

Aug. 6, 2004

1. Objective of public release

The ECALS dictionary is a standard computer-readable dictionary for electronic components being developed by the Japan Electronics and Information Technology Industries Association (JEITA) EC Center. The original ECALS dictionary (CSV format) can be downloaded from the JEITA EC Center website.

The JEITA EC Center is publishing the **ECALS STEP-P21 Format Dictionary** based on the international ISO13584/IEC61360 standards for electronic catalog dictionary models with the aim of achieving the broad dissemination of the ECALS dictionary worldwide.

【Advantages gained through public release】

- Being a format based on the shared ISO/IEC common dictionary schema, the dictionary can be readily compared with those developed by communities¹ other than ECALS. It also assures interoperability with tools compatible with the standards.
- It is possible to extract component classes and properties defined by ECALS from other dictionaries, thereby accelerating the dissemination of the ECALS dictionary

【Points to be noted when using the dictionary】

- To all members providing ECALS content
 - ✓ **The ECALS STEP-P21 Format Dictionary** is not a dictionary to be used for the purpose of preparing content. For example, template data defining required and query attributes is outside of the scope of this dictionary. When preparing content, please use the conventional ECALS dictionary (distributed in CSV format).
- Differences between the **ECALS STEP-P21 Format Dictionary** and the original (CSV format) ECALS dictionary
 - ✓ Since the data model of the **ECALS STEP-P21 Format Dictionary** differs from the conventional ECALS data model, it is being developed based on a number of hypotheses. The details are given in sections 3 and 5.

2. Explanation of terminology

ISO/IEC common dictionary schema:

The ISO/IEC common dictionary schema is an international standard model for electronic

¹ For example, the OIIDDI (Open Interoperable Domain Dictionary Initiative), a consortium of major dictionary development institutions

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catalog dictionaries provided for in common by IEC61360-2 and ISO13584 (PLIB)-42. It defines attributes, etc., for expressing products, and component classes and properties. The ECALS dictionary model in principle conforms to this, though there are some slight differences (refer to section 3.1. for details).

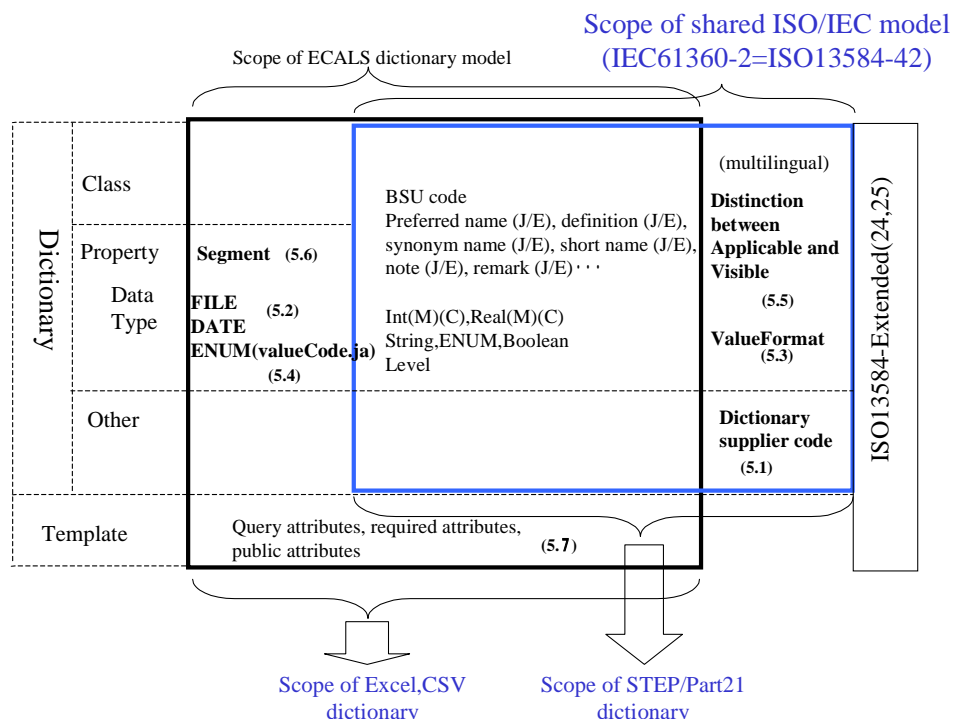
STEP/Part21 format:

The STEP/Part21 format is a standard interchange format (text format) for dictionaries that implement definitions in compliance with the ISO/IEC common dictionary schema (or ISO13584) (refer to section 3.2).

3. Comparison of electronic catalog dictionary models and STEP/Part21 format dictionaries

3.1. Comparison of the ECALS dictionary model and ISO/IEC common dictionary schema

The ECALS dictionary model is defined by ECALS dictionary related rules. Since it is developed based on the ISO/IEC common dictionary schema, they have many attributes in common, though there are also a number of differences. They are illustrated in the diagram below.



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For example, the “segment” attribute (attribute expressing property class) in the ECALS dictionary model (properties) does not exist in the ISO/IEC common dictionary schema. Conversely, the “ValueFormat” attribute (attribute stipulating the number of content digits, character string length, etc.) in the ISO/IEC common dictionary schema does not exist in the ECALS dictionary model. There are thus some minor differences.

3.2. The STEP/Part21 format

The **ISO/IEC common dictionary schema** is expressed by means of a data model description language known as EXPRESS defined by ISO10303(STEP)-11. The standard practice is to describe model instances (corresponding here to specific dictionaries) expressed by this language in a text format known as the STEP/Part21 format. The following is an example of the ECALS dictionary expressed in STEP/Part21 format in line with the ISO/IEC common dictionary schema.

The example of ECALS STEP-P21 FORMAT Dictionary

```
ISO-10303-21;
HEADER;
/* for supplier */
#1=SUPPLIER_BSU('147/JEITA//ECALSDIC',*);
#2=SUPPLIER_ELEMENT(#1,#100,'001',#3,#101);
#3=ORGANIZATION('JEITA','JEITA','Japan Electronics and Information Technology Industries Association.');
```

```
/* for component class */
#4=CLASS_BSU('XJA001','001',#1);
#5=COMPONENT_CLASS(#4,#102,'005',#6,#103,$,$,$,$,#16,....,#104),($,$,$,$);
#6=ITEM_NAMES(#7,0,#105,$,$);
#7=TRANSLATED_LABEL(('ECALS/JEITA ROOT COMPONENT','ECALS/JEITA ROOT COMPONENT'),#106);

#8=CLASS_BSU('XJA002','001',#1);
#9=COMPONENT_CLASS(#8,#102,'005',#10,#107,#108,$,$,#4,(),(),$,$,$);
#10=ITEM_NAMES(#11,(),#109,$,$);
#11=TRANSLATED_LABEL(('RESISTORS','抵抗器'),#106);

#12=CLASS_BSU('XJA003','001',#1);
#13=COMPONENT_CLASS(#12,#102,'005',#14,#110,#112,$,$,#8,(#20,....,#113),(),$,$,$);
#14=ITEM_NAMES(#15,(),#114,$,$);
#15=TRANSLATED_LABEL(('FIXED RESISTORS','固定抵抗器'),#106);

/* for properties */
#16=PROPERTY_BSU('XJE010','001',#4);
#17=NON_DEPENDENT_P_DET(#16,#102,'007',#18,#115,$,#116,#117,$,$,$,#118,$);
#18=ITEM_NAMES(#19,(),#119,$,$);
#19=TRANSLATED_LABEL(('Part Number','製品番'),#106);

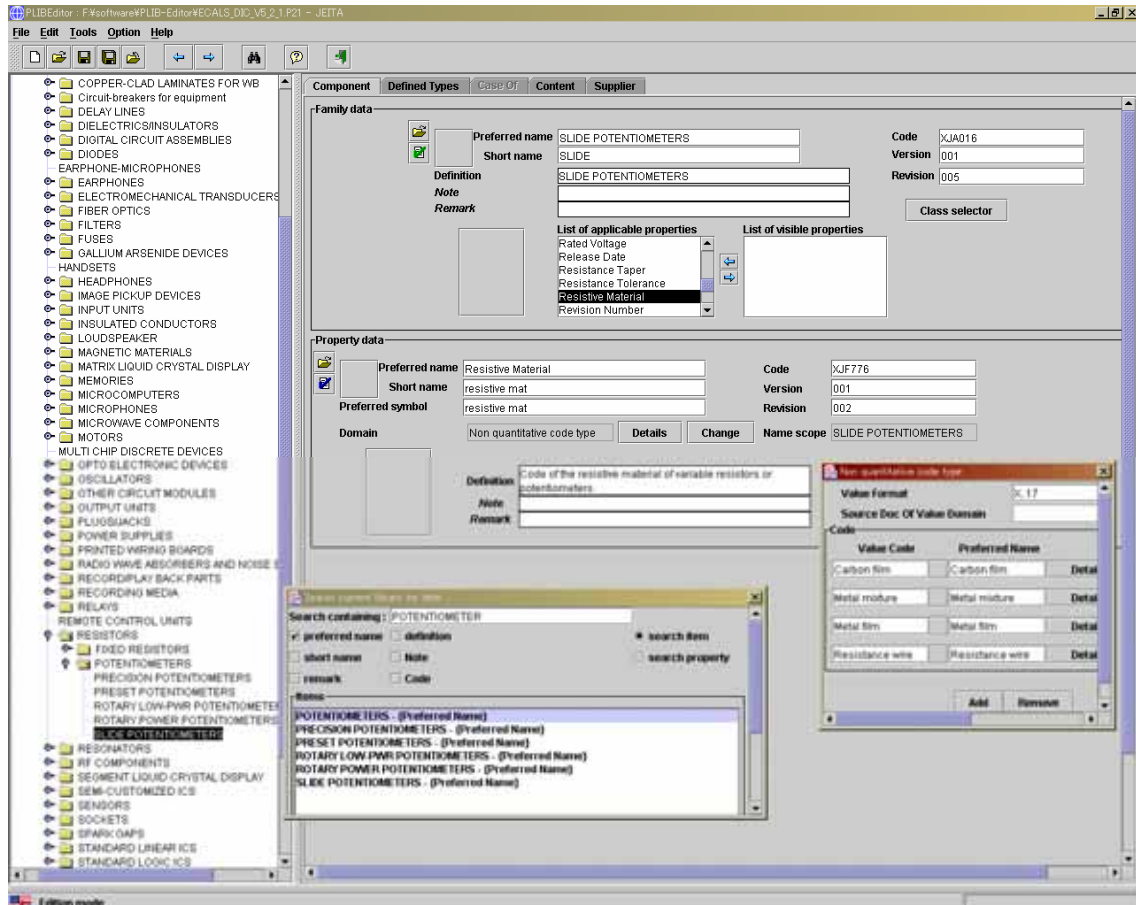
#20=PROPERTY_BSU('XJF711','001',#12);
#21=NON_DEPENDENT_P_DET(#20,#102,'003',#22,#120,#121,#122,$,$,$,$,#123,$);
#22=ITEM_NAMES(#23,(),#124,$,$);
#23=TRANSLATED_LABEL(('Rated Dissipation','定格電力'),#106);
```



Note: Since the Japanese language portion is ASCII encoded in the actual file, the image when opening the file in a text editor is different from the illustration above.

4. STEP/Part21 format interoperability

Since the **ECALS STEP-P21 format dictionary** complies with the ISO/IEC common dictionary schema, it is possible to use it with any tools that support this standard. For example, browsing and editing are possible with the PLIB Editor available on the PLIB homepage at LISI/ENSMA.



5. ECALS STEP-P21 format dictionary development rules and technical issues

Though, as indicated in Section 3.1, the ECALS dictionary model generally conforms to the ISO/IEC common dictionary schema, it is not in complete conformity. It is therefore necessary to set a portion of the attributes of the dictionary and to ignore others.

The **ECALS STEP-P21 format dictionary** currently available was developed in accordance with the rules indicated below. These rules will be reviewed as the need arises.

5.1. Dictionary supplier code

The dictionary supplier in the ISO/IEC common dictionary schema is identified by ICD

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(International Code Designator, defined by ISO6523). Since it is not defined in the original ECALS dictionary (CSV), it is necessary to provide this code (dictionary supplier code).

ICD(4digits)+'/' +OID+'/'(+OPID)+'/'(+OPIS)+'/'

ICD: International Code Designator code

OID: Organization Identifier (organization identifier, maximum 35 characters)

OPID: Organization Part Identifier (organization part identifier, optional, maximum 35 characters)

OPIS: OPI Source Indicator (OPID character, "0" or "1")

【Rule】

The supplier code of the **ECALS STEP-P21 format dictionary** is set as '147/101001/'. This indicates that the dictionary was supplied by the Japan Electronics and Information Technology Industries Association (JEITA).

5.2. Data type

There are data types (file type, date type) in the ECALS dictionary model that do not exist in the ISO/IEC common dictionary schema.

【Rule】

In the **ECALS STEP-P21 format dictionary**, these data types are mapped in the following manner.

ECALS data types	Data types in the ISO/IEC common dictionary schema
FILE	String
DATE	String

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5.3. ValueFormat

ValueFormat is an attribute defined in the ISO/IEC common dictionary schema that decides the type of content values, digit count, etc. This is a required item in the ISO/IEC common dictionary schema but it does not exist in the ECALS dictionary model.

【Rule】

Mapping has been executed in the **ECALS STEP-P21 format dictionary** to enable ValueFormat of the ISO/IEC common dictionary schema to be set uniquely from ECALS data type.²

ECALS data type	ISO/IEC common dictionary schema – ValueFormat
Boolean	"A..5" (alphabet, variable length, 5 characters)
Int, IntM	"NR1 S..10" (signed, variable length, 10 digits)
Real, RealM	"NR3 S..7.7ES2" (signed, variable length, decimal point or floating point)
IntC	"NR1..10" (signed, variable length, 10 digits)
RealC	"NR2..10.2" (signed, variable length, decimal point)
String, File, Date	"M..512" (mixed character string, variable length)
ENUM	"X..17" (alphanumeric, variable length, 17 characters for ValueCode)

5.4. PropertyValue.JA enumeration type property

There are 2 types (Japanese and English) of enumeration type properties as PropertyValue in the ECALS dictionary model, though only 1 type is defined in the ISO/IEC common dictionary schema.

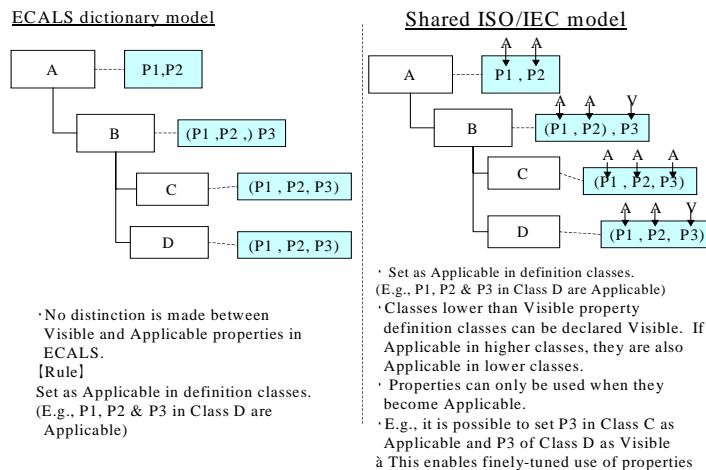
²Character string length and other values relating to the content are defined by attributes (note) in the case of some of the properties; however, these values are not currently reflected in ValueFormat.

【Rule】

It was decided to use PropertyValue.En in the **ECALS STEP-P21 format dictionary**.

5.5. Distinction between Visible and Applicable properties

The ISO/IEC common dictionary schema distinguishes between Visible properties and Applicable properties in property attributes. This distinction does not exist in the ECALS dictionary model.



【Rule】

Properties below definition class are considered to be Applicable properties in the **ECALS STEP-P21 format dictionary**, as indicated in the diagram above (left side).

5.6. Segments

Attributes (segments) exist in the ECALS dictionary model for the purpose of classifying properties.

【Rule】

Since they do not exist in the ISO/IEC common dictionary schema, it was decided not to register them in the **ECALS STEP-P21 format dictionary**.

5.7. Template data

In the ECALS dictionary model, data regarding whether or not properties require description query attributes or not and the extent of public disclosure are compiled as templates in the ECALS dictionary model

【Rule】

Though it is possible to register these data based on ISO13584-25, it is beyond the scope of the ISO/IEC common dictionary schema, it was decided not to register it in the **ECALS STEP-P21 format dictionary**.

5.8. System properties

A number of properties used by the system are defined in ECALS. These system properties (XJE031-XJE040) are currently registered in the STEP/Part21 dictionary. However, given the nature of these properties, there is a need to examine the advisability of registering them in the STEP/Part21 dictionary.