INTERNATIONAL STANDARD

ISO/IEC 19988

Second edition
2017-10

Information technology — Core Business Vocabulary Standard

Technologies de l'information — Vocabulaire normatif relatif aux activités de base

Reference number
ISO/IEC 19988:2017(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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 document 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 and IEC 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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by the GS1 and was adopted, under the PAS procedure, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

This second edition cancels and replaces the first edition (ISO/IEC 19988:2015), which has been technically revised.

The main changes compared to the previous edition are as follows:

— A new standard vocabulary for EPCIS error declaration reason identifiers is added.

— The URI structure for EPCIS event identifiers is specified.

— New business step values dispensing and voidShipping added.

— New disposition values dispensed and partially_dispensed added.

— A new section for trade item master data attributes is added, and the section on location and party master data attributes is expanded.

Document Summary

Document Item	Current Value
Document Name	Core Business Vocabulary Standard
Document Date	Sep 2016
Document Version	1.2
Document Issue	
Document Status	Ratified
Document Description	specifies the structure of vocabularies and specific values for the vocabulary elements to be utilised in conjunction with the GS1 EPCIS standard

Log of Changes

Release	Date of Change	Changed By	Summary of Change
1.0	Oct 2010		Initial release
1.1	March 2014		A new standard vocabulary for EPCIS source/destination type is added. Templates for new user vocabularies for EPCIS source/destination identifier, EPCIS transformation identifier, and object classes are added. New business step, disposition, and business transaction type values are added. The definitions of existing values are also clarified. Disposition values non_sellable_expired, non_sellable_damaged, non_sellable_disposed, non_sellable_no_pedigree_match, and non_sellable_recalled defined in CBV 1.0 are deprecated in favour of new disposition values expired, damaged, disposed, no_pedigree_match, and recalled introduced in CBV 1.1. RFC5870-compliant geocoordinate URIs are now permitted as location identifiers. The introductory material is revised to align with the GS1 System Architecture.
1.2	Sep 2016		CBV 1.2 is fully backward compatible with CBV 1.1 and 1.0. CBV 1.2 includes these new or enhanced features: A new standard vocabulary for EPCIS error declaration reason identifiers is added. The URI structure for EPCIS event identifiers is specified. New business step values dispensing and voidShipping added. New disposition values dispensed and partially_dispensed added. A new section for trade item master data attributes is added, and the section on location and party master data attributes is expanded.

Disclaimer

GS1®, under its IP Policy, seeks to avoid uncertainty regarding intellectual property claims by requiring the participants in the Work Group that developed this **Core Business Vocabulary Standard** to agree to grant to GS1 members a royalty-free licence or a RAND licence to Necessary Claims, as that term is defined in the GS1 IP Policy. Furthermore, attention is drawn to the possibility that an implementation of one or more features of this Specification may be the subject of a patent or other intellectual property right that does not involve a Necessary Claim. Any such patent or other intellectual property right is not subject to the licencing obligations of GS1. Moreover, the agreement to grant licences provided under the GS1 IP Policy does not include IP rights and any claims of third parties who were not participants in the Work Group.

Accordingly, GS1 recommends that any organisation developing an implementation designed to be in conformance with this Specification should determine whether there are any patents that may encompass a specific implementation that the organisation is developing in compliance with the Specification and whether a licence under a patent or other intellectual

property right is needed. Such a determination of a need for licencing should be made in view of the details of the specific system designed by the organisation in consultation with their own patent counsel.

THIS DOCUMENT IS PROVIDED “AS IS” WITH NO WARRANTIES WHATSOEVER, INCLUDING ANY WARRANTY OF MERCHANTABILITY, NONINFRINGMENT, FITNESS FOR PARTICULAR PURPOSE, OR ANY WARRANTY OTHER WISE ARISING OUT OF THIS SPECIFICATION. GS1 disclaims all liability for any damages arising from use or misuse of this Standard, whether special, indirect, consequential, or compensatory damages, and including liability for infringement of any intellectual property rights, relating to use of information in or reliance upon this document.

GS1 retains the right to make changes to this document at any time, without notice. GS1 makes no warranty for the use of this document and assumes no responsibility for any errors which may appear in the document, nor does it make a commitment to update the information contained herein.

GS1 and the GS1 logo are registered trademarks of GS1 AISBL.

Table of Contents

1 Introduction – Core Business Vocabulary

This GS1 standard defines the Core Business Vocabulary (CBV). The goal of this standard is to specify various vocabulary elements and their values for use in conjunction with the EPCIS standard [EPCIS1.2], which defines mechanisms to exchange information both within and across organisation boundaries. The vocabulary identifiers and definitions in this standard will ensure that all parties who exchange EPCIS data using the Core Business Vocabulary will have a common understanding of the semantic meaning of that data.

This standard is intended to provide a basic capability that meets the above goal. In particular, this standard is designed to define vocabularies that are *core* to the EPCIS abstract data model and are applicable to a broad set of business scenarios common to many industries that have a desire or requirement to share data. This standard intends to provide a useful set of values and definitions that can be consistently understood by each party in the supply chain.

Additional end user requirements may be addressed by augmenting the vocabulary elements herein with additional vocabulary elements defined for a particular industry or a set of users or a single user. Additional values for the standard vocabulary types defined in this standard may be included in follow-on versions of this standard.

This standard includes identifier syntax and specific vocabulary element values with their definitions for these *Standard Vocabularies*:

- Business step identifiers
- Disposition identifiers
- Business transaction types
- Source/Destination types
- Error reason identifiers

This standard provides identifier syntax options for these *User Vocabularies:*

- Objects
- Locations
- Business transactions
- Source/Destination identifiers
- Transformation identifiers
- Event identifiers

This standard provides *Master Data Attributes and Values* for describing Physical Locations including:

- Site Location
- Sub-Site Type
- Sub-Site Attributes
- Sub-Site Detail

Additional detailed master data regarding locations (addresses, etc.) are not defined in this standard.

2 Relationship to the GS1 System Architecture

The Core Business Vocabulary is a companion standard to the EPCIS standard. EPCIS is the standard that defines the technical interfaces for capturing and sharing event data. EPCIS defines a framework data model for event data. The Core Business Vocabulary is a GS1 *data standard* that supplements that framework by defining specific data values that may populate the EPCIS data model. As such, the CBV exists in the “Share” group of GS1 standards.

3 Relationship to EPCIS

This section specifies how the Core Business Vocabulary standard relates to the EPC Information Services (EPCIS) standard.

3.1 EPCIS event structure

The EPCIS 1.2 standard [EPCIS1.2] specifies the data elements in an EPCIS event. The following lists these data elements, and indicates where the Core Business Vocabulary provides identifiers that may be used as values for those data elements.

- **The "what" dimension**: The *what* dimension for most event types contains one or more unique identifiers for physical or digital objects or classes of physical or digital objects. Identifiers for physical or digital objects in the Core Business Vocabulary are specified in *Section 8.2 (instance-level) and Section 8.3 (class-level)*. In the case of an EPCIS TransformationEvent, an optional TransformationID may be used to link together multiple events that describe the same transformation. The Core Business Vocabulary includes TransformationIDs in *Section 8.7.*
- **The "when" dimension**: The moment in time at which an EPCIS event occurred. Event time is fully specified in the EPCIS standard.
- **The "where" dimension**: The "where" dimension consists of two identifiers that describe different aspects of where an event occurred:
  - **Read Point**: The location where the EPCIS event took place. In the case of an EPCIS event arising from reading a barcode or RFID tag, the Read Point is often the location where the barcode or RFID tag was read. Identifiers for read points in the Core Business Vocabulary are specified in *Section 8.3.*

    Example: A reader is placed at dock door #3 at the London Distribution Centre (DC). Product passed through the dock door. Read point = <The identifier that stands for London DC Dock Door #3>
  - **Business Location**: The location where the subject of the event is assumed to be following an EPCIS event, until a new event takes place that indicates otherwise. Identifiers for business locations in the Core Business Vocabulary are specified in *Section 8.3*.

    Example: A product is read through the sales floor transition door at store #123. The product is now sitting on the sales floor. Business location = <The identifier that stands for store #123 Sales Floor>
- **The "why" dimension**: The "why" dimension consists of two identifiers and a list of business transaction identifiers, which collectively provide the business context or "why" the event occurred:
  - **Business Step**: Denotes a specific activity within a business process. The business step field of an event specifies what business process step was taking place that caused the event to be captured. Identifiers for business steps in the Core Business Vocabulary are specified in *Section 7.1*.

    Example: an EPCIS event is generated as a product departs the location identified by the Read Point. Business Step = <The identifier that denotes "shipping">
  - **Disposition**: Denotes the business state of an object. The disposition field of an event specifies the business condition of the subject of the event (the things specified in the "what" dimension), subsequent to the event. The disposition is assumed to hold true until another event indicates a change of disposition. Identifiers for dispositions in the Core Business Vocabulary are specified in *Section 7.2.*

    Example: an EPCIS event is generated and afterward the products can be sold as-is and customers can access product for purchase. Disposition = <The identifier that denotes "sellable and accessible">
  - **Business Transaction References**: An EPCIS event may refer to one or more business transaction documents. Each such reference consists of two identifiers:

- **Business Transaction Type**: Denotes a particular kind of business transaction. *Example: the identifier that denotes "purchase order"*. Identifiers for business transaction types in the Core Business Vocabulary are specified in *Section 7.3.*
- **Business Transaction Identifier**: Denotes a specific business transaction document of the type indicated by the Business Transaction Type.

  Example: <The identifier that denotes Example Corp purchase order #123456> Identifiers for business transactions in the Core Business Vocabulary are specified in *Section 8.5.*

- **Source and Destination References**: An EPCIS event may refer to one or more sources and/or destinations that describe the endpoints of a business transfer of which the event is a part. Each source or destination reference consists of two identifiers:
  - **Source or Destination Type**: Denotes a particular kind of source or destination. *Example: the identifier that denotes "owning party"*. Identifiers for source and destination types in the Core Business Vocabulary are specified in *Section 7.4*.
  - **Source or Destination Identifier**: Denotes a source or destination of the type indicated by the Business Transaction Type. *Example: <The identifier that denotes Example Corp as an owning party>* Identifiers for sources and destinations in the Core Business Vocabulary are specified in *Section 8.6.*

3.2 Vocabulary kinds

(The material in this section is adapted directly from [EPCIS1.2], *Section 6.2*.)

Vocabularies are used extensively within EPCIS to model conceptual, physical, and digital entities that exist in the real world.

Examples of vocabularies defined in the EPCIS standard are business steps, dispositions, location identifiers, physical or digital object identifiers, business transaction type names, and business transaction identifiers. In each case, a vocabulary represents a finite (though open-ended) set of alternatives that may appear in specific fields of events.

It is useful to distinguish two kinds of vocabularies, which follow different patterns in the way they are defined and extended over time:

- **Standard Vocabulary**: A Standard Vocabulary is a set of Vocabulary Elements whose definition and meaning must be agreed to in advance by trading partners who will exchange events using the vocabulary.
- **User Vocabulary**: A User Vocabulary is a set of Vocabulary Elements whose definition and meaning are under the control of a single organisation.

These concepts are explained in more detail below.

3.2.1 Standard Vocabulary

A Standard Vocabulary is a set of Vocabulary Elements whose definition and meaning must be agreed to in advance by trading partners who will exchange events using the vocabulary. For example, the EPCIS standard defines a vocabulary called "business step," whose elements are identifiers denoting such things as "shipping," "receiving," and so on. One trading partner may generate an event having a business step of "shipping," and another partner receiving that event through a query can interpret it because of a prior agreement as to what "shipping" means.

Standard Vocabulary elements tend to be defined by organisations of multiple end users, such as GS1, industry consortia outside GS1, private trading partner groups, and so on. The master data associated with Standard Vocabulary elements, if any master data is defined at all, are defined by those same organisations, and tend to be distributed to users as part of a standard or by some similar means. New vocabulary elements within a given Standard Vocabulary tend to be introduced through a very deliberate and occasional process, such as the ratification of a new version of a standard or through a vote of an industry group.

The Standard Vocabularies specified in the Core Business Vocabulary standard are: *business steps (Section 7.1), dispositions (Section 7.2), business transaction types (Section 7.3)*, and *source and*

destination types (Section 7.4). The elements and definitions are agreed to by parties prior to exchanging data, and there is general agreement on their meaning.

Example: the following is a business step identifier defined in *Section 7.1* herein:

```
urn:epcglobal:cbv:bizstep:receiving
```

This identifier is defined by the GS1 Core Business Vocabulary standard, and its meaning is known and accepted by those who implement the standard.

While an individual end user organisation acting alone may introduce a new Standard Vocabulary element, such an element would have limited use in a data exchange setting, and would probably only be used within an organisation's four walls. On the other hand, an industry consortium or other group of trading partners may define and agree on standard vocabulary elements beyond those defined by the Core Business Vocabulary, and these may be usefully used within that trading group.

3.2.2 User Vocabulary

A User Vocabulary is a set of Vocabulary Elements whose definition and meaning are under the control of a single organisation. For example, the EPCIS standard defines a vocabulary called "business location," whose elements are identifiers denoting such things as "Acme Corp. Distribution Centre #3." The location identifier and any associated master data is assigned by the user. Acme Corp may generate an event whose business location field contains the identifier that denotes "Acme Corp. Distribution Centre #3," and another partner receiving that event through a query can interpret it either because the partner recognises the identifier as being identical to the identifier received in other events that took place in the same location, or because the partner consults master data attributes associated with the location identifier, or both.

Example:

```
urn:epc:id:sgln:0614141.12345.400
```

This identifier is assigned by the End User who owns the GS1 Company Prefix 0614141, and the meaning of the identifier (that is, what location it denotes) is determined exclusively by that end user. Another End User can understand the meaning of this identifier by consulting associated master data.

User Vocabulary elements are primarily defined by individual end user organisations acting independently. The master data associated with User Vocabulary elements are typically defined by those same organisations, and are usually distributed to trading partners through the EPCIS Query Interface or other data exchange / data synchronisation mechanisms. New vocabulary elements within a given User Vocabulary are introduced at the sole discretion of an end user, and trading partners must be prepared to respond accordingly.

While the Core Business Vocabulary standard does not (and as the discussion above makes clear, cannot) specify particular user vocabulary elements, the Core Business Vocabulary does provide syntax templates that are recommended for use by End Users in constructing their own user vocabulary elements. See *Section 8.1*. The user vocabularies for which templates are specified in this standard are: *physical or digital objects (Sections 8.2 and 8.3), locations* which include both read points and business locations (*Section 8.4), business transaction identifiers (Section 8.5), source/destination identifiers (Section 8.6)*, and *transformation identifiers (Section 8.7).*

4 Terminology and typographical conventions

Within this standard, the terms SHALL, SHALL NOT, SHOULD, SHOULD NOT, MAY, NEED NOT, CAN, and CANNOT are to be interpreted as specified in Annex G of the ISO/IEC Directives, Part 2, 2001, 4th edition [ISODir2]. When used in this way, these terms will always be shown in ALL CAPS; when these words appear in ordinary typeface they are intended to have their ordinary English meaning.

All sections of this document, with the exception of Sections 2, 3 and 3 are normative, except where explicitly noted as non-normative.

The following typographical conventions are used throughout the document:

- ALL CAPS type is used for the special terms from [ISODir2] enumerated above.

- Monospace type is used to denote programming language, UML, and XML identifiers, as well as for the text of XML documents.

➢ Placeholders for changes that need to be made to this document prior to its reaching the final stage of approved GS1 standard are prefixed by a rightward-facing arrowhead, as this paragraph is.

5 Compliance and compatibility

The GS1 Core Business Vocabulary is designed to facilitate interoperability in EPCIS data exchange by providing standard values for vocabulary elements to be included in EPCIS data. The standard recognises that the greatest interoperability is achieved when all data conforms to the standard, and also recognises that individual End Users or groups of trading partners may need to extend the standard in certain situations.

To that end, this standard defines two levels of conformance for EPCIS documents:

- **CBV-Compliant**: An EPCIS document that only uses vocabulary identifiers specified in the Core Business Vocabulary standard in the standard fields of EPCIS events.
- **CBV-Compatible**: An EPCIS document that uses a combination of vocabulary identifiers specified in the Core Business Vocabulary standard and other identifiers that are outside the standard.

An EPCIS document is neither CBV-Compliant nor CBV-Compatible if it wrongly uses identifiers defined in the Core Business Vocabulary standard or if it violates any other rules specified herein.

The formal definition of these terms is specified below.

5.1 CBV Compliant

A “CBV-Compliant Document” is a document that conforms to the schema and other constraints specified in [EPCIS1.2], and which furthermore conforms to all the normative language in this standard that pertains to a “CBV-Compliant Document.”

A “CBV-Compliant Application” is any application for which both of the following are true:

- If it operates in a mode where it claims to accept a CBV-Compliant Document as an input, the application SHALL accept any document that is a CBV-Compliant Document according to this standard, and furthermore in processing that input SHALL interpret each CBV identifier according to the meaning specified herein.
- If it operates in a mode where it claims to produce a CBV-Compliant Document as an output, the application SHALL only produce a document that is a CBV-Compliant Document according to this standard, and furthermore in generating that output SHALL only use CBV identifiers to denote their meaning as specified herein.

The following list summarises the requirements for an EPCIS document to be a “CBV-Compliant Document,” as specified elsewhere in this standard:

- A CBV-Compliant Document SHALL conform to the schema and other constraints specified in [EPCIS1.2].
- A CBV-Compliant Document SHALL NOT use any URI beginning with `urn:epcglobal:cbv:` except as specified in this standard.
- Each EPCIS event in a CBV-Compliant Document SHALL include a `bizStep` field, and the value of the `bizStep` field SHALL be a URI consisting of the prefix `urn:epcglobal:cbv:bizstep:` followed by the string specified in the first column of some row of the table in *Section 7.1.3.*
- A CBV-Compliant Document MAY include a `disposition` field. If the `disposition` field is present, the value of the `disposition` field SHALL be a URI consisting of the prefix `urn:epcglobal:cbv:disp:` followed by the string specified in the first column of some row of the table in *Section 7.2.3*.

- Each EPCIS event in a CBV-Compliant Document MAY include one or more `bizTransaction` elements. If `bizTransaction` elements are present, each such element MAY include a `type` attribute. If a given `bizTransaction` element includes a `type` attribute, the value of the `type` attribute SHALL be a URI consisting of the prefix `urn:epcglobal:cbv:btt:` followed by the string specified in the first column of some row of the table in *Section 7.3.3.*
- Each EPCIS event in a CBV-Compliant Document MAY include one or more `source` or `destination` elements. The value of the `type` attribute of each such element SHALL be a URI consisting of the prefix `urn:epcglobal:cbv:sdt:` followed by the string specified in the first column of some row of the table in *Section 7.4.3.*
- Each EPCIS event in a CBV-Compliant Document MAY include an `ErrorDeclaration` element, and when present, the `ErrorDeclaration` element MAY include a `reason` field. When present in a CBV-Compliant Document, the value of the `reason` field of the `ErrorDeclaration` element SHALL be a URI consisting of the prefix `urn:epcglobal:cbv:er:` followed by the string specified in the first column of some row of the table in *Section 7.5.3.*
- URIs defined in the EPC Tag Data standard SHALL only be used in a CBV-Compliant Document as specified in *Section 8.1.1.*
- A CBV-Compliant document SHALL use one of the three URI forms specified in *Section 8.2* to populate instance-level identifiers in the "what" dimension of EPCIS events (that is, the `epcList`, `parentID`, `childEPCs`, `inputEPCList`, and `outputEPCList` fields in EPCIS `ObjectEvents`, `AggregationEvents`, `TransacationEvents`, and `TransformationEvents`), for every such field that is not null. A CBV-Compliant document SHOULD use the EPC URI form as specified in *Section 8.2.1* unless there is a strong reason to do otherwise.
- A CBV-Compliant document SHALL NOT use an SGLN EPC (`urn:epc:id:sgln:…`) as an object identifier.
- A CBV-Compliant document SHALL use one of the three URI forms specified in *Section 8.3* to populate class-level identifiers in the "what" dimension of EPCIS events (that is, the `epcClass` fields in all EPCIS event types), for every such field that is not null. A CBV-Compliant document SHOULD use the EPC URI form as specified in *Section 8.3.1* unless there is a strong reason to do otherwise.
- A CBV-Compliant document SHALL use one of the four URI forms specified in *Section 8.4* to populate the "where" dimension of EPCIS events (that is, the `readPoint` and `businessLocation` fields in all EPCIS event types), for every such field that is not null. A CBV-Compliant document SHOULD use the EPC URI form as specified in *Section 8.4.1* unless there is a strong reason to do otherwise.
- When using an EPC URI as a location identifier (*Section 8.4.1*), a CBV-Compliant document SHOULD NOT use EPC schemes other than SGLN (`urn:epc:id:sgln:…`), unless there is a strong reason to do so.
- A CBV-Compliant document SHALL use one of the four URI forms specified in *Section 8.5* to populate the business transaction identifier field (that is, the text content of the `bizTransaction` element) of EPCIS events, for every such field that is not null.
- When using an EPC URI as a business transaction identifier, a CBV-Compliant Documents SHOULD NOT use EPC schemes other than GDTI EPCs (`urn:epc:id:gdti:…`) or GSRN EPCs (`urn:epc:id:gsrn:…`), unless there is a strong reason to do so. GDTI EPCs SHOULD only be used as business transaction identifiers when they have been assigned to denote a business transaction, rather than a physical document not connected with any business transaction.
- A CBV-Compliant document SHALL use one of the three URI forms specified in *Section 8.6* to populate a source or destination identifier field (that is, the text content of a `source` or `destination` element), for every such field that is not null. A CBV-Compliant document SHOULD use the EPC URI form as specified in *Section 8.6.1* unless there is a strong reason to do otherwise.