

DIN EN ISO 19152-3



ICS 35.240.70

Teilweiser Ersatz für
DIN EN ISO 19152:2013-03

**Geoinformation –
Land Administration Domain Model (LADM) –
Teil 3: Georegulierung im Meeresraum (ISO 19152-3:2024);
Englische Fassung EN ISO 19152-3:2024**

Geographic information –
Land Administration Domain Model (LADM) –
Part 3: Marine georegulation (ISO 19152-3:2024);
English version EN ISO 19152-3:2024

Information géographique –
Modèle du domaine de l'administration des terres (LADM) –
Partie 3: Géoréglementation marine (ISO 19152-3:2024);
Version anglaise EN ISO 19152-3:2024

Gesamtumfang 70 Seiten

DIN-Normenausschuss Bauwesen (NABau)

Nationales Vorwort

Das Dokument EN ISO 19152-3:2024 wurde vom Technischen Komitee ISO/TC 211 „Geographic information/Geomatics“ in Zusammenarbeit mit dem Technischen Komitee CEN/TC 287 „Geoinformation“, dessen Sekretariat von BSI (Vereinigtes Königreich) gehalten wird, erarbeitet.

Das zuständige nationale Normungsgremium ist der Arbeitsausschuss NA 005-03-03 AA „Geoinformation (SpA zu CEN/TC 287+ISO/TC 211)“ im DIN-Normenausschuss Bauwesen (NABau).

Dieses Dokument enthält unter Berücksichtigung des DIN-Präsidialbeschlusses 1/2004 nur die Englische Fassung von EN ISO 19152-3:2024.

Für die in diesem Dokument zitierten Dokumente wird im Folgenden auf die entsprechenden deutschen Dokumente hingewiesen:

ISO 19101-1:2014	siehe	DIN EN ISO 19101-1:2015-03
ISO 19103	siehe	DIN EN ISO 19103
ISO 19107	siehe	DIN EN ISO 19107
ISO 19109	siehe	DIN EN ISO 19109
ISO 19110:2016	siehe	DIN EN ISO 19110:2017-05
ISO 19111:2019	siehe	DIN EN ISO 19111:2020-09
ISO 19115-1	siehe	DIN EN ISO 19115-1
ISO 19126:2021	siehe	DIN EN ISO 19126:2021-09
ISO 19131:2007	siehe	DIN EN ISO 19131:2008-09 (beide zurückgezogen)
ISO 19135-1:2015	siehe	DIN EN ISO 19135-1:2016-02
ISO 19136-1:2020	siehe	DIN EN ISO 19136-1:2020-12
ISO 19152-1	siehe	DIN EN ISO 19152-1
ISO 19152-2	siehe	DIN EN ISO 19152-2
ISO 19157	siehe	DIN EN ISO 19157

DIN EN ISO 19152 besteht unter dem allgemeinen Titel „Geoinformation — Land Administration Domain Model (LADM)“ aus den folgenden sechs Teilen:

- Teil 1: Generisches konzeptionelles Modell
- Teil 2: Erfassung von Grundeigentum*
- Teil 3: Georegulierung im Meeresraum*
- Teil 4: Informationen zur Immobilienbewertung*
- Teil 5: Informationen zur Raumplanung*
- Teil 6: Implementierungsaspekte*

Aktuelle Informationen zu diesem Dokument können über die Internetseiten von DIN (www.din.de) durch eine Suche nach der Dokumentennummer aufgerufen werden.

* in Erarbeitung.

Änderungen

Gegenüber DIN EN ISO 19152:2013-03 wurden folgende Änderungen vorgenommen:

- a) Aufteilung der ISO 19152:2012 in mehrere Teile;
- b) alles über das allgemeine Referenzmodell der Bodenverwaltung/Georegulierung hinausgehende in weitere Normteile verschoben;
- c) Dokument redaktionell angepasst.

Frühere Ausgaben

DIN EN ISO 19152: 2013-03

Nationaler Anhang NA (informativ)

Begriffe

Reihenfolge und Inhalt der folgenden Begriffe sind identisch mit denen im Abschnitt Begriffe der Englischen Fassung.

Für die Anwendung dieses Dokuments gelten die Begriffe nach ISO 19152-1 und die folgenden Begriffe.

ISO und IEC stellen terminologische Datenbanken für die Verwendung in der Normung unter den folgenden Adressen bereit:

- ISO Online Browsing Platform: verfügbar unter <https://www.iso.org/obp>
- IEC Electropedia: verfügbar unter <https://www.electropedia.org/>

3.1.1

Begrenzung

<marine_Georegulation> Delimitation zwischen zwei oder mehr Zonen

Anmerkung 1 zum Begriff: Bei einer Begrenzung sind zwei oder mehr Gruppen involviert.

Anmerkung 2 zum Begriff: Angepasst aus Literaturhinweis [20].

3.1.2

Kurve

1-dimensionales geometrisches Primitiv, das das kontinuierliche Bild einer Linie darstellt

Anmerkung 1 zum Begriff: Die Begrenzung einer Kurve ist die Menge der Punkte an beiden Enden der Kurve. Falls es sich bei der Kurve um einen Kreis handelt, sind die beiden Enden identisch, und es wird angenommen, dass die Kurve (wenn sie topologisch geschlossen ist) keine Begrenzung aufweist. Der erste Punkt wird als Startpunkt und der letzte Punkt als Endpunkt bezeichnet. Die Konnektivität der Kurve wird durch den Abschnitt „kontinuierliches Bild einer Linie“ sichergestellt. Ein topologisches Theorem besagt, dass ein kontinuierliches Bild einer verbundenen Menge verbunden ist.

[QUELLE: ISO 19136-1:2020, 3.1.17, modifiziert – der Begriff "Boundary" wurde hier mit „Begrenzung“ und nicht wie in der verwiesenen Quelle mit „Grenze“ übersetzt.]

3.1.3

Grenze

<marine_Georegulation> Kurve, die eine Begrenzung oder Ausdehnung einer Zone definiert

Anmerkung 1 zum Begriff: Bei einer Grenze ist eine Gruppe involviert.

Anmerkung 2 zum Begriff: Angepasst aus Literaturhinweis [20].

3.1.4

marin

in Zusammenhang stehend mit Navigation oder Verschiffung oder in Zusammenhang oder in Verbindung stehend mit dem Meer oder auf dem Meer verwendet oder für die Verwendung auf dem Meer übernommen

Anmerkung 1 zum Begriff: Gelegentlich als „maritim“ bezeichnet, doch maritim wird häufiger für etwas verwendet, das an das Meer angrenzt.

[QUELLE: Literaturhinweis [22]]

3.1.5

Marine-Kataster

Management-Werkzeug, das formell und informell definierte Begrenzungen und dazugehörige Rechte sowie Einschränkungen und Verantwortlichkeiten in der marinen Umgebung räumlich beschreibt, visualisiert und realisiert

Anmerkung 1 zum Begriff: Zusätzlich zu Begrenzungen kann ein Marine-Kataster auch Orte, Grenzen, Basislinien, Zonen und Räume adressieren.

Anmerkung 2 zum Begriff: Ein Marine-Kataster ist eine Art der Georegulation, die sich auf Eigenschaftsregistrierung, wie in ISO 19152-2 beschrieben, bezieht, wobei das Konzept „Land“ auch „über Wasser“ mit beinhaltet.

Anmerkung 3 zum Begriff: Angepasst aus Literaturhinweis [17].

3.1.6

marine Georegulation

Ausdruck eines Rechts, einer Einschränkung oder einer Verantwortlichkeit für eine oder mehrere Parteien oder Gruppen von Parteien für einen räumlichen Ort, eine Begrenzung, eine Zone oder einen Raum in der marinen Umgebung

3.1.7

maritim

angrenzend an das, oder handelnd von dem, oder in Zusammenhang stehend mit dem Meer

[QUELLE: Literaturhinweis [22]]

Nationaler Anhang NB (informativ)

Abkürzungen

BAUnit	Grundverwaltungseinheit (en: Basic Administrative Unit)
CRS	Koordinatenreferenzsystem (en: Coordinate Reference System)
DOALOS	Abteilung für Meeresangelegenheiten und Seerecht, Büro für Rechtsangelegenheiten, Vereinte Nationen (en: Division of Ocean Affairs and the Law of the Sea, Office of Legal Affairs, United Nations)
ENC	Digitale Seekarte (en: Electronic Nautical Chart)
GIS	geographisches Informationssystem (en: Geographic Information System)
guid	Global eindeutiger Bezeichner (en: Globally Unique Identifier)
IALA	Internationale Vereinigung für Navigationshilfen und Leuchtturmbehörden (en: International Association of Marine Aids to Navigation and Lighthouse Authorities)
IETF	Gremium für Netzwerkdesign (en: Internet Engineering Task Force)
IHO	Internationale Hydrographische Organisation (en: International Hydrographic Organization)
IMO	Internationale Seeschiffahrts-Organisation der Vereinten Nationen (en: International Maritime Organization of the United Nations)
LADM	Landadministrations-Domänenmodell (en: Land Administration Domain Model)
MLB	Marine Grenzen und Begrenzungen (en: Marine Limits and Boundaries)
MRN	Maritimer Ressourcename (en: Maritime Resource Name)
Oid	Objekt-ID (en: object ID)
RRR	Recht, Einschränkung, Verantwortlichkeit (en: Right, Restriction, Responsibility)
SOLAS	Internationales Übereinkommen zum Schutz des menschlichen Lebens auf See (en: International Convention on Safety of Life at Sea)
UML	Vereinheitlichte Modellierungssprache (en: Unified Modelling Language)
UNCLOS	Seerechtsübereinkommen der Vereinten Nationen (en: United Nations Convention on the Law of the Sea)
uom	Maßeinheit (en: Units of Measure)
URI	Einheitlicher Ressourcenbezeichner (en: Uniform Resource Identifier)
URN	Einheitlicher Ressourcename (en: Uniform Resource Name)

Nationaler Anhang NC (informativ)

Literaturhinweise

DIN EN ISO 19101-1:2015-03, *Geoinformation — Referenzmodell — Teil 1: Grundsätze (ISO 19101-1:2014); Englische Fassung EN ISO 19101-1:2014*

DIN EN ISO 19103, *Geoinformation — Konzeptuelle Beschreibungssprache*

DIN EN ISO 19107, *Geoinformation — Raumbezugsschema*

DIN EN ISO 19109, *Geoinformation — Regeln zur Erstellung von Anwendungsschemata*

DIN EN ISO 19110:2017-05, *Geoinformation — Objektartenkataloge (ISO 19110:2016); Englische Fassung EN ISO 19110:2016*

DIN EN ISO 19111:2020-09, *Geoinformation — Koordinatenreferenzsysteme (ISO 19111:2019); Englische Fassung EN ISO 19111:2020*

DIN EN ISO 19115-1, *Geoinformation — Metadaten — Teil 1: Grundsätze*

DIN EN ISO 19126:2021-09, *Geoinformation — Verzeichnisse und Register für Featurekonzepte (ISO 19126:2021); Englische Fassung EN ISO 19126:2021*

DIN EN ISO 19131:2008-09, *Geoinformation — Produktspezifikationen für Geodaten (ISO 19131:2007 + Amd 1:2011); Englische Fassung EN ISO 19131:2008 + A1:2011*

DIN EN ISO 19135-1:2016-02, *Geoinformation — Registrierungsverfahren für geographische Informationseinheiten — Teil 1: Grundsätze (ISO 19135-1:2015); Englische Fassung EN ISO 19135-1:2015*

DIN EN ISO 19136-1:2020-12, *Geoinformation — Geography Markup Language (GML) — Teil 1: Grundsätze (ISO 19136-1:2020); Englische Fassung EN ISO 19136-1:2020, nur auf CD-ROM*

DIN EN ISO 19152-1, *Geoinformation — Land Administration Domain Model (LADM) — Teil 1: Grundlagen*

DIN EN ISO 19152-2, *Geoinformation — Land Administration Domain Model (LADM) — Teil 2: Erfassung von Grundeigentum*

DIN EN ISO 19157, *Geoinformation — Datenqualität*

— Leerseite —

English Version

Geographic information -
Land Administration Domain Model (LADM) -
Part 3: Marine georegulation (ISO 19152-3:2024)

Information géographique -
Modèle du domaine de l'administration des terres (LADM) -
Partie 3: Géoréglementation marine (ISO 19152-3:2024)

Geoinformation -
Land Administration Domain Model (LADM) -
Teil 3: Georegulierung im Meeresraum (ISO 19152-3:2024)

This European Standard was approved by CEN on 22 May 2024.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO 19152-3:2024) has been prepared by Technical Committee ISO/TC 211 "Geographic information/Geomatics" in collaboration with Technical Committee CEN/TC 287 "Geographic Information" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2025, and conflicting national standards shall be withdrawn at the latest by January 2025.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 19152:2012.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 19152-3:2024 has been approved by CEN as EN ISO 19152-3:2024 without any modification.

Contents

Page

Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms, definitions and abbreviated terms	1
3.1 Terms and definitions	1
3.2 Abbreviated terms	2
4 Conformance	3
4.1 Conformance requirements and testing	3
4.2 Conformance classes	3
4.3 Conformance class 1 — Marine limits and boundaries in support of the UNCLOS	4
4.4 Conformance class 2 — General marine georegulation	4
5 Notation	4
6 Context	5
7 Feature and attribute structure	6
7.1 Structural overview	6
7.2 Geometry structure	6
7.3 Packages of ISO 19152-3 (this document)	7
8 Marine georegulation application schema	8
8.1 Marine georegulation elements	8
8.2 Inherited core packages	10
8.3 MRN	10
8.4 Party section	11
8.4.1 Party section general	11
8.4.2 MG_Party	12
8.4.3 MG_Party attributes and relationships	13
8.4.4 MG_PartyMember	13
8.4.5 MG_PartyMember attributes and relationships	14
8.4.6 MG_PartyTypeList	14
8.4.7 MG_GroupPartyTypeList	14
8.4.8 Special data types	14
8.5 Administrative section	15
8.5.1 Administrative section general	15
8.5.2 MG_BAUnit	17
8.5.3 MG_BAUnit attributes and relationships	17
8.5.4 MG_BAUnitTypeList	18
8.5.5 MG_RRR	18
8.5.6 MG_RRR attributes and relationships	19
8.5.7 MG_Right	19
8.5.8 MG_Right attributes and relationships	19
8.5.9 MG_Responsibility	20
8.5.10 MG_Responsibility attributes and relationships	20
8.5.11 MG_Restriction	20
8.5.12 MG_Restriction attributes and relationships	20
8.5.13 MG_Governance	20
8.5.14 MG_Governance attributes and relationships	21
8.6 Party to administrative section	21
8.7 Party to administrative relationships	22
8.7.1 rrrParty relationship	22
8.7.2 baunitAsParty relationship	22
8.8 Spatial unit section	22
8.8.1 General	22

DIN EN ISO 19152-3:2024-10 ISO 19152-3:2024(en)

8.8.2	MG_FeatureUnit.....	24
8.8.3	MG_FeatureUnit attributes and relationships.....	24
8.8.4	MG_SpatialAttribute.....	25
8.8.5	MG_SpatialAttribute attributes and relationships.....	25
8.8.6	MG_AdditionalSpatialInformation.....	26
8.8.7	MG_AdditionalSpatialInformation attributes and relationships.....	26
8.8.8	MG_Location.....	29
8.8.9	MG_Location attributes and relationships.....	29
8.8.10	MG_Point.....	30
8.8.11	MG_Point attributes and relationships.....	30
8.8.12	MG_PointAttributes.....	30
8.8.13	MG_PointAttributes attributes and relationships.....	30
8.8.14	locationReference dataType.....	31
8.8.15	MG_PointAttributes attributes.....	31
8.8.16	MG_LocationTypeList.....	31
8.8.17	MG_PointTypeList.....	31
8.8.18	MG_InterpolationTypeList.....	32
8.8.19	MG_Limit Spatial Unit Class.....	32
8.8.20	MG_Limit.....	32
8.8.21	MG_Limit attributes and relationships.....	32
8.8.22	MG_Curve.....	33
8.8.23	MG_Curve attributes and constraints.....	33
8.8.24	MG_Curve_Attributes.....	33
8.8.25	MG_Curve_Attributes attributes and constraints.....	34
8.8.26	MG_ArcGeometryTypeList.....	34
8.8.27	MG_LimitTypeList.....	34
8.8.28	MG_Zone Spatial Unit Class.....	34
8.8.29	MG_Zone.....	35
8.8.30	MG_Zone attributes and relationships.....	35
8.8.31	MG_Surface.....	36
8.8.32	MG_Surface attributes.....	36
8.8.33	MG_Surface_Attributes.....	36
8.8.34	MG_ZoneTypeList.....	37
8.8.35	MG_JurisdictionDomainTypeList.....	37
8.8.36	LA_SurfaceRelationType.....	37
8.8.37	LA_AreaType.....	37
8.8.38	LA_AreaValue.....	37
8.8.39	MG_Space spatial unit class.....	37
8.8.40	MG_Space.....	38
8.8.41	MG_Space attributes and relationships.....	38
8.8.42	MG_Volume.....	39
8.8.43	MG_Volume_Attributes attributes.....	39
8.8.44	MG_SpaceTypeList.....	40
8.8.45	LA_VolumeValue.....	40
8.9	Source section.....	40
8.9.1	Source section general.....	40
8.9.2	MG_Source.....	41
8.9.3	MG_Source attributes and relationships.....	42
8.9.4	LA_AvailabilityStatusType.....	44
8.9.5	ExtArchive.....	44
8.9.6	CI_OnlineResource.....	44
8.9.7	QualityElement.....	44
8.10	Versioning.....	44
8.10.1	General approach to versioning.....	44
8.10.2	Versioned object.....	45
Annex A (normative) Abstract test suite.....		46
Annex B (normative) Marine contexts.....		47

Bibliography	53
---------------------------	-----------

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 287, *Geographic Information*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement), and in collaboration with the International Hydrographic Organization (IHO).

This edition of ISO 19152-3, together with all other parts in the ISO 19152 series, cancels and replaces the first edition (ISO 19152:2012), which has been technically revised. This document is a new part to the ISO 19152 series and makes no changes to the original ISO 19152:2007.

A list of all parts in the ISO 19152 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

ISO 19152:2012 specifically addressed the land registration aspects of land administration. This document (ISO 19152-3:2023) introduces the broader term "georegulation", which addresses any area of geographic information in which rights, restrictions or responsibilities (RRR) can be applied. Georegulation is the activity of delimiting and asserting control over geographical spaces through regulations. This document allows the objects of georegulation to be documented in a systematic and consistent manner. Although the broader term "georegulation" is used throughout the document, the main element of the title of the document remains "Land Administration Domain Model" to retain compatibility with the previous edition of the document.

This document addresses georegulation in the marine environment. Rights and obligations created by georegulation share a basic structure, as described in ISO 19152-1. Marine activity, including transportation, resource extraction and food production (fishing and marine aquaculture), is of great importance. Different rights and obligations can exist on the surface, in the water column and on the seabed. The model defined in this document can be used for marine cadastres as well as other use cases (such as conservation areas, living resources and fishery management areas, non-living resources management areas, seabed tenure, etc.), and to describe data in support of the United Nations Convention on the Law of the Sea (UNCLOS)^[27] or other conventions, e.g. administrative areas described in support of safe navigation under the International Convention for the Safety of Life At Sea (SOLAS).^[28]

The oceans are of importance to all humankind, and specific areas along coastlines are under the jurisdiction of nation states. The jurisdiction of coastal states extends to certain maritime zones. Users and states have rights, restrictions and responsibilities in specific zones. The area beyond coastal states' zones is without exercise or claim of sovereignty and the rights regarding the resources are vested in mankind.^[27] In specific cases there are private rights, such as the rights associated with fishing or resource extraction. Some individuals can have property rights on land adjacent to water potentially extending into the area covered by water. This can be described in a marine cadastre, described using the structures available in this document.

International marine rights are addressed in international treaties globally through UN conventions and between nations; in particular, the United Nations Convention on the Law of the Sea (UNCLOS).^[27] Marine safety and navigation are addressed by the International Maritime Organization (IMO) international convention on Safety Of Life At Sea (SOLAS) 1974.^[28] Other international conventions, treaties and national laws establish rights and obligations.

The International Hydrographic Organization is an international standards development organization that specializes in the marine space. It develops standards for safe navigation, marine jurisdictions, oceanography and other aspects of the marine space in close cooperation with other international organizations such as the UN DOALOS^[29] and ISO. In particular it supports several UN conventions such as the UNCLOS^[27] and the SOLAS^[28] conventions in cooperation with the UN IMO.^[30] Alignment between ISO International Standards for the marine space and the IHO is important.

United Nations' Sustainable Development Goal 14C and United Nations' General Assembly Resolution A/RES/59/24 directed the IHO to provide technical standards for maritime zones. The IHO supports standards development for oceanography, marine science and the UN SOLAS and the UNCLOS conventions.^[31] In particular, as part of the S-100 Universal Hydrographic Data Model,^[18] IHO has developed a series of standards and specifications that address the marine space.^[32] These include IHO S-121^[20] on maritime limits and boundaries and IHO S-122^[33] on marine protected areas.

A characteristic of georegulation objects in the marine space is that their geometry structure can need to be aligned with IHO S-100^[18] and ISO 19107. As such, there can be different "feature" types. This is in alignment with the way "feature" is defined in the general feature model from ISO 19109 and the approach to feature cataloguing defined in ISO 19110. For their geographic information aspects, the IHO suite of hydrographic standards is based on many of the ISO/TC 211 suite of Geographic Information documents, through S-100. S-121^[20] on maritime limits and boundaries directly supports the UNCLOS^[27] and is built upon the ISO 19152 series. Due to the close links between S-121^[20] and the ISO 19152 series, this document makes direct reference to S-100 and S-121.

DIN EN ISO 19152-3:2024-10 **ISO 19152-3:2024(en)**

Since many of the rights and restrictions in the marine space come either from international or bi-national treaties, or national proclamations or laws, within the context of georegulation, it can be necessary to express the text or preamble of a treaty or law. A “governance” object has therefore been added to the administrative structure in this document to allow legal text to be associated with an administrative unit. In many cases the parties involved in rights, restrictions and responsibilities (RRR) relationships in the marine space are nations. This means that the code lists of types of parties and administrative units defined in other parts of the ISO 19152 series will not necessarily apply. Unique code lists have been defined to address the marine space. Further, treaties are often the reference source for both the administrative and spatial aspects, so the distinction between types of sources has been eliminated.

The ISO 19152 series is a general abstract model for Land Administrative Domain Model (LADM) systems. It provides a uniform way of describing national or other systems. The ISO 19152 series is implemented through profiles, such as country profiles, in accordance with ISO 19106. S-121^[20] is a profile for the description of marine limits and boundaries (MLB) in the context of support for the SOLAS^[28] and the UNCLOS^[27] conventions supported by the IHO series of standards. This document has two conformance classes, one that directly supports the S-121 profile, and the other more general conformance class that supports other aspects of marine georegulation. The profile for MLB is defined in S-121. The support of other aspects of marine georegulation will require the development of specific profiles to address these other areas.

This document is a derived work, developed under a cooperative agreement with the IHO, based on S-121^[20] and used with permission.

In accordance with the ISO/IEC Directives, Part 2, 2018, Rules for the structure and drafting of International Standards, in International Standards the decimal sign is a comma on the line. However, the General Conference on Weights and Measures (Conférence Générale des Poids et Mesures) at its meeting in 2003 passed unanimously the following resolution:

“The decimal marker shall be either a point on the line or a comma on the line.”

In practice, the choice between these alternatives depends on customary use in the language concerned. In the technical areas of geodesy and geographic information it is customary for the decimal point always to be used, for all languages. That practice is used throughout this document.

NOTE The direction of positive rotation used in this document is positive in a counter clockwise direction in alignment with ISO 19109 and ISO 19107. The IHO S-100 series of standards makes use of “Heading Orientation” which is positive in a clockwise direction. The user needs to be aware of this difference.

Geographic information — Land Administration Domain Model (LADM) —

Part 3: Marine georegulation

1 Scope

This document specifies the concepts and structure for standardization for georegulation in the marine space.

This document addresses the information structures related to management of legal spaces (such as the international maritime limits and boundaries, marine living and non-living resources management areas, marine conservation areas, etc.) and their related rights and obligations.

This document establishes the common elements and basic schema to structure marine georegulation information system. It builds upon the common components defined in ISO 19152-1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 19152-1, *Geographic information — Land Administration Domain Model (LADM) — Part 1: Generic conceptual model*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 19152-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1.1

boundary

<marine_georegulation> delimitation between two or more zones

Note 1 to entry: A boundary involves two or more parties.

Note 2 to entry: Adapted from Reference [20].

3.1.2

curve

1-dimensional geometric primitive, representing the continuous image of a line

Note 1 to entry: The boundary of a curve is the set of points at either end of the curve. If the curve is a cycle, the two ends are identical, and the curve (if topologically closed) is considered to not have a boundary. The first point is called the start point, and the last is the end point. Connectivity of the curve is guaranteed by the "continuous image of a line" clause. A topological theorem states that a continuous image of a connected set is connected.

[SOURCE: ISO 19136-1:2020, 3.1.17]

3.1.3

limit

<marine_georegulation> curve that defines a boundary or extent of a zone

Note 1 to entry: A limit involves one party.

Note 2 to entry: Adapted from Reference [20].

3.1.4

marine

relating to navigation or shipping or relating to or connected with the sea or used, or adopted for use at sea

Note 1 to entry: Sometimes called "maritime", but maritime is more frequently applied to that which borders on the sea.

[SOURCE: Reference [22]]

3.1.5

marine cadastre

management tool which spatially describes, visualizes and realizes formally and informally defined boundaries and associated rights, restrictions and responsibilities in the marine environment

Note 1 to entry: In addition to boundaries, a marine cadastre can also address locations, limits, baselines, zones and spaces.

Note 2 to entry: A marine cadastre is a type of georegulation related to property registration as addressed in ISO 19152-2 where the concept of "land" is extended to include "over water".

Note 3 to entry: Adapted from Reference [17].

3.1.6

marine georegulation

expression of a right, restriction or responsibility for one or more parties or group parties for a spatial location, boundary, zone or space in the marine domain

3.1.7

maritime

bordering on, or concerned with, or related to the sea

[SOURCE: Reference [22]]

3.2 Abbreviated terms

BAUnit	basic administrative unit
CRS	coordinate reference system
DOALOS	Division of Ocean Affairs and the Law of the Sea, office of legal affairs, United Nations
ENC	Electronic Nautical Chart
GIS	geographic information system

guid	globally unique identifier
IALA	International Association of marine aids to navigation and Lighthouse Authorities
IETF	Internet Engineering Task Force
IHO	International Hydrographic Organization
IMO	International Maritime Organization of the United Nations
LADM	Land Administration Domain Model
MLB	marine limits and boundaries
MRN	Maritime Resource Name
Oid	object ID
RRR	right, restriction, responsibility
SOLAS	International Convention on Safety of Life at Sea
UML	Unified Modelling Language
UNCLOS	United Nations Convention on the Law Of the Sea
uom	units of measure
URI	Uniform Resource Identifier
URN	Uniform Resource Name

4 Conformance

4.1 Conformance requirements and testing

Conformance to this document consists of alignment with the requirements established in 4.3 and 4.4. The abstract test suite given in Annex A describes a methodology which shall be used for testing conformance to these requirements.

4.2 Conformance classes

Two conformance classes are identified in this document:

- one for the description of a LADM marine georegulation system in support of maritime limits and boundaries for the UNCLOS
- one in support of other marine georegulation domain areas as outlined in Annex B.

The conformance class for a marine georegulation system in support of maritime limits and boundaries for the UNCLOS^[27] provides a general model that is used by S-121.^[20] This includes code lists and other structures, such as the governance class MG_Governance and the attribute type Marine Resource Name (MRN) as defined in S-100,^[18] and geometry constraints to align with S-101.^[19] The more general conformance class for other types of marine georegulation permits but does not require the use of the code lists and other structures specific to maritime limits and boundaries for the UNCLOS. These code lists and structures can be extended, or other code lists and structures can be included. Where compatibility is desirable between data products that conform with conformance class 1 and extensions that conform with conformance class 2, it is desirable that extensions be used. These two conformance classes are not mutually exclusive, but rather by making use of extensions it is possible to support both conformance criteria. Support

for the geometric constraints described in 7.2 is required for any marine georegulation data product that supports compatibility with the S-100-based suite of Electronic Nautical Chart (ENC) navigation standards.

4.3 Conformance class 1 — Marine limits and boundaries in support of the UNCLOS

Requirement 1: The description of a LADM marine georegulation schema in support of maritime limits and boundaries for the UNCLOS using this document (ISO 19152-3) shall consist of a set of UML classes with associated attributes that make use of or subtype the classes defined in Clause 8 including the code lists defined in 8.4.6, 8.4.7, 8.5.4, 8.5.14.7, 8.8.16, 8.8.27, 8.8.34, and 8.8.35, the attribute Marine Resource Name defined in 8.3 and the geometry constraints defined in 7.2 which are enumerated in Annex B.

NOTE The IHO standard S-121^[19] conforms to conformance class 1 of this document.

4.4 Conformance class 2 — General marine georegulation

Requirement 2: The description of a LADM marine georegulation schema for general application, such as for marine cadastre or any of the other marine contexts described in Annex B using this document (ISO 19152-3) shall consist of a set of UML classes with associated attributes that make use of or subtype the classes defined in Clause 8. This allows for other marine georegulation application areas to be addressed that are not covered in S-121^[20] or in the UNCLOS.^[27] For example, seabed resource extraction would be an area that can be addressed by this conformance class. However, to do this, all of the code list values that pertain to this other application area would need to be defined as part of the specification of that application. The code lists, the attribute Marine Resource Name and the geometry constraints identified in conformance class 2 are optional and can be replaced with other code lists and geometric constraints.

5 Notation

The conceptual schema specified in this document is described using the Unified Modelling Language (UML), following the guidance of ISO 19103. The description of the types of relationships, such as subtyping, inheritance, and realization are described in ISO 19103, not in this document.

Several model elements used in this schema are defined in other ISO geographic information International Standards. By convention within some ISO/TC 211 documents, names of UML classes, with the exception of basic data type classes, include a two-letter prefix that identifies the document and the UML package in which the class is defined. This provides a global unique name for the class. UML classes defined in this document have the two-letter prefix of MG. The two-letter prefix of LA is used for ISO 19152-1 and ISO 19152-2 to support backward compatibility. Table 1 lists the other International Standards and packages in which UML classes used in this document have been defined.

Table 1 — Sources of externally defined UML classes

Prefix	Document	Part
CI	ISO 19115-1	Metadata — Fundamentals
DQ	ISO 19157-1	Data quality — General requirements
GM	ISO 19107	Spatial schema
LA	ISO 19152-1	Generic conceptual model
LA	ISO 19152-2 ^a	Land registration
MG	ISO 19152-3	Marine georegulation

^a Under preparation. Stage at the time of publication ISO/DIS 19152-2:2024.

NOTE ISO 19157-1 and ISO 19107 have dropped the prefixes GM and DQ, relying on context for the uniqueness of class names. However, the prefixes are still used in the older versions of these documents, which are still referenced by some external standards, such as versions of S-100.^[18] Retaining the prefixes in Table 1 provides an understanding of the meaning of these prefixes when they are encountered. They are required for backward compatibility.

The following stereotypes are used to identify attributes that apply to specific conformance classes.

<<MLB>> — This stereotype applies to attributes that are specific to conformance class 1 relating to maritime limits and boundaries in accordance with S-121.^[20]

<<MRN>> — This stereotype applies to attributes used to carry the Maritime Resource Name, which is a specific identifier managed by the IHO and defined for the S-100 suite of standards, including S-121.^[20]

6 Context

The purpose of this document is to establish a structure for the description of georegulation in the marine space.

Jurisdictions in the marine space can be different from those on land and can be covered by international conventions such as the UN Convention on the Law of the Sea (UNCLOS).^[27] The UNCLOS defines the marine zones and the rights and duties of a country regarding those zones. Other treaties and agreements between nations and national instruments define specific aspects of georegulation in the maritime space, including, among other subjects, fisheries, passage, exploration and exploitation.

Although georegulation in the marine space can be different from land administration, the same underlying structure of rights, restrictions and responsibilities (RRR) established in ISO 19152-1 apply. There can be different rights assigned to the seafloor, the water column and the surface within different zones. An example is the “right of innocent passage” as described in the UNCLOS, Article 17 which is subject to restrictions as described in Article 19.^[27] However, in some cases, individuals or corporations can also have rights, such as the fishing rights or exploration rights granted by nations in their waters or multilateral bodies. In some nations, property rights on land adjacent to water can extend into areas covered by water and property rights can exist in the water.

In the international context, some RRRs in the marine space derive from treaties between nations, where the nations are the parties. Other RRRs can derive from national instruments such as laws or government declarations. RRRs can also derive from marine property rights expressed using a marine cadastre. International treaties and national instruments or other sources can be referenced using the “source” construct described in ISO 19152-1. However, it is sometimes necessary to include the associated legal text in the marine space georegulation dataset. In order to accommodate this, a “Governance” object has been added to the structure in this document to contain legal text that is associated with an administrative unit. Often treaties and national marine regulations serve as both the administrative and spatial source.

This document uses a feature-oriented approach for spatial geometry in alignment with the general feature model defined in ISO 19109. Features are defined in accordance with ISO 19110. The features can be locations, limits, zones or spaces with associated spatial geometry as defined in ISO 19107. For example, a Base Line Point is a specific type of location represented as a point geometry. A zone such as the Exclusive Economic Zone [UNCLOS Part V]^[27] is represented as an area with surface geometry. A specific type of limit such as the “Outer Limit of the Territorial Sea” [UNCLOS Article 4]^[27] is represented as a line with curve geometry. This approach is similar to the approach taken in many other areas of geographic information and is fully supported by the ISO/TC 211 geometry model specified in ISO 19107.

There is a close relationship between marine georegulation as defined in this document and S-121.^[20] The IHO has developed S-100^[18] based on many of the ISO/TC 211 documents: it forms a profile of those documents applicable to the marine space, in particular in terms of the geometry, feature model, quality, metadata, coverage, portrayal and encoding specified. S-100 is quite broad, allowing for a number of specific product specifications to be developed addressing different areas related to safe navigation, oceanography and marine georegulation. However, S-100 does make specific selections with respect to spatial geometry and feature relations. These constraints allow for rigorous testing of marine Electronic Chart Display Information Systems to comply with the UN International Marine Organization (IMO) regulations.

The IHO series of standards referred to in this document support several UN conventions, in particular, the International convention for the Safety of Life at Sea (SOLAS)^[28] and the UN Convention on the Law of the Sea (UNCLOS).^[27] The SOLAS convention addresses safe navigation and the UNCLOS addresses maritime space and associated rights and responsibilities. Further to this, S-121^[20] addresses the requirements of the Division of Ocean Affairs and the Law of the Sea, Office of Legal Affairs, United Nations (DOALOS)^[29] for Maritime Limits and Boundaries. S-121 is based on the structures defined in ISO 19152-1 for RRR and party, making use of the Universal Hydrographic Model from S-100. The geometry and other constraints defined in S-100 also apply to S-121.