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Australian/New Zealand Standard™

Geographic information—Schema for moving features

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Australasian Fire and Emergency Service Authorities Council
Australian Antarctic Division
Australian Hydrographic Office
Australian Map Circle
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Geographic information—Schema for moving features

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT-004, Geographical Information/Geomatics.

The objective of this Standard is to specify a conceptual schema that addresses moving features, i.e., features whose locations change over time. This schema includes classes, attributes, associations and operations that provide a common conceptual framework that can be implemented to support various application areas that deal with moving features.

This Standard is identical with, and has been reproduced from ISO 19141:2008, *Geographic information—Schema for moving features.*

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

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Reference to International Standard		*Australian/New Zealand Standard*	
ISO/TS		AS/NZS ISO	
19103	Geographic information—Conceptual schema language	19103	Geographic information—Conceptual schema language
ISO			
19107	Geographic information—Spatial schema	19107	Geographic information—Spatial schema
19108	Geographic information—Temporal schema	19108	Geographic information—Temporal schema
19109	Geographic information—Rules for application schema	19109	Geographic information—Rules for application schema
19133	Geographic information—Location-based services—Tracking and navigation	19133	Geographic information—Location-based services—Tracking and navigation

The terms 'normative' and 'informative' have been used in this Standard to define the application of the annex to which they apply. A 'normative' annex is an integral part of a Standard, whereas an 'informative' annex is only for information and guidance.

CONTENTS

1 Scope 1

2 Conformance 1
2.1 Conformance classes 1
2.2 Requirements 2

3 Normative references 2

4 Terms, definitions, and abbreviated terms 3
4.1 Terms and definitions 3
4.2 Abbreviated terms 5

5 Package – Moving Features 6
5.1 Semantics 6
5.2 Package structure 7
5.3 Class hierarchy 7

6 Package – Geometry Types 9
6.1 Package semantics 9
6.2 Type – MF_OneParamGeometry 9
6.3 Type – MF_TemporalGeometry 11
6.4 Type – MF_Trajectory 12
6.5 Type – MF_TemporalTrajectory 14
6.6 Class – MF_PositionExpression 20
6.7 Type – MF_SecondaryOffset 20
6.8 Type – MF_MeasureFunction 21

7 Package – Prism Geometry 22
7.1 Package structure 22
7.2 CodeList – MF_GlobalAxisName 23
7.3 Type – MF_LocalGeometry 25
7.4 Type – MF_PrismGeometry 27
7.5 Type – MF_RigidTemporalGeometry 28
7.6 Type – MF_RotationMatrix 29
7.7 Type – MF_TemporalOrientation 30

8 Moving features in application schemas 30
8.1 Introduction 30
8.2 Representing the spatial characteristics of moving features 31
8.3 Associations of moving features 31
8.4 Operations of moving features 31

Annex A (normative) **Abstract test suite** 32
A.1 Application schemas for data transfer 32
A.2 Application schemas for data with operations 32

Annex B (informative) **UML Notation** 34
B.1 Introduction 34
B.2 Class 34
B.3 Stereotype 34
B.4 Attribute 35
B.5 Operation 35
B.6 Constraint 36
B.7 Note 36

B.8 Association **36**
B.9 Role name **36**
B.10 Multiplicity **37**
B.11 Navigability **37**
B.12 Aggregation **37**
B.13 Composition **38**
B.14 Dependency **38**
B.15 Generalization **38**
B.16 Realization **39**

Annex C (informative) **Interpolating between orientations** **40**
C.1 Introduction **40**
C.2 Euler rotations and gimbal lock **40**
C.3 Interpolating between two orientation matrices **42**
C.4 Interpolating between other orientation representations **44**
C.5 Sample interpolation **45**

Bibliography **49**

INTRODUCTION

This International Standard specifies a conceptual schema that addresses moving features, i.e., features whose locations change over time. This schema includes classes, attributes, associations and operations that provide a common conceptual framework that can be implemented to support various application areas that deal with moving features, including:

— Location Based Services,

— Intelligent Transportation Systems,

— Tracking and navigation (land-based, marine, or space), and

— Modeling and simulation.

The schema specifies mechanisms to describe motion consisting of translation and/or rotation of the feature, but not including deformation of the feature. The schema is based on the concept of a one parameter set of geometries that may be viewed as a set of leaves or a set of trajectories, where a leaf represents the geometry of the moving feature at a particular value of the parameter (e.g., a point in time) and a trajectory is a curve that represents the path of a point in the geometry of the moving feature as it moves with respect to the parameter.

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Geographic information—Schema for moving features

1 Scope

This International Standard defines a method to describe the geometry of a feature that moves as a rigid body. Such movement has the following characteristics.

a) The feature moves within any domain composed of spatial objects as specified in ISO 19107.

b) The feature may move along a planned route, but it may deviate from the planned route.

c) Motion may be influenced by physical forces, such as orbital, gravitational, or inertial forces.

d) Motion of a feature may influence or be influenced by other features, for example:

   1) The moving feature might follow a predefined route (e.g. road), perhaps part of a network, and might change routes at known points (e.g. bus stops, waypoints).

   2) Two or more moving features may be "pulled" together or pushed apart (e.g. an airplane will be refuelled during flight, a predator detects and tracks a prey, refugee groups join forces).

   3) Two or more moving features may be constrained to maintain a given spatial relationship for some period (e.g. tractor and trailer, convoy).

This International Standard does not address other types of change to the feature. Examples of changes that are not adressed include the following:

— The deformation of features.

— The succession of either features or their associations.

— The change of non-spatial attributes of features.

— The feature's geometric representation cannot be embedded in a geometric complex that contains the geometric representations of other features, since this would require the other features' representations to be updated as the feature moves.

Because this International Standard is concerned with the geometric description of feature movement, it does not specify a mechanism for describing feature motion in terms of geographic identifiers. This is done, in part, in ISO 19133.

2 Conformance

2.1 Conformance classes

2.1.1 Introduction

This International Standard specifies four conformance classes (Table 1). They are differentiated on the basis of two criteria: purpose and level of complexity.

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