AS/NZS ISO 19134:2008
ISO 19134:2007
Reconfirmed 2018

AS/NZS ISO 19134:2008

Australian/New Zealand Standard™

Geographic information—Location-based services—Multimodal routing and navigation

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee IT-004, Geographical Information/Geomatics. It was approved on behalf of the Council of Standards Australia on 25 July 2008 and on behalf of the Council of Standards New Zealand on 21 July 2008.
This Standard was published on 16 September 2008.

The following are represented on Committee IT-004:

ACT Planning and Land Authority
ANZLIC - the Spatial Information Council
Australian Antarctic Division
Australian Bureau of Statistics
Australian Hydrographic Office
Australian Key Centre In Land Information Studies
Australian Map Circle
Australian Spatial Information Business Association
CSIRO Exploration & Mining
Department for Administrative and Information Services (SA)
Department of Defence (Australia)
Department of Lands NSW
Department of Natural Resources and Water (Qld)
Department of Planning and Infrastructure (NT)
Department of Primary Industries and Water Tasmania
Department of Sustainability and Environment (Victoria)
Geoscience Australia
InterGovernmental Committee on Surveying and Mapping
Land Information New Zealand
Office of Spatial Data Management
Western Australian Land Information System

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR 08109.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION

OF
AS/NZS ISO 19134:2008
Geographic information–Location-based services–
Multimodal routing and navigation

RECONFIRMATION NOTICE

Technical Committee IT-004 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 9 April 2018.

Approved for reconfirmation in New Zealand on behalf of the New Zealand Standards Approval Board on 26 June 2018.

The following are represented on Technical Committee IT-004:

ANZLIC - the Spatial Information Council
Australian Antarctic Division
Australian Bureau of Meteorology
Australian Bureau of Statistics
Australian Maritime Safety Authority
CSIRO
Curtin University of Technology
Department of Defence (Australian Government)
Department of Human Services (Australian Government)
Geoscience Australia
InterGovernmental Committee on Surveying and Mapping
New Zealand Geospatial Office
Science New Zealand Inc
Spatial Industries Business Association

Australian/New Zealand Standard™

Geographic information—Location-based services—Multimodal routing and navigation

First published as AS/NZS ISO 19134:2008.

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 8898 X

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 specify the data types and their associated operations for the implementation of multimodal location-based services for routing and navigation.

This Standard is identical with, and has been reproduced from ISO 19134:2007, *Geographic information—Location-based services—Multimodal routing and navigation*.

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.

(b) In the source text 'this International Standard' should read 'this Australian/New Zealand Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard ISO		*Australian/New Zealand Standard* AS/NZS ISO	
19101	Geographic information—Reference model	19101	Geographic information—Reference model
19107	Geographic information—Spatial schema	19107	Geographic information—Spatial schema
19108	Geographic information—Temporal schema	19108	Geographic information—Temporal schema
19112	Geographic information—Spatial referencing by geographic identifiers	19112	Geographic information—Spatial referencing by geographic identifiers
19133	Geographic information—Location-based services—Tracking and navigation	19133	Geographic information—Location-based services—Tracking and navigation

The terms 'normative' and 'informative' are used 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

Page

INTRODUCTION

In everyday life in metropolitan areas in the world, a typical traveller is involved in using various modes of transportation for daily activities: e.g. walking, driving, park-and-ride, mass transit and taxi. The traveller frequently faces the problem of finding the optimal or best route combining several modes, from the origin to the destination, passing through the locations (waypoints) where the traveller might want to engage in activities such as shopping and meeting people, possibly satisfying a set of constraints such as the sequence constraints like “activity 1 before activity 2”, “location 1 before location 2”, etc. A typical intercity traveller faces situations requiring decisions to be made such as which station (junction) and by which mode to travel in order to take which system among the available transportation modes between an origin and a destination. The decision will depend on the overall cost that includes the line-haul, parking, routing, stopping at stations (junctions), stopping at intermediate places, etc.

This International Standard provides a conceptual schema for describing the data and services needed to support routing and navigation application for mobile clients who intend to reach a target position using two or more modes of transportation. This conceptual schema is a standard schema such as the spatial schema (ISO 19107) or the temporal schema (ISO 19108). This International Standard provides a description of a service type to support routing and navigation for a mode that operates either on a fixed route or with a fixed schedule, a description of data type for transfers, and a description of data type for schedule information and route information of a mode with a fixed route and/or schedule.

Based upon ISO 19133:2005, this International Standard specifies additional classes as well as extensions to existing classes to be used for multimodal routing and navigation. As in ISO 19133:2005, this International Standard assumes that all requests for services will be encapsulated in a request/response pair between the mobile client and the client application or its on-web proxy application. Therefore, this International Standard describes service operation types and a set of request/response data types associated with some operations which are necessary for multimodal routing and navigation.

By way of adding and/or expanding ISO 19133:2005, standardized conceptual schemas for multimodal routing and navigation of mobile clients will increase the ability to share geographic information among multimodal location-based service applications. These schemas will be used by multimodal location-based service applications, mostly in metropolitan areas, and in all intercity travelling environments to provide consistently understandable spatial data structures.

AUSTRALIAN/NEW ZEALAND STANDARD

Geographic information — Location-based services — Multimodal routing and navigation

1 Scope

This International Standard specifies the data types and their associated operations for the implementation of multimodal location-based services for routing and navigation. It is designed to specify web services that may be made available to wireless devices through web-resident proxy applications, but is not limited to that environment.

2 Conformance

Conformance to this International Standard depends on the type of entity declaring conformance.

Mechanisms for the data exchanges are conformant to this International Standard if they contain record implementations of the object types described within this International Standard, as specified in A.2.

Web services for routing and navigation are conformant to this International Standard if their interfaces implement one or both of the subtypes of service defined in this International Standard, as specified in A.3.

Details of the conformance classes are given in the Abstract test suite in Annex A.

3 Normative references

The following referenced documents are indispensable for the application 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 19101, *Geographic information — Reference model*

ISO 19107, *Geographic information — Spatial schema*

ISO 19108, *Geographic information — Temporal schema*

ISO 19112, *Geographic information — Spatial referencing by geographic identifiers*

ISO 19133:2005, *Geographic information — Location-based services — Tracking and navigation*

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1
application
manipulation and processing of data in support of user requirements

[ISO 19101]