the ice conditions in the area.</p> <p>Description This product is a shapefile that shows the locations of icebergs detected and their characteristics as determined</p>

from SAR imagery.

Credits

This satellite image product was developed by XXX.

Use limitations

This satellite SAR image product was created for the use of CLIENT and its partners.

Extents

EXTENT

GEOGRAPHIC EXTENT

BOUNDING RECTANGLE

EXTENT TYPE Extent used for searching

* WEST LONGITUDE -67.498153

* EAST LONGITUDE -65.686973

* SOUTH LATITUDE 75.605711

* NORTH LATITUDE 75.987550

* EXTENT CONTAINS THE RESOURCE Yes

Resource Constraints

CONSTRAINTS

LIMITATIONS OF USE

This satellite SAR image product was created for the use of CLIENT and its partners.

Spatial Reference

ARCGIS COORDINATE SYSTEM

* TYPE Geographic

* GEOGRAPHIC COORDINATE REFERENCE GCS_WGS_1984

* COORDINATE REFERENCE DETAILS

GEOGRAPHIC COORDINATE SYSTEM

WELL-KNOWN IDENTIFIER 4326

X ORIGIN -400

Y ORIGIN -400

XY SCALE 11258999068426.238

Z ORIGIN -100000

Z SCALE 10000

M ORIGIN -100000

M SCALE 10000

XY TOLERANCE 8.983152841195215e-009

Z TOLERANCE 0.001

M TOLERANCE 0.001

HIGH PRECISION true

LEFT LONGITUDE -180

LATEST WELL-KNOWN IDENTIFIER 4326

WELL-KNOWN TEXT

GEOGCS["GCS_WGS_1984",DATUM["D_WGS_1984",SPHEROID["WGS_1984",6378137.0,298.257223563]],PRIME
M["Greenwich",0.0],UNIT["Degree",0.0174532925199433],AUTHORITY["EPSG",4326]]



[Lineage](#)

LINEAGE STATEMENT

Iceberg detection results derived from an analysis of satellite Synthetic Aperature Radar (SAR).

[SOURCE DATA](#)

DESCRIPTION COSMO-SkyMed acquired an image on September 10, 2012 at 09:18:01 UTC with the following parameters: Beam mode - Stripmap (HIMAGE) Orbit - Ascending Spatial Resolution - 5 m Polarization - HH

[Metadata Contacts](#)

METADATA CONTACT

INDIVIDUAL'S NAME:

ORGANIZATION'S NAME

CONTACT'S POSITION Image Analyst

CONTACT'S ROLE author

[CONTACT INFORMATION](#)

PHONE

VOICE xxx-XXX-XXXX

FAX xxx-XXX-XXXX

ADDRESS

DELIVERY POINT

CITY

ADMINISTRATIVE AREA

POSTAL CODE

COUNTRY

E-MAIL ADDRESS:

Quality Control Process Applied

- *Ice analyst examination of each target detection*
- *Ice analyst examination of target classification*
- *Supervisor quality check of final output product*