
UAS traffic management (UTM) —
Part 7:
Data model for spatial data

Gestion du trafic des aéronefs sans pilote (UTM) —

Partie 7: Modèle de données pour les données spatiales



This document is a preview generated by EKO



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Data model	2
4.1 Overall data model.....	2
4.2 Ground map package.....	3
4.2.1 Overview.....	3
4.2.2 Attributes of takeoff and landing area.....	3
4.2.3 Attributes of land.....	4
4.3 Obstacle data package.....	5
4.3.1 Overview.....	5
4.3.2 Attributes of static obstacle.....	5
4.3.3 Attributes of temporal obstacle.....	5
4.4 Virtual data package.....	6
4.4.1 Overview.....	6
4.4.2 Attributes of airspace.....	6
4.4.3 Attributes of flight route.....	6
4.4.4 Attributes of CNS coverage.....	7
4.5 Dynamic data package.....	7
4.5.1 Overview.....	7
4.5.2 Object sub-package.....	8
4.5.3 Phenomena sub-package.....	9
Annex A (informative) Examples of information	11
Annex B (informative) Use cases	12
Bibliography	26

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 documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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 20, *Aircraft and space vehicles*, Subcommittee SC 16, *Unmanned aircraft systems*.

A list of all parts in the ISO 23629 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

In order to enable UAS (unmanned aircraft systems) to operate safely, there is a need to define the data model that is related to various spatial information for common use between the UAS operators and the UAS traffic management (UTM) system. Existing standards regarding spatial data for safely operating UAS including static data and dynamic data do not exist, whereas efforts are underway to establish related standards on the part of ASTM and EUROCAE.

This document can be used as a reference model. Implementations of this document can lead to cost reductions in maintenance/expansion for application developers as well as compilation/maintenance of map data for map providers.

UAS traffic management (UTM) —

Part 7: Data model for spatial data

1 Scope

This document specifies the data model that is related to various spatial information for common use between the UAS service provider and the system for operation control, e.g. UTM. This document specifies the names of the items for the data model, while the communication architecture and responsibilities of actors to define the items are not included.

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 19157, *Geographic information — Data quality*

ISO 21384-4, *Unmanned aircraft systems — Part 4: Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21384-4 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

aerodrome

defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft

[SOURCE: ICAO/Annex 2]

3.2

CNS

communications, navigation, and surveillance systems, employing digital technologies, including satellite systems together with various levels of automation

[SOURCE: ICAO Doc. 9750]

3.3

time

mark attributed to an instant or a time interval on a specified time scale

Note 1 to entry: The representation rules are defined in the ISO 8601 series.