PD ISO/TS 13584-35:2010

BSI Standards Publication

Industrial automation systems and integration — Parts library

Part 35: Implementation resources: Spreadsheet interface for parts library

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National foreword

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Part 35: Implementation resources: Spreadsheet interface for parts library

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Partie 35: Ressources de mise en application: Interface de tableur pour bibliothèque de composants

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

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An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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ISO/TS 13584-35 was prepared by Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 4, *Industrial data*.

ISO 13584 consists of the following parts under the general title *Industrial automation systems and integration — Parts library*:

— *Part 1: Overview and fundamental principles*

— *Part 20: Logical resource: Logical model of expressions*

— *Part 24: Logical resource: Logical model of supplier library*

— *Part 25: Logical resource: Logical model of supplier library with aggregate values and explicit content*

— *Part 26: Logical resource: Information supplier identification*

— *Part 31: Implementation resources: Geometric programming interface*

— *Part 32: Implementation resources: OntoML: Product ontology markup language*

— *Part 35: Implementation resources: Spreadsheet interface for parts library* [Technical Specification]

— *Part 42: Description methodology: Methodology for structuring part families*

— *Part 101: Geometrical view exchange protocol by parametric program*

— *Part 102: View exchange protocol by ISO 10303 conforming specification*

— *Part 501: Reference dictionary for measuring instruments — Registration procedure*

— *Part 511: Mechanical systems and components for general use — Reference dictionary for fasteners*

The structure of ISO 13584 is described in ISO 13584-1. The numbering of the parts of ISO 13584 reflects its structure:

— Parts 20 to 29 specify the logical resources;

— Parts 30 to 39 specify the implementation resources;

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— Parts 40 to 49 specify the description methodology;

— Parts 100 to 199 specify the view exchange protocol;

— Parts 500 to 599 specify the reference dictionaries.

A complete list of parts of ISO 13584 is available from the Internet:

<http://www.tc184-sc4.org/titles/PLIB_Titles.htm>

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Introduction

ISO 13584 is an International Standard for the computer-interpretable representation and exchange of parts library data. The objective is to provide a neutral mechanism capable of transferring parts library data, independent of any application that is using a parts library data system. The nature of this description makes it suitable not only for the exchange of files containing parts, but also as a basis for implementing and sharing databases of parts library data.

ISO 13584 is organized as a series of parts, each published separately. The parts of ISO 13584 fall into one of the following series: logical resources, implementation resources, description methodology, view exchange protocol, and reference dictionaries. The series are described in ISO 13584-1.

This part of ISO 13584 specifies the standard spreadsheet structure for parts library, used either for the definition and transfer of a reference dictionary, or for the definition and interchange of a set of instance data belonging to a class of a reference dictionary conforming to the ISO 13584 series of standards.

This part of ISO 13584 also establishes the standard mapping between the data carrying a reference dictionary represented in the spreadsheet format defined in this part of ISO 13584 and the data represented in the ISO 13584-25 compliant EXPRESS model for the exchange of reference dictionary.

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Industrial automation systems and integration — Parts library —

Part 35: Implementation resources: Spreadsheet interface for parts library

1 Scope

This part of ISO 13584 specifies the standard spreadsheet interface structure for parts library, used either for the definition and exchange of a reference dictionary, or for the definition and exchange of the instance data belonging to a class of library.

This part of ISO 13584 also establishes the standard mapping between the data carrying a dictionary represented in the spreadsheet format conforming to this part of ISO 13584 and the data represented in the ISO 13584-25 compliant EXPRESS model for dictionary exchange. A set of spreadsheets whose semantics conform to the specification given in this part of ISO 13584, where the physical file structure of the spreadsheets is based on the CSV (Comma Separated Values) format, is typically used in a popular commercial spreadsheet application, or any other tabular formats compatible or convertible to the CSV format. Such a set of spreadsheets supporting a conformance class specified in this part of ISO 13584 may be used additionally for data translation between the CSV format and the ISO 10303-21 physical file structure based on the mapping specified in this part of ISO 13584.

The spreadsheet interface structure defined in this part of ISO 13584 contains the following:

— definition and specification of the basic structure and layout of the spreadsheet interface for parts library, independent of the data content carried by the structure;

— method of specification of instance data belonging to a class of reference dictionary described by a set of spreadsheets conformant to this part of ISO 13584;

— definition and specification of the meta-dictionary that enables the definition and transfer of a reference dictionary as a set of instance data conforming to the meta dictionary;

— specification of the mapping between the dictionary data expressed in the spreadsheet format and the EXPRESS model specified by ISO 13584-25;

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— description of the basic semantic mapping between the dictionary data expressed in the spreadsheet formats defined in this part of ISO 13584 and that of DIN 4002.

The following items are outside the scope of this part of ISO 13584:

— specification of the CSV format *per se*, used in a spreadsheet tool;

— specification of the presentation layout details, such as colouring and sizing of the spreadsheet interface, conformant to this part of ISO 13584;

— specification of the dictionary EXPRESS model conformant to the ISO 13584 series of standards;

— normative definition of the mappings between an ISO 13584 compliant dictionary and another that is based upon other standards;

— specification of the maintenance method of this part of ISO 13584.

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2 Normative references

The following referenced documents are indispensable for the application 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 639-1, *Codes for the representation of names of languages — Part 1: Alpha-2 code*

ISO 639-2, *Codes for the representation of names of languages — Part 2: Alpha-3 code*

ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO 13584-25, *Industrial automation systems and integration — Parts library — Part 25: Logical resource: Logical model of supplier library with aggregate values and explicit content*

ISO 13584-42, *Industrial automation systems and integration — Parts library — Part 42: Description methodology: Methodology for structuring part families*

IEC 61360-2, *Standard data element types with associated classification scheme for electric components — Part 2: EXPRESS dictionary schema*

IEC 61360-4, *Standard data element types with associated classification scheme for electric components — Part 4: IEC reference collection of standard data element types and component classes*

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3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
applicable property
a property that is defined for some family of parts and that shall apply to any part that belongs to this family of parts

EXAMPLE For a generic family of screws, the threaded diameter is an applicable property. This characteristic applies to any screw.

[ISO 13584-24:2003, definition 3.3]

3.2
application
use of software or a standard in an industrial domain

3.3
basic semantic unit
BSU
entity that provides an absolute and universally unique identification of a certain object of the application domain

EXAMPLE Classes, data element types.

[ISO 13584-42:—, definition 3.4]

3.4
common dictionary schema
CIID schema
information model for a reference dictionary based on the EXPRESS data model defined in IEC 61360-2 and ISO 13584-42

3.5
composite property
collection of properties that can be referenced from a class or classes as a single entity

[ISO 13584-501:2007, definition 3.8]

3.6
conjunctive parcels
parcel sheets that are used together to define a library or a reference dictionary

3.7
data
quantities, characters, or symbols on which operations are performed by computers and other automatic equipment, and which may be stored or transmitted in the form of electric signals, records on magnetic or magneto-optic medium, or pieces of paper, etc.

3.8
data element type
DET
unit of data for which the identification, description and value representation have been specified

NOTE In the ISO 13584 standard series, a property value is represented as a data element type.

[ISO 13584-42:—, definition 3.13]

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3.9
data type
representation, interpretation, and structure of values used in computer systems and other automatic equipment

3.10
dictionary
data dictionary
set of terms with respective identifiers formulated in a canonical syntax and with commonly accepted definitions designed to yield a lexical or taxonomical framework for knowledge representation in a computer interpretable form, which can be shared by different information systems and communities

3.11
dictionary data
dictionary represented as rows of data conforming to the schema collectively defined by a meta dictionary

3.12
dictionary element
set of attributes that constitutes the dictionary description of certain objects of the application domain

EXAMPLE 1 A dictionary compliant with this part of ISO 13584 provides for the description of classes, properties, information sources and datatypes.

EXAMPLE 2 A dictionary compliant with ISO 13584-24 provides for the description of classes, properties, information sources, datatypes, tables, documents and program libraries.

[ISO 13584-42:—, definition 3.15]

3.13
dictionary parcel
set of spreadsheets that are used to define in parts a reference dictionary as the instance of the class that each schema header section of the parcel sheet represents

3.14
dictionary parcel client
dictionary parcel client system
parcel client that can read or write parcel dictionaries, and that may have an optional capability to send them to, or receive them from a server system

3.15
dictionary parcel server
dictionary server
parcel server that can provide parcel dictionaries over the Internet

3.16
entity
a class of information defined by common properties.

[ISO 10303-11:2004, definition 3.3.6]

3.17
feature
an aspect of an item that can be captured by a class structure and set of properties and that cannot exist independently of the item

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EXAMPLE 1 A form feature is an aspect of a part that conforms to some preconceived shape stereotype associated to dimensioning properties. It may be represented as an instance of a class that captures this shape stereotype.

EXAMPLE 2 In a piping component, an outlet is an aspect of a part that conforms to some preconceived function stereotype that is associated with properties (e.g., its name, its role). It may be represented as a feature.

[ISO 13584-24:2003, definition 3.41]

3.18
globally unique identifier
ID

identifier for the global identification of the source of identifier information, and which provides a globally unique identification of a concept without recourse to the linguistic interpretation of the meaning of the letter sequence of the identifier

NOTE The globally unique identifier might or might not be based on ISO/IEC 6523.

3.19
instance

set of unary or n-ary values being identified as a distinct member of a class and conceptually characterized by the set of properties belonging to the class

3.20
international concept identifier
international concept ID
ICID

globally unique identifier that is used in the parcelling format for identifying each data concept

3.21
is-a relationship

the inheritance relationship defined in the object oriented paradigm

NOTE In ISO 13584 the is-a relationship holds between a family of parts and a generic family of parts to which the former family belongs.

[ISO 13584-24:2003, definition 3.61]

3.22
is-case-of relationship

a relationship providing a formal expression of the fact that an object conforms to the partial specification defined by another object

NOTE In ISO 13584, all the properties and data types visible or applicable for some family of parts may be imported by all the families of parts that declare to be case-of the former family. These properties and data types may then be used to describe the latter families.

[ISO 13584-24:2003, definition 3.62]

3.23
is-part-of

the aggregation part/whole relationship

NOTE In ISO 13584 the is-part-of relationship holds between a family of constituent parts and a family of assembled parts to which the constituent parts belongs.

[ISO 13584-24:2003, definition 3.63]

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3.24
item
thing that can be captured by a structure of class or by a structure of property

3.25
library
set of data composed of the full definition of a reference dictionary and the specification of a population of instances conforming to the dictionary, or part of such a set of data corresponding to some classes of a reference dictionary

3.26
library data supplier
supplier
an organization that delivers a library in the standard format defined in ISO 13584 and is responsible for its content

[ISO 13584-1:2001, definition 3.1.10]

3.27
library external file
a file, referenced from a library delivery file, that contributes to the definition of a supplier library

NOTE The structure and the format of a library external file is specified in the library delivery file that references it.

[ISO 13584-24:2003, definition 3.71]

3.28
library integrated information model
LIIM
an EXPRESS schema that integrates resource constructs from different EXPRESS schemas for representing supplier libraries for the purpose of exchange and that is associated with conformance requirements

NOTE Three library integrated information models are defined in this part of ISO 13584 for representing different kinds of supplier libraries.

[ISO 13584-24:2003, definition 3.72]

3.29
library parcel
set of spreadsheets that are used to define in parts a set of instances of a class that the header part of the parcel represents

3.30
library parcel client
parcel client that can read or write library parcels, and that may have an optional capability to send them to, or receive them from a server system

3.31
library parcel server
library parcel server system
server system that can provide library parcels over the Internet

3.32
meta-dictionary
set of meta-classes, each of which is characterized by a different set of properties called “meta-properties”, and as an instance of which a reference dictionary may be defined and specified

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3.33
meta object facility
metadata management framework, and a set of metadata services for the development and interoperability of model and metadata driven systems

3.34
meta-property
property that is used to characterize a meta-class and is used to define the syntactic structure of the meta-class

3.35
Office Open XML
set of XML vocabularies standardized as ISO/IEC 29500 and based on W3C XML Schema, for the representation of word-processing documents, spreadsheets and presentations

3.36
parcel editor
system that edits parcelling sheets, which may have a capability to send them or receive them over the Internet

3.37
parcel sheet
parcelling sheet
parcel
standardized use and specification of spreadsheets, used for data-dictionary or data-library specification, exchange, and registering, of objects at various meta modelling layers

3.38
parcel client
client system that can read or write parcelling sheets in general, and that may have an optional capability to send them to, or receive them from a server system

3.39
parcel server
server system that can provide parcelling sheets in general over the Internet

3.40
parcelling
act of defining, exchanging, or transmitting information using parcelling sheets defined in this part of ISO 13584

3.41
parcelling tool
tool that can process parcelling sheets in general, including PCL-clients, PCL-editors, and PCL-servers

3.42
part
a material or functional element that is intended to constitute a component of different products

[ISO 13584-1:2001, definition 3.1.16]

3.43
property
set of characteristic information that conceptually characterizes a class, the value of which may be actually supplied by a library supplier and used to characterize instances (parts) that belong to the class or its subclasses

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3.44
property of parts library
PLIB-property
kind of property that is used strictly in the sense of the property defined ISO 13584-42 when it is necessary to be differentiated from other uses of property, such as meta-properties or properties used to describe mapping between different data library or catalogue standards

3.45
reference dictionary
dictionary that is based on the ISO 13584/IEC 61360 data model

4 Use scenario for spreadsheet interface

4.1 Spreadsheet representation of dictionary or library

The spreadsheet interface structure defined in this part of ISO 13584 may be used either for expressing a dictionary or a library. Two interface formats for dictionary and library are in fact two different and specialized uses of the same spreadsheet format, whose underlying physical file structure is widely recognized and processible by many software applications. For the ease of identification of the two uses, and for the distinction of the specialized spreadsheets from those for general use, the one for dictionary representation of parts library shall be called “the dictionary parcelling format”, and the other for library representation of parts library shall be called “the library parcelling format”, in this part of ISO 13584. In the parcelling formats used either for dictionary or for library, several spreadsheets need to be compiled together, in order to represent a dictionary or a library. Hence, the word “parcelling” comes from the fact that both formats use a certain number of spreadsheets set together, and each of them represents semantically different content of EXPRESS entities in a syntactically similar unit of structure, which is called “parcel” in this part of ISO 13584. The whole use scenario of the spreadsheet interface for dictionary and library is illustrated in Figure 1.

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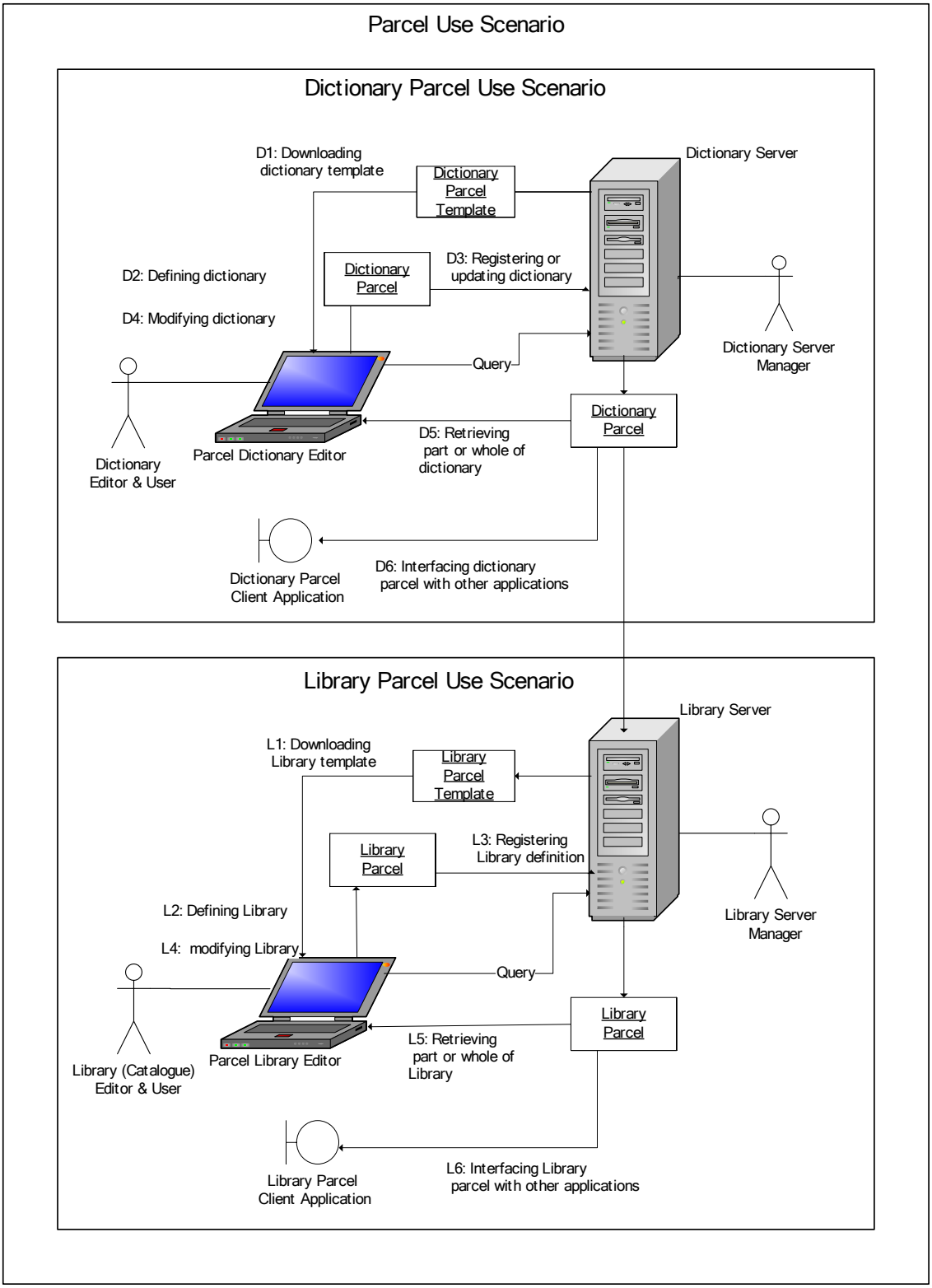

Figure 1 —Parcel use scenario

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4.2 Use scenario of dictionary parcelling format

The dictionary parcelling format may be used in the following use-cases as typical cases:

— D1: Retrieval of a set of blank dictionary parcels from a dictionary server as a dictionary template for defining a new reference dictionary;

— D2: Definition of the content of a reference dictionary;

— D3: Registering of the content of a reference dictionary in a dictionary server;

— D4: Modification of the content of a reference dictionary;

— D5: Retrieving part or whole of a reference dictionary from a dictionary server;

— D6: Interfacing dictionary parcel with other software applications or engineering tools.

Among the above cases, the use cases D1 through D3 are concerned with defining a new reference dictionary with a use of spreadsheet software, while the use cases D4 through D6 are for the reuse of information of a reference dictionary which has been registered previously. The interest of putting a reference dictionary into a set of spreadsheets, i.e., a tabular or matrix form is to make it easy for human readers to understand the content, while from an information processing view point, a spreadsheet format is quite close to the data forms suitable for interfacing with relational databases. In addition, the advantage of assigning a global identifier to each of the attributes of dictionary elements is that it becomes neutral to the change of names of the attributes, necessitated by an evolution of standard or merger of standards, and also it helps map between the attributes of two or more different dictionary standards. Furthermore, the parcelling format defined in this part of ISO 13584 provides a unique functionality called “alternate ID” that enables identification of an item by one another identifier, used temporally or locally. Annex G attached to this part of ISO 13584 may well be used to establish a mapping between this part of ISO 13584 and DIN 4002, with the help of alternate ID.

4.3 Use scenario of library parcelling format

The library parcelling format may be used in the following use-cases as typical ones:

— L1: Retrieval of a set of blank library parcels from a library server as a library template for defining a new library;

— L2: Definition of the content of a library;

— L3: Registering of the content of a library in a library server;

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— L4: Modification of the content of a library;

— L5: Retrieving part or whole of a library from a library server;

— L6: Interfacing library parcel with other software applications or engineering tools.

Among the above cases, as explained in L6 the uses for interfacing with other software applications such as DTP (Desk-Top Publishing) applications, PDM (Product Data Management) applications, or ERP (Engineering Resource Planning) systems, or other engineering applications that support spreadsheet formats for data input and output, are especially important. In fact, many commercial DTP, PDM and analytic engineering tools have a built-in spreadsheet input/output interface, and once the data are read into a commercial spreadsheet application commercially available on the market, conversion of data between one format (or use) and another on the spreadsheet is quite easy and can be almost intuitively done by a domain engineer, who has no special knowledge or prior training about information processing. This demarcates the parcelling format from other conventional exchange formats of parts library. In other words, the parcelling format may be used as an interface between a tool or application that reads and writes data in a spreadsheet format and another tool or application that processes conventional ISO 13584 dictionary or library data in ISO 10303-21 step physical file format. In this regard, it must be noted that any column which is not headed by a property ID of applicable property which is supposed to be in the class designated by the class ID of the parcel sheet shall be ignored by the system compliant to this part of ISO 13584. This feature is useful for a wide range of applications based on this part of ISO 13584, for information may be embedded in the parcel sheet for other processing, and the same spreadsheet may be used in multiple ways by different applications for their own specific purposes. Thus the parcelling formats serve not just for data exchange between ISO 13584 compliant systems, but also as an interface between an ISO 13584 compliant system and others that are compliant to other standards or protocols but may read and write spreadsheets for data input or output.

5 Structure of the spreadsheet interface

5.1 Meta-dictionary approach

For flexibly modelling either a library or a dictionary on the same base spreadsheet structure, the spreadsheet interface defined in this part of ISO 13584 employs a “meta dictionary approach” with a special emphasis on separating the modelling layer of meta-dictionary from that of a reference dictionary. In other words, the syntactic meta-class as an observer language gives syntax to the meta-dictionary as the target language which defines the semantics of reference

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dictionaries, while the meta-dictionary as the observer language gives syntax to the reference dictionary as the target dictionary, which in its own turn defines the semantics of real world objects. This separation of syntactic modelling layer from semantic modelling layer is quite common in mathematical logic or formal metaphysics, but is relatively rare in data modelling. The advantage of taking this approach is that data model for the reference dictionary represented in this part of ISO 13584 may be flexibly updated or modified without changing the underlying base-structure, built on and represented with the spreadsheet. Since all the modelling constructs modelled as an EXPRESS entity in ISO 13584-42 with a specific name are reduced to a set of instance data of the meta-meta-class defining the meta-dictionary(depicted in the left-most box) where the meta-classes and meta-properties are identified by a globally unique identifier based on ISO/IEC 6523, most of the updates and changes in the data-model may be realized just as an addition or deletion of the instances, or modification of the values of those instances defined in the meta-meta-class.

The meta-dictionary approach explained above is schematically depicted in Figure 2 for the ease of intuitive understanding of the method.

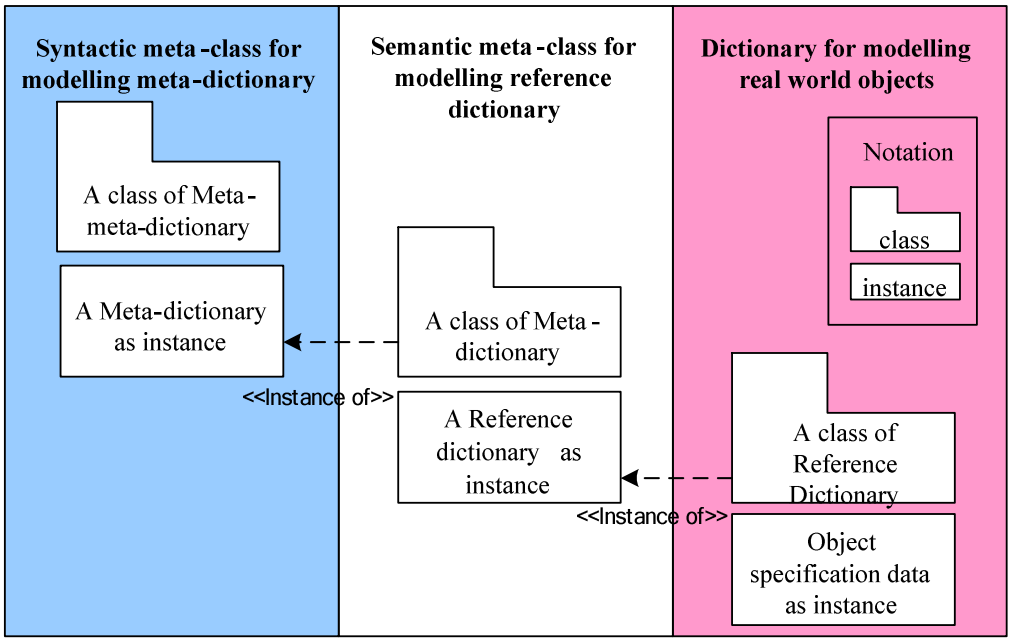

Figure 2 — Schematic diagram of meta-dictionary approach

5.2 Identification structure

This part of ISO 13584 references the ISO/IEC 11179 series of standards, in particular

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ISO/IEC 11179-3 and ISO/IEC 11179-5, as the basic framework for the identification of the types of concepts used to describe elements of data in a parcel sheet. Each data element plays a role similar to "administered item" defined in ISO/IEC 11179-3 as the identifier of a registered item. Hence, the parcel sheets defined in ISO 13584-35 may be used simply as a medium for gathering or collecting metadata, or data elements of a reference dictionary, to be registered into a registration authority based on the ISO/IEC 11179 series of standards. However, in this part of ISO 13584, such an identifier is also applied and assigned to each construct that structures metadata, and thus its function in the cases needs to be further differentiated from that of IRDI (International Registration Data Identifier) mechanism for the administered item described in ISO/IEC 11179-5.

In this part of ISO 13584, we refer to an element to be identified within a set of metadata or a metamodel as "concept element". Examples of the concept elements include not only the concepts of class and property, but their constituent key attributes, such as their name, ID, data type, unit of measurement, definition, symbol, note, and etc., regardless of their appellations. Conversely, such an identifier of the concept element is referred to in this part of ISO 13584 as "international concept identifier", or "concept identifier" for short, where the context is clear, and ICID by acronym. However, except for the cases of classifying and identifying the constructs of a metamodel, the function of ICID is identical to IRDI. So it is regarded as an extension of the IRDI.

In parcelling format, each ICID is unique across the boundary of organizations, and it has the following sequence:

ICID ::= RAI '#'DI'##'VI

where RAI stands for the registration authority identifier, DI for the data identifier, and VI for the version identifier as described in ISO/IEC 11179-5, and RAI, DI, and VI themselves may be composed of several data elements. Note that in this part of ISO 13584, two consecutive pound signs, i.e., "##" are used to separate DI and VI, while RAI and DI are separated by one single "#" character. This allows us a short hand notation of the concept identifier eliminating either RAI or VI, or both when and where the context for DI is clear.

Thus, "P501_P000170##000000001" means an identification of property whose property identification, so-called "property_BSU" in ISO 13584, is "P501_P000170" and its version is 1(one) whose information supplier shall be determined by the context, while "0120/1///13584_501_1#P501_P000170" means a property whose information supplier code is "0120/1///13584_501_1" and its property identification is "P501_P000170", while the version is to be determined by the context. This shorthand convention is extremely useful when a user does

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not know exactly the current version of a property or class in a reference dictionary maintained in a dictionary server for retrieving missing pieces of information.

5.3 Structure of a parcelling sheet

Figure 3 illustrates the general structure of a parcelling sheet which is independent of the type of data content, i.e., dictionary or library, carried by the parcelling sheets. For ease of illustration, both information supplier and version are omitted from the property ID .

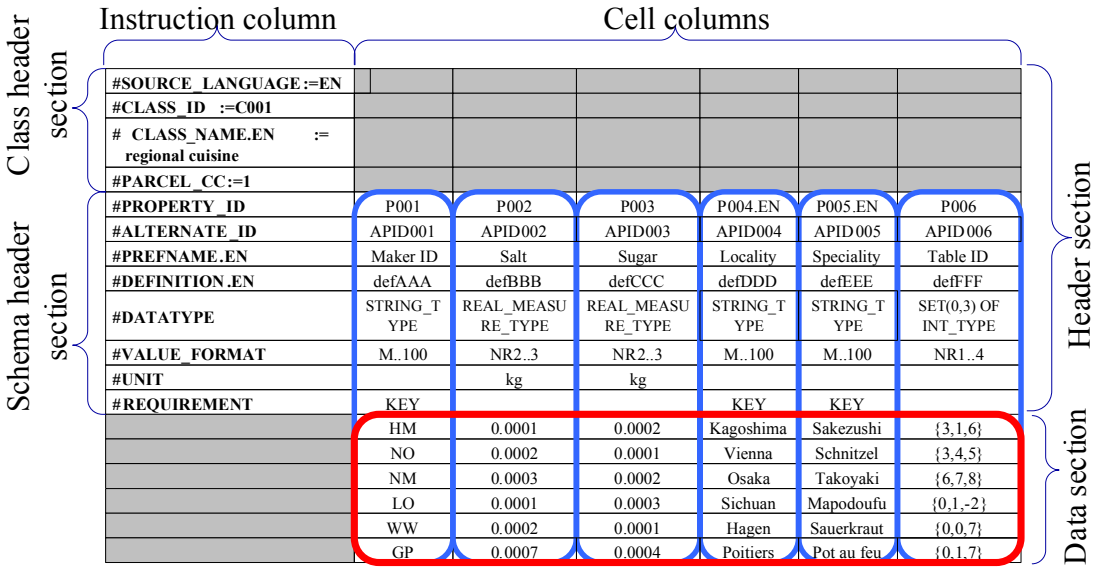

Figure 3 — Structure of a parcelling sheet

As you see from the figure, horizontally, a parcel sheet may be divided into two sections; a header section and a data section. Vertically, the parcel sheet may be divided into an instruction column, and a set of cell columns. As a further subdivision of the horizontal division, the header section may be divided into a class header section, and a schema header section. The class header section describes the information about this parcelling sheet, thus it may also be called the “class header”, while the schema header section describes the data schema of this spreadsheet as a class, thus it gives the “schema” of the instance data described in the data section of this parcelling sheet.

5.4 File name extension

When it is necessary to differentiate the parcelling format conforming to this part of ISO 13584 from a spreadsheet for general use, the file name of a file for library parcelling shall be terminated

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by a file name extension "**.pcl**", signifying the parcelling format for library. For the specification of dictionary, on the other hand, the extension "**.pcd**" shall be used.

5.5 Library use of parcelling format

The library use of the spreadsheet structure, or library parcelling format for short, shall consist of a set of parcelling sheets, each of which contains in its header section, a list of applicable properties that characterize a class of a given dictionary, and some rows of the instance data in data section that belong to this class. When some of those properties are of enumeration type, i.e., either non_quantitative_string type or non_quantitative_int type, then an additional parcelling sheet called "enumeration parcel" may accompany the parcel sheet as a library of instances, and it may list all the option codes and meanings for the enumeration types used in the library parcel. However, this accompaniment of enumeration parcel is not mandatory for the use of library parcel, because although the presence of such an enumeration sheet may help users to enter a precise option value into a property of enumeration type, it is not indispensable as long as the users know the enumerated values. In more typical cases, the sender and receiver will share the dictionary, prior to the library data exchange.

As noted earlier, in each parcelling sheet, there is a header section and a data section. The header section consists of lines each of which shall start with a pound sign "#" and then entail a reserved word. If the word is not recognized as a reserved word, then the line shall be simply treated as a comment line.

Data elements in each definition line are separated by a comma "**,**", and all the values for a property delimited by a pair of commas shall be arranged in a column. If a data value itself contains comma, then the data value shall be enclosed between a start and an end double-quotation mark, such as "**, "10,000",** " where 10,000 is a value and the outer-most pair of double quotation marks are just added for marking the quotation into this document.

It is also assumed that each line shall be terminated by a line feed code used in many popular spreadsheet software applications, i.e., "**0d0a**" in hexadecimal coding which is automatically added by most of the typical spreadsheet applications that are compatible with a leading spreadsheet software[1] commercially available on the market.

[1] One such software tool is MS-EXCEL® of the Microsoft® Corporation. It is an example of a suitable product available commercially. This information is given for the convenience of users of this part of ISO 13584 and does not constitute an endorsement by ISO of this product.

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5.6 Header section

5.6.1 Categories of instructions

Each line shall be interpreted using the semantic function described in the cell of the first column. As noted above, instructions to and from an information system conformant to this part of ISO 13584 which reads or writes a parcelling format file shall be started with a letter "#". There are four categories of instructions:

— Mandatory;

— Optional – functional;

— Optional – informative;

— Comment.

The words following the symbol "#" and designated in the above categories except the one for comment line shall be treated as reserved words, and shall not be used for other purposes.

5.6.2 Mandatory

Reserved words of this category following the letter "#" are mandatory, therefore, they shall be present in a library exchange file. They are required for any system conformant to this part of ISO 13584 for analyzing the property definitions specified by a user. Thus they are also functional in nature.

5.6.3 Optional - functional

If a reserved keyword of this category following the letter "#" is present in a file, the values of the cells in the line following the second element shall be processed according to the function implied by the keyword. Thus changing the description in the line may change the behaviour of the system which interprets the parcelling sheet. An instruction of this category may or may not exist in an exchange file.

5.6.4 Reserved - informative

If a reserved keyword of this category following the letter "#" is present in a file, the values of the cells in the line following the second element are provided to the users of this parcelling sheet just as informative messages by a system conformant to this part of ISO 13584. Since the instruction is informative, changing the information contained in the line would not change the behaviour of the system which interprets the parcelling sheet. An instruction of this category may or may not exist in an exchange file.

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5.6.5 Comment line

The line started with a letter "#" and not followed by a reserved word shall be interpreted as a comment line. It is used to note a comment within the line. This means an instruction of the categories of mandatory, optional - functional, and optional - informative may be commented out with an additional "#" inserted before the instruction word.

5.6.6 Reserved words

The reserved words of the categories specified in 5.6.1 are summarized in Table C.1 and Table C.2.

5.7 Instruction column

5.7.1 General rule

There are three general description rules that every keyword in the instruction column shall follow:

Rule 1 – comment out

Any line including line with a keyword may be commented out using "#" except it is mandatory.

Rule 2 – precedence of mandatory instructions

Mandatory instructions shall be described before the start of data section used for the description of instances, i.e., library data.

Rule 3 – precision for the description of keywords

Keyword shall be written exactly as specified in this document.

The following subclauses define the specific rules and meanings of each keyword.

5.7.2 Class ID

Keyword : #CLASS_ID

Name : Class identifier

Definition : globally unique identifier of the class based on ISO/IEC 6523, which is characterized by the properties described in the same parcel, and to which the instance data contained in the parcel belong

Note : Character sets used for the class_ID shall be in accordance with the class BSU specification defined in ISO 13584-42, in case the parcel is used for the exchange of dictionaries conformant to ISO 13584/IEC 61360 common dictionary schema.

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Category : mandatory

Format : The keyword "#CLASS_ID" shall be described in the first column and the class code shall be described after the keyword separated by the symbol ":=" (colon-equal). The cells in the second column and after shall be ignored.

Example 1 :

#CLASS_ID:=0112/1///13584_501_1#P501_C000001##000000001,

Example 2 :

#CLASS_ID:=0112/1///13584_501_1#P501_C000001,

5.7.3 Preferred name of the class

Keyword : #CLASS_NAME.<lang>

Name : Preferred name of the class

Definition : preferred name of the class specified by the class ID in the language optionally designated by a language code

Note : The information is optional and informative in a library parcelling format because by the specification of a class_ID already designates mandatory pieces of information about the class, including the preferred name(s). When an appropriate name is not available for the corresponding language, the cell may be kept open.

Category : optional - informative

Example : #CLASS_NAME.EN:=Environment measuring instrument,

5.7.4 Definition of the class

Keyword : #CLASS_DEFINITION.<lang>

Name : Definition of the class

Definition : statement about the meaning and concept of the class in the language designated by a language code

Note : The definition available in this field is informative, and supposed to be provided by a parcelling tool which holds the dictionary which the class belongs to. When an appropriate definition is not available in the corresponding language, the cell may be kept open.

Category : optional - informative

Example : #CLASS_DEFINITION.EN:=set of voltage amplifiers of which each amplifier can be described with the same group of data element types.,

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5.7.5 Note of the class

Keyword : #CLASS_NOTE

Name : Note for class

Definition : statement that provides additional information about the definition of the class that is essential for the understanding of the definition of the class designated by the class ID described in the same parcel

Note : This may be used for describing information useful for the interpretation of the definition of the class. The information is provided by a system conformant to this part of ISO 13584, and changing the value for this keyword shall not change the behaviour of the system.

Category : optional - informative

Format : string of alphanumeric characters of any length, excluding ":=" or "," as a constituent.

Example : #CLASS_NOTE.EN := This class corresponds to the class in IEC CDD

5.7.6 Alternate class ID

Keyword : #ALTERNATE_CLASS_ID

Name : Alternate class ID

Definition : alternate class identifier of the class specified by the class ID noted in the same parcel

Note : This may be used for mapping with an external system, a local identification system, another International Standard, or some other standard that uses a different identification scheme than that is used for class ID, for historical or domain specific reasons. A change of information may affect the behaviour of the system that processes this alternate ID, however shall not affect the behaviour of the parcelling tools conformant to this part of ISO 13584, for the alternate IDs are meaningful only for those systems which process the alternate IDs.

Category : optional - informative

Format : string of alphanumeric characters of any length, excluding ":=" or "," as a constituent.

Example : #ALTERNATE_CLASS_ID:=147/101001#XJA418,

5.7.7 Source language

Keyword : #SOURCE_LANGUAGE

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Name : Source language

Definition : designation of the source language in line with ISO 639, in which the text of dictionary definition was originally made

Category : optional - informative

Format : The keyword "#SOURCE_LANGUAGE" and its assigned value shall be described in the instruction column. The cells in and after the second column shall be ignored. The language code according to ISO 639 enables the identification of the language used as the original.

Mapping : It shall be mapped to the following entity of ISO 13584-42; "dictionary_element.administration\administrative_data.soruce_langauge".

Example 1 : #SOURCE_LANGUAGE:=EN-US,

Example 2 : #SOURCE_LANGUAGE:=FR,

Example 3 : #SOURCE_LANGUAGE:=JA,

5.7.8 Parcel identifier

Keyword : #PARCEL_ID

Name : Parcel identifier

Definition : designation of conjunctive parcels, i.e., the parcels that are used together in the same unit of exchange, and in parts they describe a dictionary or library.

Note : Conjunctive parcels are required to have the same alphanumeric letter sequence for this identifier. PARCEL_ID may include neither a comma nor a double quotation mark. When this ID is omitted for dictionary parcelling, the other parcels processed together shall be construed as conjunctive parcels. In case of library parcelling, it may be used to couple library instances with part of the relevant dictionary information, especially with an enumeration parcel, in order for an application to property display the meanings of option codes for non-quantitative (enumeration) type property values.

Category : optional - functional

Format : alphanumeric

Example : #PARCEL_ID:=2006-06-25 08:19:49,

5.7.9 Parcel conformance class identifier

Keyword : #PARCEL_CC

Name : Parcel conformance class identifier

Definition : Designation of the conformance class number according to ISO 13584-35 conformance class, for the data carried in the data section, in the parcel.

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Note: When there is a local extension, the value for parcel conformance class identifier must be clearly marked for such an extension.

Category : optional - informative

Format : An integer value between one (1) and ten (10) shall be used. Values outside of this range may be used for local extensions.

Example : #PARCEL_CC:=9,

5.7.10 Default supplier

Keyword: #DEFAULT_SUPPLIER

Name : Default supplier identifier

Definition : prefix to be added to the shorthand notations of class ID and property ID, with an aim to make a full identifier sequence

Note : This shorthand notation of IDs shall be used only in the header section and in the values of class_instance type properties in the data section. This short cut notation is allowed for definition purpose only, and it is assumed that the parcelling file containing the shorthand notation would be pre-processed to yield a full identifier notation, before it is actually sent to other systems compliant to this part of ISO 13584.

Category : optional - functional

Example : #DEFAULT_SUPPLIER:=0112/1///13584_501_1,

5.7.11 Property ID

Keyword : #PROPERTY_ID

Name : Property identifier

Definition : globally unique identifier of the property based on ISO 6023 referenced for the definition of instances in the data section of the same parcel

Note : This corresponds to the specification of the property BSU of a known applicable property that is used for library exchange in ISO 13584-25 in accordance with the common dictionary schema defined in ISO 13584-42 and IEC 61360-2.

When a property ID listed in the #PROPERTY_ID line is not recognizable as an applicable property of the class designated by the class ID described in the same parcel, all the information in the cells in the same column designated by the property ID shall be ignored as comments.

Category : mandatory

Format : The keyword “#PROPERTY_ID” is described in the first column. The ICDIs

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of properties are described in the columns in and after the second column. An property ID shall be encoded as in the following table.

Table 1 — Description of the property code

level	property code description
level 1	RAI+ ”#” + DI + “##”+ VI
level 2	supplier_bsu.code + sep_id + class_bsu.code + sep_cv + class_bsu.verison + sep_id + property_bsu.code + sep_cv + property_bsu.version
level 3	RAI + “#”+ DI
level 4	DI + ”##”+ VI
level 5	DI

NOTE1 If the data type of the property is level_type, a column is allocated for each level defined in the data type. Such property code is described as “property code” + “sep_id” + “levels". The levels are identified by three-letter alphabets and are described as in the following way; “MIN”, “NOM”, “TYP”, “MAX”. Separator here means a dot, i.e.,“.”.

NOTE2 If the data type of the property is translatable_string, a column is allocated for each language. Such property code is described as “property code” + “sep_id” + “language code”. The language code identifies a language according to ISO 639. Values are e.g. “EN” for English in general, “FR” for French, “RU” for Russian, “DE” for German, “en GB” for UK English, “en US” for US English, etc…

NOTE3 For the use of level 4 and level 5 notations, default supplier ID shall be declared prior to the use of level 4 and level 5 types of property code description. See “#DEFAULT_SUPPLIER” for more detail.

NOTE4 level 2 should be used only for maintaining compatibility with the legacy dictionaries based on ISO 13584-42 edition 1, and IEC 61360-2 edition 1 and 2. For any other purposes, the use of level 2 is strictly prohibited.

Example : This example is described using the level 3 notation (i.e. the versions of property is omitted).

#PROPERTY_ID,0140/TOPAS#P000001,0140/TOPAS#P001089.MAX,
0140/TOPAS#P001089.MIN,0140/TOPAS#000894.EN,
0114/TOPAS#P000894.FR,

Also, it will be displayed by a usual spreadsheet application as in Figure 4.

#PROPERTY_ID	0140/TOPAS# P000001	0140/TOPAS# P001089.MAX	0140/TOPAS# P001089.MIN	0140/TOPAS# P000894.EN	0140/TOPAS# P000894.FR

Figure 4 — Display example of property ID

5.7.12 Preferred name of the property

Keyword : #PROPERTY_NAME.<lang>

Name : Preferred name of the property

Definition : preferred name of the property specified by the property ID in the language optionally designated by a language code

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Note : The information is provided by a parcel server, and any change of the information for this attribute by user shall not affect the behaviour of the systems. Language for the preferred name may be specified using ISO 639. Thus, a preferred name in English may be specified as "#PROPERTY_NAME.EN". When an appropriate name in the corresponding language is not available, the cell may be kept open. The keyword corresponds to the preferred_name of property specified in ISO 13584-42, when applied to the exchange of libraries based on the common dictionary schema. If the data type of the property is level_type or translatable_string_type, the preferred name is not needed for each level or each language code of the property.

Category : optional - informative

Format : The keyword "#PROPERTY_NAME.<lang>" is described in the first column. The extension "<lang>" means a two-letter language code defined in ISO639. The preferred names are described in the columns in and after the second column. Each preferred name relates to the property designated by the property ID code which is described in the line #PROPERTY_ID.

Example : #PROPERTY_NAME.EN,CONSORTIUM STANDARD,PH MEASURING,PH MEASURING,COMPANY NAME,COMPANY NAME, #PROPERTY_NAME.FR,NORME D'ASSOCIATION,MESURE PH, MESURE PH,NOM ENTREPRISE,NOM ENTREPRISE,

Spreadsheet view : It will be displayed by a usual spreadsheet software as in Figure 5.

#PROPERTY_ID	0140/TOPAS# P000001	0140/TOPAS# P001089.MAX	0140/TOPAS# P001089.MIN	0140/TOPAS# P000894.EN	0140/TOPAS# P000894.FR
#PROPERTY_ NAME.EN	CONSORTIU M STANDARD	PH MEASURING	PH MEASURING	COMPANY NAME	COMPANY NAME
#PROPERTY_ NAME.FR	NORME D'ASSOCIATI ON	MESURE PH	MESURE PH	NOM ENTREPRISE	NOM ENTREPRISE

Figure 5 — Display example of preferred name

5.7.13 Definition

Keyword : #DEFINITION.<lang>

Name : Definition

Definition : statement about the meaning of, or the concept of the property specified by the property ID, optionally in the language designated by a language code

Note : The information is provided by parcel severs, and any change of the

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information by user shall not affect the behaviour of the systems. Language for the definition may be specified using ISO 639. Thus, a definition in English may be specified as "#DEFINITION.EN". When an appropriate definition is not available in the corresponding language, the cell may be kept open.

Category : optional - informative

Format : The keyword "#DEFINITION.<lang>" is described in the first column. The extension "<lang>" means a two-letter language code defined in ISO639. The definitions are described in the columns in and after the second column. Each definition relates to the property designated by the property ID code which is described in the line #PROPERTY_ID.

Example : #DEFINITION,"referential standard of a consortium, association, or organization excluding international standard and national standard", "measuring span for pH measuring instrument", "measuring span for pH measuring instrument", "name of the company which manufactures the product",

Spreadsheet view : It will be displayed by a usual spreadsheet application as in Figure 6.

#PROPERTY_ID	0140/TOPAS# P000001	0140/TOPAS# P001089.MAX	0140/TOPAS# P001089.MIN	0140/TOPAS# P000894.EN
#PROPERTY_ NAME.EN	CONSORTIUM STANDARD	PH MEASURING	PH MEASURING	COMPANY NAME
#DEFINITION.EN	referential standard of a consortium, association, or organization excluding international standard and national standard	measuring span for pH measuring instrument	measuring span for pH measuring instrument	name of the company which manufactures the product

Figure 6 — Display example of definition

5.7.14 Note

Keyword : #NOTE

Name : Note for the property

Definition : statement that provides additional information about the definition that is essential for the understanding of the latter

Category : optional - informative

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Format : The keyword "NOTE" shall be described in the first column. The note statements shall be described in the cells in and after the second column. Each note statement shall apply to the definition of the property specified by the value #PROPERTY_ID that is in the same column as the note statement.

Example : #NOTE,"referential standard of a consortium, association, or organization excluding international standard and national standard", "measuring span for pH measuring instrument", "measuring span for pH measuring instrument", "name of the company which manufactures the product",

5.7.15 Data type

Keyword : #DATATYPE

Name : Data type

Definition : attribute that designates the predefined classification of a unit of data for computer processing, of the property specified by the property ID

Note: The information is provided by the system that implements the parcelling spreadsheet structure, and any change of the information by user shall not affect the behaviour of the system.

Category : optional - informative

Format : The keyword "#DATATYPE" shall be described in the first column. The data types shall be described in the columns in and after the second column. Each data type shall correspond to the property of the property ID specified in the line of #PROPERTY_ID in the same column.

Example : #DATATYPE,STRING_TYPE,LEVEL(MIN,MAX) OF REAL_MEASURE_TYPE, LEVEL(MIN,MAX) OF REAL_MEASURE_TYPE, TRANSLATED_STRING, TRANSLATED_STRING,

Spreadsheet view : It will be displayed by a usual spreadsheet application as in Figure 7.

#PROPERTY_ ID	0140/TOPAS# P000001	0140/TOPAS# P001089.MAX	0140/TOPAS# P001089.MIN	0140/TOPAS# P000894.EN	0140/TOPAS# P000894.FR
#DATATYPE	STRING_TYPE	LEVEL(MIN, MAX) OF REAL_ MEASURE_ TYPE	LEVEL(MIN, MAX) OF REAL_ MEASURE_ TYPE	TRANSLATED _STRING	TRANSLATED _STRING

Figure 7 — Display example of data type

NOTE Data types may be constructed from the primitive types. Examples of primitive types are shown in Annex D.

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5.7.16 Unit of measurement

Keyword : #UNIT

Name : Unit of measurement

Definition : information about the unit of measurement of the property specified by the property ID

Note : The information will be provided by the parcel servers with an aim to help user to understand the property specification, and any change of the information by user shall not affect the behaviour of the parcel servers.

Category : optional - informative

Format : The keyword "#UNIT" will be described in the first column. The units will be described in the cells corresponding to the second column and after. Each such unit corresponds to the property which is described in the #PROPERTY_**ID** line.

Example : #UNIT,,pH,pH,,,

Spreadsheet view : It will be displayed by a usual spreadsheet application as in Figure 8.

#PROPERTY_ ID	0140/TOPAS# P000001	0140/TOPAS# P001089.MAX	0140/TOPAS# P001089.MIN	0140/TOPAS# P000894.EN	0140/TOPAS# P000894.FR
#UNIT		pH	pH		

Figure 8 — Display example of unit of measurement

5.7.17 Requirement

Keyword : #REQUIREMENT

Name : Requirement

Definition : designation of the requisity of the value of the property in data section, where the corresponding cells may be either blank or one of the followings; "KEY", "NOT _NULL", "MANDATORY", or "OPTIONAL"

Note : When it is kept blank, it is equivalent to the designation as "OPTIONAL" while the values "MANDATORY" and "OPTIONAL" may be shorthanded as "MAND" and "OPT", respectively. NOT_NULL means that the value is mandatory and it shall not be null. A blank field must be equivalent to OPTIONAL, except the case when the requirements for the properties are not determined yet such as in a parcel template for determining the requirements.

Category : optional - functional

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Format : The keyword "#REQUIREMENT" shall be stated in the instruction column and the cases of the letters of the keyword shall be ignored. In the following cells a reserved word "KEY" shall be noted in every cell where the property corresponding to the property ID shall be treated as the key, or as an element of the (composite) key of the database to be created.

Example : #REQUIREMENT,KEY,,,,,

Spreadsheet view : It will be displayed by a spreadsheet application as in Figure 9.

#PROPERTY_ID	0140/TOPAS# P000001	0140/TOPAS# P001089.MAX	0140/TOPAS# P001089.MIN	0140/TOPAS# P000894.EN	0140/TOPAS# P000894.FR
#REQUIREMENT	KEY				MANDATORY

Figure 9 — Display example of key

5.7.18 Alternative units of measurement

Keyword : #ALTERNATIVE_UNITS

Name : Alternative units of measurement

Definition : information about other units of measurement that may be used for the property specified by the property ID

Note : The information will be provided by a parcel server with an aim to help a user to understand allowed units of the property, and any change of the information by the user shall not affect the behaviour of the parcel server.

Category : optional - informative

Format : The keyword "#ALTERNATIVE_UNITS" will be described in the first column. Lists of alternative units will be described in the cells corresponding to the second column and after. Each such list of alternative units corresponds to the property which is designated by an identifier in the #PROPERTY_ID line.

Even if there is only one alternative unit, the alternative should be placed in a set of parentheses, i.e., "(" and ")".

Spreadsheet view: It will be displayed by a spreadsheet application as in the following.

#PROPERTY_ ID	0140/TOPAS# P000001	0140/TOPAS# P001089.MAX	0140/TOPAS# P001089.MIN	0140/TOPAS# P000894.EN	0140/TOPAS# P000894.FR
#UNIT		Pa	Pa		
#ALTERNATIVE _UNITS		(bar, Torr)	(bar, Torr)		

Figure 10 — Display example of unit of measurement

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5.7.19 IDs of alternative units of measurement

Keyword : #ALTERNATIVE_UNIT_IDS

Name : IDs of alternative units of measurement

Definition : IDs of other units of measurement that may be used for the property specified by the property ID

Note : The information will be provided by a parcel server with an aim to help a user to understand allowed units of the property, and any change of the information by the user shall not affect the behaviour of the parcel server.

Category : optional - informative

Format : The keyword "#ALTERNATIVE_UNIT_IDS" will be described in the first column. Lists of alternative units will be described in the cells corresponding to the second column and after. Each such list of alternative units corresponds to the property which is designated by an identifier in the #PROPERTY_ID line.

Even if there is only one alternative unit, the alternative should be placed in a set of parentheses, i.e., "(" and ")".

Spreadsheet view: It will be displayed by a spreadsheet application as in the following.

#PROPERTY_ ID	0140/TOPAS# P000001	0140/TOPAS# P001089.MAX	0140/TOPAS# P001089.MIN
#UNIT		Pa	Pa
#ALTERNATIVE_UNITS		(bar, Torr)	(bar, Torr)
#ALTERNATIVE_UNIT_IDS		(uom0001, uom002)	(uom0001, uom002)

Figure 11 — Display example of unit of measurement

5.7.20 Alternate property ID

Keyword : #ALTERNATE_ID

Name : Alternate property ID

Definition : alternate property identifier of the property specified by the property **ID**, where the value of property designated by the alternate property ID shall be at least assignable to the property designated by the property **ID**, and additionally the value designated by the property **ID** may be assignable to the property designated by the alternate property ID

Note : This may be used for mapping with an external system, another International Standard, or other standard that uses a different identifier for properties for historical or domain specific reasons. A change of information may affect the behaviour of the system that processes the Alternate property ID, however shall not affect the behaviour of the parcelling tools conformant to this part of

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ISO 13584, for the alternate IDs are meaningful only for those systems which interpret the alternate IDs.

Category : optional - informative

Format : string of alphanumeric characters of any length, excluding ":=" or "," as a constituent.

Example : #PROPERTY_ID,MDC_P001_5,MDC_P002_1,MDC_P004_1.DE, MDC_P005.DE,
#ALTERNATE_ID,C01,C02,A01(DE),A04(DE),

Spreadsheet view : It will be displayed by a spreadsheet application as in Figure 12.

#PROPERTY_ID	MDC_P001_5	MDC_P002_1	MDC_P004_1.DE	MDC_P005.DE
#ALTERNATE_ID	C01	C02	A01(DE)	A04(DE)
#PROPERTY_NAME. EN	Code	Version	Preferred name	Definition

Figure 12 — Display example of alternate property ID

5.7.21 ID for the unit of measurement

Keyword : #UNIT_ID

Name : ID for the unit of measurement

Definition : identifier to uniquely reference the unit of measurement (UoM) used in a property, being specified by a UoM_ID listed in the #UNIT_ID line, noted in the same column as the property ID in a parcel

Note : The ID for the unit of measurement may be recognized as a globally unique identifier only by parcelling tools. Thus, it requires translation into the descriptions available in ISO 13584-42, when conversion into ISO 13584-25 is requested, by extracting the pieces of information stored in the fields named "unit structure", "unit in SGML" and "unit in text" in a UoM meta-class. Since there are multiple ways of describing the same unit in a string, an automated reverse mapping is not foreseeable for the current ISO 13584-42.

Category : optional - informative

Example : #UNIT_ID,,
0112/1///13584_35_1#Pxxx_PFU001,0112/1///13584_35_1#Pxxx_PFU001,,

Spreadsheet view : It will be displayed by a usual spreadsheet application as in Figure 13.

#PROPERTY_ ID	0140/TOPAS# P000001	0140/TOPAS# P001089.MAX	0140/TOPAS# P001089.MIN	0140/TOPAS# 000894.EN	0140/TOPAS# P000894.FR
#UNIT_ID		0112/1///13584_ 35_1#Pxxx_PFU001	0112/1///13584_ 35_1#Pxxx_PFU001		

Figure 13 — Display example of ID for the unit of measurement

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5.7.22 Property value format

Keyword : #VALUE_FORMAT

Name : Property value format

Definition : specification of the type and length of the representation of the value of a property, where it shall be interpreted as maximum value format for storage in a server system that generated the parcel

Note : The detailed specification of value format is explained in ISO 13584-42.

Category : optional - informative

Example : #VALUE_FORMAT,M..14,M..255,M..255,

Spreadsheet view : The following figure illustrates how the value format shall be described for each property specified by a respective property ID.

#PROPERTY_ID	MDC_P001_3	MDC_P001_4.EN	MDC_P001_4.DE
#PREFENAME.EN	CODE	PREFERRED NAME	PREFERRED NAME
#PREFENAME.DE	KENNUNG	BENENNUNG	BENENNUNG
#VALUE_FORMAT	M..14	M..255	M..255

Figure 14 — Display example of value format

5.7.23 Identifier encoding

Keyword : #ID_ENCODE

Name : Identifier encoding

Definition : specification of the property ID encoding method for property

Note : This is designed to allow for an external ID encoding method for each property other than BSU-based method defined in the ISO134584/IEC 61360 series of standards and its presentation is modified in this part of ISO 13584 as ICID. When this specification is omitted or the cell is blank, ICID is meant as default.

Category : optional - informative

Example : #ID_ENCODE, , ICID, ISO 29002

Spreadsheet view : The following figure illustrates how the ID encoding shall be displayed for each property specified by a respective property ID

#PROPERTY_ID	MDC_P001_5	0112/1#MDC_P002_1##1	0112-1#02-MDC_P004_1.DE#1
#ID_ENCODE		ICID	ISO 29002
#ALTERNATE_ID	C01	C02	A01(DE)
#PROPERTY_NAME.EN	Code	Version	Preferred name

Figure 15 — Display example of ID encoding specification

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5.7.24 Default ID encoding

Keyword : #DEFAULT_ID_ENCODE

Name : Default identifier encoding

Definition : specification of the global encoding method for the parcel for data element identification

Note : This is designed to inform about the global ID encoding method used in the parcel to display data elements or enter data instances. Even if this specification is missing, ICID is assumed as default method. The value of this specification and the method of identification used for library data in the data section shall be consistent.

Category : optional - informative

Example : #DEFAULT_ID_ENCODE := ISO 29002

Spreadsheet view : The following figure illustrates how the ID encoding shall be displayed for each property when #DEFAULT_ID_ENCODE is set to ISO 29002 and #ID_ENCODE is set to ICID for version, when a dictionary is the library content.

#PROPERTY_ID	MDC_P001_5	MDC_P002_1##1	0112-1#02-MDC_P004_1.DE#1
#ID_ENCODE	ICID	ICID	
#ALTERNATE_ID	C01	C02	A01(DE)
#PROPERTY_NAME.EN	Code	Version	Preferred name

Figure 16 — Display example of ID encoding specification

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5.8 Data section for instances

5.8.1 General

In this part of ISO 13584, each line in the data section designates a set of property values that collectively characterize an instance, i.e., a list of property-value pairs that one part or one product belonging to a class has. If in the first column of the line, namely on the instruction column within the data section, any "#" is marked at the head of a sequence of letters or values, the line shall be treated as a comment line. Users may insert as many comment lines as they wish. This functionality may also be used for commenting out some of the existing value instances.

This part of ISO 13584 uses the data type notations that are analogous to ISO 13584-42. The detailed comparison and correspondence between the data type notations, used in this part of ISO and in ISO 13584-42 are elucidated in Annex D.

The following subclauses explain how an instance value shall be described for each data type, by a human user, or by a parcelling tool.

5.8.2 Enumeration types, or non quantitative types

For such data types as **non_quantitative_code_type** and **non_quantitative_int_type**, only one value code within a list of the value codes predetermined for each of those data types shall be written in the data section as an instance value. In other words, the meaning of the code shall not be entered as the value.

Figure 17 gives a typical display example on a spreadsheet application.

#PROPERTY_ID	0140/TOPAS#P001	0140/TOPAS#P002	0140/TOPAS#P003	0140/TOPAS#P004
#PROPERTY_NAME	Colour of the wall	Colour of the roof	Type of the door	Type of the window
#DATA_TYPE	ENUM_CODE_ TYPE(EXX_001)	ENUM_CODE_ TYPE(EXX_001(red, blue, yellow))	ENUM_INT_TYPE (EXX_999)	ENUM_INT_TYPE (EXX_999(1, 2, 3))
	blue	red	2	1
	yellow	blue	3	2

Figure 17 — Display example of ENUM_INT_TYPE or ENUM_CODE_TYPE

NOTE For example, in the description "ENUM_CODE_TYPE(EXX_001(red, blue, yellow))", "EXX_001" is the ID for the enumeration list and "red", "blue", and "yellow" are the value codes available for selection. The value codes are listed just for information purpose, and they may be omitted in the "#DATA_TYPE" row, just like the expression, "ENUM_CODE_TYPE(EXX_001)".

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5.8.3 Level type

For each element of a level type (MIN., MAX., TYP., NOM.) to be used in a library exchange file, one column shall be used. If some of the elements are not used in all the instances of the file, the columns for those elements are not necessary. The elements of the level type are identified by a dot extension with a three-letter code added after the property ID codes aligned in the #PROPERTY_ID row.

Figure 18 gives a typical display example on a usual spreadsheet application, which uses only "**MIN.**" and "**MAX.**" among the four optional attributes of the level type.

#PROPERTY_ ID	0140/TOPAS# P000001	0140/TOPAS# P001089.MAX	0140/TOPAS# P001089.MIN	0140/TOPAS# P000894.EN	0140/TOPAS# P000894.FR
	JIS	1000	2000	JAPAN Corporation	JAPON SA
	CEN	20	23	FRENCH Ltd.	FRANÇAIS SA

Figure 18 — Display example of LEVEL_TYPE

NOTE JAPAN Corporation and FRENCH Ltd., and their equivalents in French language are used just as examples and their names are totally fictitious. Neither JAPAN Corporation nor FRENCH Ltd., exists in the real world.

5.8.4 String type

For each property of STRING_TYPE to be used in a library exchange file, one column shall be allocated. If the language to construe the meaning of the value of string type needs to be designated, it shall be done so by assigning a two-letter language code according to ISO 639 to #SOURCE_LANGUAGE, as described in 5.7.7 .

5.8.5 Translatable string type

For each language of a property of TRANSLATABLE_STRING_TYPE to be used in a library exchange file, one column shall be allocated. The language element of the TRANSLATABLE_STRING_TYPE is specified by a dot extension with a two-letter code added after property ID codes aligned in the #PROPERTY_ID row.

Figure 19 gives a typical display example on a usual spreadsheet application.

#PROPERTY_ ID	0140/TOPAS# P000001	0140/TOPAS#P 001089.MAX	0140/TOPAS# P001089.MIN	0140/TOPAS# P000894.**EN**	0140/TOPAS# P000894.**FR**
	JIS	1000	2000	JAPAN Corporation	JAPON SA
	CEN	20	23	FRENCH Ltd.	FRANÇAIS SA

Figure 19 — Display example of TRANSLATABLE_STRING_TYPE

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NOTE JAPAN Corporation and FRENCH Ltd., and their equivalents in French language are used just as examples and their names are totally imaginary. Neither JAPAN Corporation nor FRENCH Ltd., exists in the real world.

5.8.6 Boolean type

For a Boolean type property, either “TRUE” or “FALSE” is expected for its value.

Figure 20 gives a typical display example on a spreadsheet application.

#PROPERTY_ID	TOPAS_Pxxx
#PROPERTY_NAME.EN	Export restriction
#DEFINITION.EN	Presence of an export restriction on the product
#DATATYPE	BOOLEAN_TYPE
	TRUE

Figure 20 — Display example of BOOLEAN_TYPE

5.8.7 Class instance type (Class reference type)

In the library exchange file (noted in the following as “Main file”), an instance value of this data type shall contain only one class_ID and its reference conditions as a list of property-value pairs. Class instance type is also referred to as “class reference type” and may be specified instead of class_instance_type

Figure 21 gives a typical display example on a usual spreadsheet application.

#PROPERTY_ID	0140/TOPAS#P000001
#DATATYPE	CLASS_REFERENCE_TYPE(“0140/TOPAS#C000999”)
	0140/TOPAS#C000888, {(“0140/TOPAS# P000101”, “Colour”), (“0140/TOPAS# P000102”,“TRUE”), (“0140/TOPAS# P000103”, “200”)}
	0140/TOPAS#C000888, {(“0140/TOPAS# P000101”,“Red”), (“ 0140/TOPAS# P000102”,“FALSE”), (“0140/TOPAS# P000103”, “300”)}

Figure 21 — Display example of CLASS_INSTANCE_TYPE

NOTE1 In describing the reference mechanism by class_instance type, in the first place, the ICID of the referenced class is noted, and a list of property-value pairs follows the ICID, being placed within a pair of parentheses.

NOTE2 0140/TOPAS#C000888 is the ICID of one of the subclasses of the class whose ICID is 0140/TOPAS#C000999.

NOTE3 Shortcut for the notation of supplier_ID is available. Setting “#DEFAULT_SUPPLIER:= 0140/TOPAS/”, an ICID notation like “0140/TOPAS#C000999” may be reduced to “P501_C000999”.

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