

Australian/New Zealand Standard™

**Geographic information—Imagery and  
gridded data**



## **AS/NZS ISO 19121:2006**

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 11 January 2006 and on behalf of the Council of Standards New Zealand on 27 January 2006.  
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**AS/NZS ISO 19121:2006**  
**Geographic information—Imagery and gridded data**

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Australian/New Zealand Standard™

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## PREFACE

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

This Standard is identical with, and has been reproduced from ISO/TR 19121:2000, *Geographic information—Imagery and gridded data*.

The objective of this Standard is to provide systems designers and analysts with aspects of imagery and gridded data that have been standardized or are being standardized in other ISO committees and external standards organizations, and that influence or support the establishment of raster and gridded data standards for geographic information, and to describe the components of identified ISO and external imagery and gridded data standards that can be harmonized with the ISO 19100 series of geographic information/geomatics standards.

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19106	Geographic information—Profiles	19106	Geographic information—Profiles
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
19110	Geographic information—Methodology for feature cataloguing	19110	Geographic information—Methodology for feature cataloguing
19111	Geographic information—Spatial referencing by coordinates	19111	Geographic information—Spatial referencing by coordinates
19112	Geographic information—Spatial referencing by geographic identifiers	19112	Geographic information—Spatial referencing by geographic identifiers
19113	Geographic information—Quality principles	19113	Geographic information—Quality principles

ISO		AS/NZS ISO	
19114	Geographic information—Quality evaluation procedures	19114	Geographic information—Quality evaluation procedures
19115	Geographic information—Metadata	19115	Geographic information—Metadata
19116	Geographic information—Positioning services	19116	Geographic information—Positioning services
19117	Geographic information—Portrayal	19117	Geographic information—Portrayal
19118	Geographic information—Encoding	19118	Geographic information—Encoding
19119	Geographic information—Services	19119	Geographic information—Services
ISO/TS			
19103	Geographic information—Conceptual schema language	19103	Geographic information—Conceptual schema language
ISO/TR			
19120	Geographic information—Functional standards	19120	Geographic information—Functional standards

Only international references adopted as Australian or Australian/New Zealand Standards have been listed.

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## INTRODUCTION

This Technical Report is intended to identify the manner by which ISO/TC 211 should handle imagery and gridded data in the context of its standards.

A natural image is a radiometric representation of the real world, as seen by an optical or other sensor. A synthetic image is a generated depiction of spatial data in a visual form. Both natural and synthetic image data are being used increasingly in the area of geographic information/geomatics. Gridded data is the representation of attribute values in terms of a spatial grid. All three of these forms of spatial information can be handled in a similar manner by representation in terms of a raster or matrix structure. Both a raster and a matrix are array structures that may be coded somewhat differently due to the characteristics of the data.

An increasingly large volume of natural and synthetic image and gridded data is being produced. For example, current imaging satellites include LandsAT, RADARSAT, SPOT, ERS, MOS, JERS and NOAA. Also, there are military satellite images and other public and private domain image sources. There are current plans to launch more than one hundred Earth observing satellites by the year 2005, with 60 of those scheduled for launch by the end of 1999, with some of these satellites generating as many as 22 000 scenes per day. Digital orthophoto mapping is another field in which major financial investment is being made and in which a large volume of raster data is being produced. Obviously, there will be great demand for this imagery to be in a standard format in order to be useful with other sources of data.

Large volumes of synthetic imagery are being produced by the scanning of the current large inventory of paper maps and charts, and it is expected that the volume of this data will exceed the production of vector based data sets for a long time. Synthetic raster maps include scanned paper map products, such as topographic maps, nautical charts, soil and vegetation maps and other such products. They also include raster data sets generated directly from vector data sets. Since the demand for image and gridded data is large and will be rapidly increasing in the near future, it is necessary to address this form of data in ISO/TC 211. Many countries and international organizations are producing Digital Elevation Models (DEMs). Many other forms of gridded data such as georeferenced socio-economic data including land use data, meteorological and bathymetric data are being compiled in large volumes.

Earth observation networks and information infrastructures are being developed in many countries to further improve the access and use of remote sensing data, products and services, with the objective to provide state-of-the-art interfaces between the data archives and their users. The interoperability between data archives — an important element of which is interoperable standards — will greatly facilitate a more effective operation by government bodies and the value-added sector.

The specific aim of this work item is to analyse the characteristics of imagery and gridded data and make recommendations with respect to how this data can be handled in ISO/TC 211. There is a significant overlap between many of the current ISO/TC 211 work items and those areas that require standardization to support imagery and gridded data. For example, it is possible to share many metadata elements between vector and raster representations, but some unique metadata will be required to handle particular raster related aspects.

The main interests that will benefit from the standardization of raster and matrix data formats will be the distributors and end-users of raster data. Currently, each satellite effectively defines its own "standard" based on the characteristics of its sensors. There also exists a large number of "standard" formats for the exchange and distribution of synthetic raster data such as scanned paper maps. Integration of data is difficult at best.

Although there are some aspects of sensor characteristics that are unique to particular data sources, there is a high degree of commonality underlying the basic parameters. In addition, many of the aspects of the existing ISO/TC 211 work on vector standards, such as geographic referencing, quality, metadata, positioning services, and portrayal are applicable to raster and matrix data.



## AUSTRALIAN/NEW ZEALAND STANDARD

**Geographic information — Imagery and gridded data****1 Scope**

This Technical Report reviews the manner in which raster and gridded data is currently being handled in the Geomatics community in order to propose how this type of data should be supported by geographic information standards.

This Technical Report identifies those aspects of imagery and gridded data that have been standardized or are being standardized in other ISO committees and external standards organizations, and that influence or support the establishment of raster and gridded data standards for geographic information. It also describes the components of those identified ISO and external imagery and gridded data standards that can be harmonized with the ISO 19100 series of geographic information/geomatics standards.

A plan is presented for ISO/TC 211 to address imagery and gridded data in an integrated manner, within the ISO 19100 series of geographic information standards.

**2 References**

ISO 19101:—<sup>1)</sup>, *Geographic information — Reference model.*

ISO 19102:—<sup>1)</sup>, *Geographic information — Overview.*

ISO/TS 19103:—<sup>1)</sup>, *Geographic information — Conceptual schema language.*

ISO 19104:—<sup>1)</sup>, *Geographic information — Terminology.*

ISO 19105:—<sup>1)</sup>, *Geographic information — Conformance and testing.*

ISO 19106:—<sup>1)</sup>, *Geographic information — Profiles.*

ISO 19107:—<sup>1)</sup>, *Geographic information — Spatial schema.*

ISO 19108:—<sup>1)</sup>, *Geographic information — Temporal schema.*

ISO 19109:—<sup>1)</sup>, *Geographic information — Rules for application schema.*

ISO 19110:—<sup>1)</sup>, *Geographic information — Feature cataloguing methodology.*

ISO 19111:—<sup>1)</sup>, *Geographic information — Spatial referencing by coordinates.*

ISO 19112:—<sup>1)</sup>, *Geographic information — Spatial referencing by geographic identifiers.*

ISO 19113:—<sup>1)</sup>, *Geographic information — Quality principles.*

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1) To be published.