AS/NZS ISO 19111:2004
ISO 19111:2003

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Australian/New Zealand Standard™

Geographic information—Spatial referencing by coordinates

STANDARDS AUSTRALIA

STANDARDS NEW ZEALAND
Paerewa Aotearoa

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee IT-004, Geographical Information. It was approved on behalf of the Council of Standards Australia on 14 May 2004 and on behalf of the Council of Standards New Zealand on 11 June 2004.
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The following are represented on Committee IT-004:

ACT Department of Urban Services
ANZLIC – the Spatial Information Council
Association of Aerial Surveyors Australia
Association of Crown Research Institutes New Zealand
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Australasian Urban and Regional Information Systems Association
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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 International or Standards New Zealand at the address shown on the back cover.

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Geographic information—Spatial referencing by coordinates

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PREFACE

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

This Standard is identical with, and has been reproduced from ISO 19111:2003, *Geographic information—Spatial referencing by coordinates*.

The objective of this Standard is to define the conceptual schema for the description of spatial referencing by coordinates. It describes the minimum data required to define one-, two-, and three-dimensional coordinate reference systems. It allows additional descriptive information to be provided. It also describes the information required to change coordinate values from one coordinate reference system to another.

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.

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		*Australian/New Zealand Standard*	
ISO		AS/NZS	
19113	Geographic information—Quality principles	19113	Geographic information—Quality principles
		AS ISO	
1000	SI units and recommendations for use of their multiples and of certain other units	1000	The international system of units (SI) and its application

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INTRODUCTION

Geographic information contains spatial references which relate the features represented in the data to positions in the real world. Spatial references fall into two categories:

— those using coordinates;

— those based on geographic identifiers.

This International Standard deals only with spatial referencing by coordinates. Spatial referencing by geographic identifiers is the subject of ISO 19112, *Geographic information — Spatial referencing by geographic identifiers*.

Coordinates are unambiguous only when the coordinate reference system to which those coordinates are related has been fully defined. A coordinate reference system is a coordinate system which has a reference to the Earth. This International Standard describes the elements that are necessary to define fully various types of coordinate systems and coordinate reference systems applicable to geographic information. The subset of elements required is partially dependent upon the type of coordinates. This International Standard also includes optional fields to allow for the inclusion of non-essential coordinate reference system information. The elements are intended to be both machine and human readable. A set of coordinates on the same coordinate reference system requires one coordinate reference system description.

In addition to describing a coordinate reference system, this International Standard provides for the description of a coordinate transformation or coordinate conversion between two different coordinate reference systems. With such information, geographic data referred to different coordinate reference systems can be merged together for integrated manipulation. Alternatively, an audit trail of coordinate reference system manipulations can be maintained.

AUSTRALIAN/NEW ZEALAND STANDARD

Geographic information — Spatial referencing by coordinates

1 Scope

This International Standard defines the conceptual schema for the description of spatial referencing by coordinates. It describes the minimum data required to define one-, two- and three-dimensional coordinate reference systems. It allows additional descriptive information to be provided. It also describes the information required to change coordinate values from one coordinate reference system to another.

This International Standard is applicable to producers and users of geographic information. Although it is applicable to digital geographic data, its principles can be extended to many other forms of geographic data such as maps, charts, and text documents.

2 Conformance requirements

This International Standard defines two classes of conformance, Class A for conformance of coordinate reference systems and Class B for coordinate operations between two coordinate reference systems. Any coordinate reference system claiming conformance to this International Standard shall satisfy the requirements given in Annex A, Clause A.1. Any coordinate operation claiming conformance to this International Standard shall satisfy the requirements given in Annex A, Clause A.2.

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 1000, *SI units and recommendations for use of their multiples and of certain other units*

ISO/TS 19103:—[1)], *Geographic information — Conceptual schema language*

ISO 19113:2002, *Geographic information — Quality principles*

ISO 19114:—[1)], *Geographic information — Quality evaluation procedures*

4 Terms and definitions

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

4.1
Cartesian coordinate system
coordinate system which gives the position of points relative to n mutually perpendicular axes

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1) To be published.