AS/NZS ISO 19143:2011
ISO 19143:2010

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Australian/New Zealand Standard™

Geographic information—Filter encoding

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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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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.

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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 describe an XML and KVP encoding of a system neutral syntax for expressing projections, selection and sorting clauses collectively called a query expression.

This Standard is identical with, and has been reproduced from ISO 19143:2010, *Geographic information—Filter encoding.*

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 ISO	
19108	Geographic information—Temporal schema	19108	Geographic information—Temporal schema
19125	Geographic information—Simple feature access	19125	Geographic information—Simple feature access
19125-1	Part 1: Common architecture	19125.1	Part 1: Common architecture

Only documents that have been adopted as Australian or Australian/New Zealand Standards have been listed.

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

INTRODUCTION

Filter encoding was originated within the OGC.

A fundamental operation performed on a set of data or resources is that of querying in order to obtain a subset of the data which contains certain desired information that satisfies some query criteria and which is also, perhaps, sorted in some specified manner.

The term “projection clause” is used to describe an encoding for specifying which subset of resource properties are presented in the response to a query.

The term “filter or selection clause” is used to describe an encoding of predicates which are typically used in query operations to specify how data instances in a source dataset should be filtered to produce a result set. Each data instance in the source set is evaluated using the filter expression. The overall filter expression always evaluates to true or false. If the expression evaluates to true, the data instance satisfies the expression and is marked as being in the result set. If the overall filter expression evaluates to false, the data instance is not in the result set. Thus, the net effect of evaluating a filter expression is a set of data or resource identifiers which satisfy the predicates in the expression.

The term “sorting clause” is used to describe an encoding for specifying how the data in a response is ordered prior to being presented.

Such encodings are considered system neutral because using the numerous XML tools available today, XML encoded projection, selection and sorting clauses can be easily validated, parsed and then transformed into whatever target query language is required to retrieve or modify resources stored in some persistent object store. For example an XML encoded query composed of a projection, selection and sorting clauses can be transformed into a SQL “SELECT … FROM … WHERE … ORDER BY …” statement to fetch data stored in a SQL-based relational database. Similarly, the same XML encoded query expression can just as easily be transformed into an XQuery expression in order to retrieve data from XML document.

The XML and KVP encodings of projection, selection and sorting clauses described in this International Standard are common components which can be used together or as individually by a number of web services. Any service that requires the ability to query objects from a web-accessible repository can make use of the XML and KVP encodings of a query expression described in this International Standard. For example the GetFeature operation, defined in ISO 19142, uses the elements derived from definitions in this International Standard to encode query expressions.

AUSTRALIAN/NEW ZEALAND STANDARD

Geographic information—Filter encoding

1 Scope

This International Standard describes an XML and KVP encoding of a system neutral syntax for expressing projections, selection and sorting clauses collectively called a query expression.

These components are modular and intended to be used together or individually by other standards which reference this International Standard.

EXAMPLE 1 ISO 19142 makes use of some or all of these components.

This International Standard defines an abstract component, named AbstractQueryExpression, from which other specifications can subclass concrete query elements to implement query operations.

This International Standard also defines an additional abstract query component, named AbstractAdhocQueryExpresison, which is derived from AbstractQueryExpression and from which other specifications can subclass concrete query elements which follow the following query pattern:

> An abstract query element from which service specifications can subclass a concrete query element that implements a query operation that allows a client to specify a list of resource types, an optional projection clause, an optional selection clause, and an optional sorting clause to query a subset of resources that satisfy the selection clause.

This pattern is referred to as an ad hoc query pattern since the server is not aware of the query until it is submitted for processing. This is in contrast to a stored query expression, which is stored and can be invoked by name or identifier.

This International Standard also describes an XML and KVP encoding of a system-neutral representation of a select clause. The XML representation is easily validated, parsed and transformed into a server-specific language required to retrieve or modify object instances stored in some persistent object store.

EXAMPLE 2 An XML encoded filter can be transformed into a WHERE clause for a SQL SELECT statement to fetch data stored in a SQL-based relational database. Similarly, and XML encoded filter expression can be transformed into an XPath or XPointer expression for fetching data from XML documents.

This International Standard defines the XML encoding for the following predicates.

a) A standard set of logical predicates: and, or and not.

b) A standard set of comparison predicates: equal to, not equal to, less than, less than or equal to, greater than, greater than or equal to, like, is null and between.

c) A standard set of spatial predicates: equal, disjoint, touches, within, overlaps, crosses, intersects, contains, within a specified distance, beyond a specified distance and BBOX.

d) A standard set of temporal predicates: after, before, begins, begun by, contains, during, ends, equals, meets, met by, overlaps and overlapped by.

e) A predicate to test whether the identifier of an object matches the specified value.