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Australian/New Zealand Standard™

Geographic information—Reference model

Part 2: Imagery

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 15 November 2011 and on behalf of the Council of Standards New Zealand on 14 November 2011.
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ANZLIC—The Spatial Information Council
Australasian Fire and Emergency Service Authorities Council
Australian Antarctic Division
Australian Hydrographic Office
Australian Map Circle
CSIRO Exploration and Mining
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PREFACE

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

The objective of this document is to provide a reference model for processing of geographic imagery which is frequently done in open distributed manners.

This document is identical with, and has been reproduced from ISO/TS 19101-2:2008, *Geographic information—Reference model*—Part 2: *Imagery*.

As this document is reproduced from an International Technical Specification, the following applies:

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

(b) 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 ISO	
19115	Geographic information—Metadata	19115	Geographic information—Metadata
19119	Geographic information—Services	19119	Geographic information—Services
19123	Geographic information—Schema for coverage geometry and functions	19123	Geographic information—Schema for coverage geometry and functions

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.

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INTRODUCTION

This Technical Specification provides a reference model for processing of geographic imagery which is frequently done in open distributed manners. The motivating themes addressed in this reference model are given below.

In terms of volume, imagery is the dominant form of geographic information.

— Stored geographic imagery volume will grow to the order of an exabyte.

— National imagery archives are multiple petabytes in size; ingesting a terabyte per day.

— Individual application data centers are archiving hundreds of terabytes of imagery.

— Tens of thousands of datasets have been catalogued but are not yet online.

Large volumes of geographic imagery will not be portrayed directly by humans. Human attention is the scarce resource, and is insufficient to view petabytes of data. Semantic processing will be required: for example, automatic detection of features; data mining based on geographic concepts.

Information technology allows the sharing of geographic information products through processing of geographic imagery. Standards are needed to increase creation of products. A number of existing standards are used for the exchange of geographic imagery.

Examples of technical, legal, and administrative hurdles to moving imagery online include

— technical issues of accessibility – geocoding, geographic access standards,

— maintenance of intellectual property rights,

— maintenance of individual privacy rights as resolution increases, and

— technical issues of compatibility requiring standards.

Governments have been the predominant suppliers of remotely sensed data in the past. This is changing with the commercialization of remotely sensed data acquisition. Geographic imagery is a key input to decision support for policy makers.

The ultimate challenge is to enable the geographic imagery collected from different sources to become an integrated digital representation of the Earth widely accessible for humanity's critical decisions.

Currently a large number of standards exist that describe imagery data. The processing of imagery across multiple organizations and information technologies (IT) is hampered by the lack of a common abstract architecture. The establishment of a common framework will foster convergence at the framework level. In the future, multiple implementation standards are needed for data format and service interoperability to carry out the architecture defined in this Technical Specification.

The objective of this Technical Specification is the coordinated development of standards that allow the benefits of distributed geographic image processing to be realized in an environment of heterogeneous IT resources and multiple organizational domains. An underlying assumption is that uncoordinated standardization activities made without a plan cannot be united under the necessary framework.

This Technical Specification provides a reference model for the processing of geographic imagery which is frequently done in open distributed manners. The basis for defining an information system in this

Technical Specification is the Reference Model for Open Distributed Processing (RM-ODP) [78]. A brief description of RM-ODP can be referenced in Annex B. The basis for defining geographic information in this specification is the ISO 19100 family of standards.

The RM-ODP [78] viewpoints are used in the following fashion:

— Typical users and their business activities, and policies to carry out those activities, are addressed in the Enterprise Viewpoint.

— Data structures and the progressive addition of value to the resulting products are found in the schemas of the Information Viewpoint.

— Individual processing services and the chaining of services are addressed in the Computational Viewpoint.

Approaches to deploy the components of the Information and Computational viewpoints to distributed physical locations are addressed in the Engineering Viewpoint.

AUSTRALIAN/NEW ZEALAND STANDARD

Geographic information—Reference model

Part 2:
Imagery

1 Scope

This part of ISO 19101 defines a reference model for standardization in the field of geographic imagery processing. This reference model identifies the scope of the standardization activity being undertaken and the context in which it takes place. The reference model includes gridded data with an emphasis on imagery. Although structured in the context of information technology and information technology standards, this Technical Specification is independent of any application development method or technology implementation approach.

2 Conformance

2.1 General

To conform to this Technical Specification, all of the conditions specified for at least one of the conformance classes described below shall be satisfied.

2.2 Enterprise conformance

Any enterprise that claims conformance to this Technical Specification shall satisfy all of the conditions specified in the Test module in A.1.

2.3 Sensor conformance

Any sensor for which conformance to this Technical Specification is claimed shall satisfy all of the conditions specified in the Test module in A.2.

2.4 Imagery data conformance

Any enterprise for which conformance to this Technical Specification is claimed shall satisfy all of the conditions specified in the Test module in A.3.

2.5 Imagery services conformance

Any enterprise for which conformance to this Technical Specification is claimed shall satisfy all of the conditions specified in the Test module in A.4.

2.6 Image processing system conformance

Any image processing system for which conformance to this Technical Specification is claimed shall satisfy all of the conditions specified in the Test module in A.5.