
**Upravljanje jezikovnih virov - Lingua franca za korpusne poizvedbe (CQLF) - 2. del:
Ontologija**

Language resource management -- Corpus Query Lingua Franca (CQLF) - Part 2:
Ontology

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*Gestion des ressources linguistiques — Corpus query lingua franca
(CQLF) —
Partie 2: Ontologie*

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CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 37, *Language and terminology*, Subcommittee SC 4, *Language resource management*.

A list of all parts in the ISO 24623 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Several families of International Standards codify various aspects of the representation of language data. These standards describe general corpus-oriented data models in the linguistic annotation framework (LAF) (see ISO 24612), various aspects of the semantic representation in the semantic annotation framework (SemAF) (see ISO 24617-1 and others), the representation of lexical data in the lexical markup framework (LMF) (see ISO 24613-1 and others), as well as the representation of metadata in the component metadata infrastructure (CMDI) (see ISO 24622-1 and others). Complementary to the standards concerning the representation of language data, the ISO 24623 series focuses on the exploitation of language data and on ways to satisfy various kinds of information needs targeting these data.

The corpus query lingua franca (CQLF) metamodel, described in ISO 24623-1, is a maximally permissive construct that establishes means of describing the scope of corpus query languages (CQLs) at a general level and with a focus on various kinds of data models assumed by query systems, with conformance conditions meant to be satisfied by a wide range of CQLs. The metamodel provides a “skeleton” for a CQL taxonomy by setting up basic categories of corpus queries (encoded as levels and modules) as well as the dependencies among them.

Consequently, the task of a more concrete characterization of CQLs is meant to be covered in other parts of the ISO 24623 series. This document establishes a framework for an ontology which focuses on the generalized information needs satisfied by corpus queries, and which is structured as a multi-layer taxonomy against which individual CQLs can make positive and negative conformance statements.

Such an ontology allows, on the one hand, a fine-grained comparison of the expressive power of CQLs, and, on the other hand, it serves a practical purpose, i.e. as a foundation for platforms where developers can enter conformance statements, and where end users can see which CQL to turn to in order to ensure that their search needs get satisfied. An example of such a platform is given by Reference [13].

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Language resource management — Corpus query lingua franca (CQLF) —

Part 2: Ontology

1 Scope

This document specifies the structure of an ontology for a fine-grained description of the expressive power of corpus query languages (CQLs) in terms of search needs. The ontology consists of three interrelated taxonomies of concepts: the CQLF metamodel (a formalization of ISO 24623-1); the expressive power taxonomy, which describes different facets of the expressive power of CQLs; and a taxonomy of CQLs.

This document specifies:

- a) the taxonomy of the CQLF metamodel;
- b) the topmost layer of the expressive power taxonomy (whose concepts are called “functionalities”);
- c) the structure of the layers of the expressive power taxonomy and the relationships between them, in the form of subsumption assertions;
- d) the formalization of the linkage between the CQL taxonomy and the expressive power taxonomy, in the form of positive and negative conformance statements.

This document does not define the entire contents of the ontology (see [Clause 4](#)).

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2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 24612, *Language resource management — Linguistic annotation framework (LAF)*

ISO 24623-1, *Language resource management — Corpus query lingua franca (CQLF) — Part 1: Metamodel*

ISO/IEC 10646, *Information technology — Universal coded character set (UCS)*

W3C-OWL 2-SPEC. *OWL 2 Web Ontology Language: Structural Specification and Functional-Style Syntax* (Second Edition). MOTIK B., PATEL-SCHNEIDER, P.F., and PARSIA, B. eds. W3C Recommendation, 11 December 2012. Available from: <http://www.w3.org/TR/owl2-syntax/>

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 24612, ISO 24623-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

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3.1
CQLF module
 subcomponent of the CQLF metamodel, defined with reference to a specified data-model characteristic

Note 1 to entry: The CQLF metamodel currently distinguishes three modules within CQLF Level 1, Linear (plain-text, segmentation and simple annotation), and three modules within CQLF Level 2, Complex (hierarchical, dependency and containment).

Note 2 to entry: In 5.3, the containment module is formalized by the concept SpanContainment in order to avoid terminological ambiguity.

[SOURCE: ISO 24623-1:2018, 3.8, modified — “the CQLF metamodel” has replaced “a CQLF level” in order to improve clarity outside the context of ISO 24623-1; Note 2 to entry has been added.]

3.2
functionality
 label for a concept in a *CQLF ontology* (3.15) that represents a family of *CQL capabilities* (3.12) contributing to the expressive power of a *CQL* (3.5), formulated at a general level and linked to one or more *CQLF modules* (3.1)

3.3
frame
 label for a concept in a *CQLF ontology* (3.15) that represents a typical *search need* (3.6) of *end users* (3.7), understood as one facet of the expressive power of *CQLs* (3.5)

Note 1 to entry: Most frames arise from the specialization of a *functionality* (3.2) and/or the combination of multiple functionalities.

3.4
use case
 label for a concept in a *CQLF ontology* (3.15) that represents a concrete instantiation of a *frame* (3.3), for which it can be determined unambiguously whether a given *query expression* (3.8) satisfies the *search need* (3.6) or not

Note 1 to entry: Use cases are often parameterized, i.e. they contain variable elements. Parameterized use cases are satisfied by parameterized query expressions

3.5
CQL
corpus query language
 formal language designed to retrieve specific information from (large) language data collections, and thereby incorporate certain abstractions over commonly shared data models that make it possible for the *end user* (3.7) (or user agents) to address parts of those data models

Note 1 to entry: A CQL defines a syntactic notation for *query expressions* (3.8) and the corresponding search semantics, i.e. an intensional specification of the intended result set. For most current CQLs, semantics are implicitly defined by a particular implementation.

[SOURCE: ISO 24623-1:2018, 3.4, modified — “CQL” has been added as preferred term, “end user” has replaced “user” in the definition and Note 1 to entry has been added.]

3.6
search need
 information pattern that an *end user* (3.7) wants to locate in a corpus, based on the primary data stream and/or simple or complex annotation

3.7**end user**

agent who uses a *CQL* (3.5) to satisfy his or her *search needs* (3.6)

Note 1 to entry: This can be done via an interactive graphical user interface (GUI), a command-line tool, programmatically via some application programming interface (API) or by a software program developed by the end user.

3.8**query expression**

string that is syntactically valid in a given *CQL* (3.5) and can be executed to return a result set

Note 1 to entry: Query expressions are often parameterized with variable elements. No formal specification of the parameter substitution procedure is attempted, but entries for parameterized query expressions in the ontology are required to include informal descriptions of the range of admissible values and any transformations required.

3.9**parameter**

variable element in a *query expression* (3.8) or in the description of a *search need* (3.6)

3.10**positive conformance statement**

assertion that a given *CQL* (3.5) supports a given *use case* (3.4) by means of a *query expression* (3.8)

3.11**negative conformance statement**

assertion that a given *CQL* (3.5) cannot support a given *use case* (3.4), *frame* (3.3) or *functionality* (3.2)

Note 1 to entry: Negative conformance is due to technical unavailability of specific capabilities in the respective *CQL* or limitations on the complexity of *query expressions* (3.8).

3.12**CQL capability
capability**

facility provided by *CQLs* (3.5) to meet a specific aspect of *search needs* (3.6)

3.13**layer**

totality of concepts at the same level of abstraction in a *CQLF ontology* (3.15)

EXAMPLE *Functionalities* (3.2), *frames* (3.3), *use cases* (3.4).

3.14**token**

non-empty contiguous sequence of graphemes or phonemes in a document

[SOURCE: ISO 24611:2012, 3.21, modified — Note 1 to entry has been deleted.]

3.15**CQLF ontology**

ontology for a fine-grained description of the expressive power of *CQLs* (3.5) in terms of *search needs* (3.6), which adheres to the structure specified in this document

4 Motivation and aims

CQLs differ widely in their basic sets of capabilities. Whereas some are restricted to rather specific application scenarios, others are able to cover a wider variety of applications and search needs. It is therefore both the quality and the quantity of CQL capabilities – as well as the degree to which they can be combined freely – that determine the expressive power of a CQL. A CQLF ontology as specified