INTERNATIONAL STANDARD

IEC
61360-2

2002-01

AMENDMENT 1
2003-12

Amendment 1

**Standard data element types
with associated classification scheme
for electric components –**

**Part 2:
EXPRESS dictionary schema**

PRICE CODE R

For price, see current catalogue

FOREWORD

This amendment has been prepared by subcommittee 3D: Data sets for libraries, of IEC technical committee 3: Information structures, documentation and graphical symbols.

The text of this amendment is based on the following documents:

FDIS	Report on voting
3D/117/FDIS	3D/126/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until 2005. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This amendment introduces corrections which are needed to align with ISO 13584-42 in order to keep the common ISO 13584-IEC 61360 dictionary schema common across both committees.

In a number of clauses, where the common EXPRESS model allows more freedom, IEC has defined more restrictions which are found in the methodology part of IEC 61360-1.

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Page 5

INTRODUCTION

Replace the quotations from IEC 61360-1 and ISO 13584-42 by the following more recent ones:

"This part of IEC 61360 provides a firm basis for the clear and unambiguous definition of characteristic properties (data element types) of all elements of electrotechnical systems from basic components to subassemblies and full systems. Although originally conceived in the context of providing a basis for the exchange of information on electric/electronic components, the principles and methods of this standard may be used in areas outside the original conception such as assemblies of components and electrotechnical systems and subsystems."

and

"This part of ISO 13584 provides rules and guidelines for library data suppliers to create hierarchies of families of parts according to a common methodology intended to enable multi-supplier consistency. These rules pertain to the following: the method for grouping parts into families of parts to form a hierarchy; the dictionary elements that describe the families and properties of parts."

Page 6

1.1 Scope

Delete, in the first sentence of the first bullet, the words "but without modelling the definitions of the terms".

Delete the last paragraph.

Page 9

4.2 Compatibility with ISO 13584-42

Replace, in the second sentence of the second paragraph, "IEC 61360 implementation, whether it conforms to conformance class 1, or to conformance class 2 that includes" *by* "IEC 61360 implementation that conforms to conformance class 1 that includes"

Page 10

4.4 Main structure of the common dictionary schema

Replace, on page 11 in the third paragraph, "(see figure 1 to figure 12)" *by* "(see figure 1 to figure 11)"

Page 12

5.2 Constant definitions

Replace, in the EXPRESS specification, "short_name_len: INTEGER:= 15;" *by* "short_name_ len: INTEGER:= 30;"

Page 13

5.3.2 Three-level architecture of the dictionary data

Replace, in the fourth bullet, the words "property_DETs" *by* "**property_DETs**".

Page 14

5.3.2.1 basic_semantic_unit

Replace, in the first line, "dictionary_element" *by* "**dictionary_element**".

Page 15

5.3.2.2 dictionary_element

Add, on page 16, at the end of this subclause, the following note:

NOTE   The time_stamps attribute will be used as a starting-point to encode in the dates entity the property and class attributes "Date of Original Definition", "Date of Current Version" and "Date of Current Revision" (see 5.8.2).

Page 17

5.3.4 Identification of dictionary element: three-levels structure

Replace in the last sentence, "entities in 5.3 through 5.7" *by* "entities in 5.3 through 5.6".

Page 26

5.6.1 property_BSU

Replace, on page 27, the formal proposition WR1 by the following new formal proposition WR1:

WR1: any class referenced by the describes_classes attribute of a property_BSU either is the class referenced by its name_scope attribute, or it is a subclass of this class.

Page 27

5.6.2 property_DET

Replace, in the EXPRESS specification, "synonymous_symbols: SET [0:2] OF mathe-matical_string;" *by* "synonymous_symbols: SET [0:?] OF mathematical_string;".

Page 29

5.6.3.2 dependent_DET[19]

Replace the existing title of this subclause by the following new title:

5.6.3.2 dependent_P_DET[19]

Page 30

5.6.3.3 non-dependent_DET

Replace the existing title of this subclause by the following new title:

5.6.3.3 non-dependent_P_DET".

Page 32

5.7.1.1 data_type_BSU

Replace the fourth attribute definition ('defining class') by the following new definition:
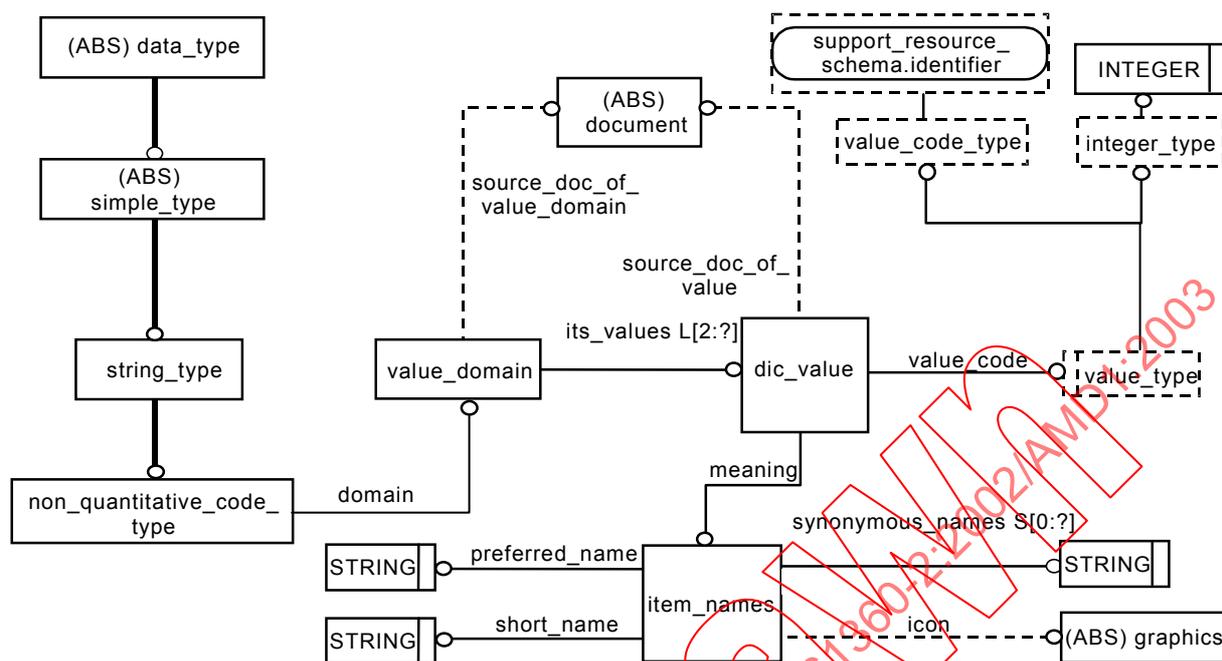
defining_class: SET OF class FOR defined_types

Page 41

Figure 11 – Overview of non-Quantitative data element types

Replace figure 11 by the following new figure:

Figure 11 – Overview of non-Quantitative data element types

Page 42

5.7.3.1   value_domain[25]

Add, to the WHERE rules in the EXPRESS specification, the following:

WR3:   EXISTS(languages) OR (QUERY(v <* its_values |

EXISTS(v.meaning.languages)) = []);

Replace the first attribute definition ('its_values') *by the following new definition:*

its_values: LIST [1:?] OF dic_value;

Add to the list of formal propositions:

WR3: if no languages are provided, the value meanings shall not be assigned any language.

Page 53

5.8.2.5   item_names

Replace WR1 and WR3 of the WHERE rules in the express specification by the following:

WR1:   NOT (EXISTS(languages)) OR (
        ('ISO13584_IEC61360_LANGUAGE_RESOURCE_SCHEMA'
        + '.TRANSLATED_LABEL' IN TYPEOF(preferred_name))
            AND (languages :=: preferred_name\translated_label.languages)
            AND (NOT (EXISTS(short_name))

OR ('ISO13584_IEC61360_LANGUAGE_RESOURCE_SCHEMA'
+ '.TRANSLATED_LABEL' IN TYPEOF(short_name))
AND (languages :=: short_name\translated_label.languages))
AND (QUERY (s <* synonymous_names
| NOT ('ISO13584_IEC61360_DICTIONARY_SCHEMA'
+'.LABEL_WITH_LANGUAGE' IN TYPEOF(s))) = [ ]));

WR3:　EXISTS(languages) OR (('SUPPORT_RESOURCE_SCHEMA.LABEL' IN
TYPEOF(preferred_name)) AND (NOT(EXISTS(short_name)) OR
('SUPPORT_RESOURCE_SCHEMA.LABEL' IN
TYPEOF(short_name))) AND (QUERY(s <* synonymous_names |
'ISO13584_IEC61360_DICTIONARY_SCHEMA.LABEL_WITH_LANGUAGE' IN
TYPEOF(s)) = []));

Replace, in the list of attribute definitions, the third definition ('short_name') by the following new definition:

short_name: OPTIONAL short_name_type;

Replace, in the list of formal propositions, WR3 by the following:

WR3: if no languages are provided, preferred_name, short_name and synonymous_names shall not be translated.

Page 55

5.9.1　acyclic_superclass_relationship function

Replace, in the EXPRESS specification, "IF current.definition[1]\class IN visited THEN" by 'IF current.definition[1] IN visited THEN'.

Replace

```
IF EXISTS current.definition[1]\class.its_superclass)
THEN
RETURN     (acyclic_superclass_relationship (current.definition[1]\class.its_superclass,
           visited + current.definition[1]\class));
```
by
```
'IF EXISTS (current.definition[1]\class.its_superclass)
THEN
RETURN     (acyclic_superclass_relationship (current.definition[1]\class.its_superclass,
           visited + current.definition[1])); '
```


5.9.2　at_most_two_synonyms_per_language function

Delete this Subclause and renumber the following Subclauses.

Page 56

5.9.4   codes_are_unique_function

Replace

```
    ELSE
        RETURN(UNKNOWN);
    END_IF;
END_IF;
```

by:

```
'   ELSE
        RETURN( ?);
    END_IF;
END_IF; '
```

Page 61

5.9.11   all_class_descriptions_reachable function

Replace

```
IF NOT EXISTS(cl)
    THEN
        RETURN(UNKNOWN);
END_IF;
```

by:

```
'IF NOT EXISTS(cl)
    THEN
        RETURN(?);
END_IF; '
```

Page 65

6   IEC 61360 extensions to the common dictionary schema

Delete this Clause and renumber the following Clauses and Subclauses.

Page 71

8.1.3   Templates for property DET data

Replace the text of the second, third and fourth paragraphs of this Subclause by the following:

e_i_n=CONDITION_DET(identified_by: property_BSU, time_stamps: OPTIONAL dates, revision: revision_type, names: item_names, definition: definition_type, source_doc_of_definition: OPTIONAL document, note: OPTIONAL note_type, remark: OPTIONAL remark_type, preferred_symbol: OPTIONAL mathematical_string, synonymous_symbols: SET [0 : ?] OF mathematical_string, figure: OPTIONAL graphics, det_classification: OPTIONAL DET_classification_type, domain: data_type, formula: OPTIONAL mathematical_string);

e_i_n=DEPENDENT_P_DET(identified_by: property_BSU, time_stamps: OPTIONAL dates, revision: revision_type, names: item_names, definition: definition_type, source_doc_of_definition: OPTIONAL document, note: OPTIONAL note_type, remark: OPTIONAL remark_type, preferred_symbol: OPTIONAL mathematical_string, synonymous_symbols: SET [0 : ?] OF mathematical_string, figure: OPTIONAL graphics, det_classification: OPTIONAL DET_classification_type, domain: data_type, formula: OPTIONAL mathematical_string, depends_on: SET [1 : ?] OF property_BSU);

e_i_n=NON_DEPENDENT_P_DET(identified_by: property_BSU, time_stamps: OPTIONAL dates, revision: revision_type, names: item_names, definition: definition_type, source_doc_of_definition: OPTIONAL document, note: OPTIONAL note_type, remark: OPTIONAL remark_type, preferred_symbol: OPTIONAL mathematical_string, synonymous_symbols: SET [0 : ?] OF mathematical_string, figure: OPTIONAL graphics, det_classification: OPTIONAL DET_classification_type, domain: data_type, formula: OPTIONAL mathematical_string);

Page 74

Annex A - Example Physical File

Replace the text of this Annex by the following new text:

'ISO-10303-21;

HEADER;
FILE_DESCRIPTION(('Example physical file'), '2;1');
FILE_NAME('example.spf', '2001-01-29', ('IEC SC3D WG2'), (),
'Version 1', '', '');
FILE_SCHEMA(('example_schema'));
ENDSEC;
DATA;
/*

A.1 Supplier data

*/
#1=SUPPLIER_BSU('112/2///61360_4_1', *); /*according to ISO 13584-26*/
#2=SUPPLIER_ELEMENT(#1, #3, '01', #4, #5);
#3=DATES('1994-09-16', '1994-09-16', $);
#4=ORGANIZATION('IEC', 'IEC Maintenance Agency', 'The IEC Maintenance Agency as described in IEC 61360-3: "Maintenance and Validation Procedures"');
#5=ADDRESS('to be determined', $, $, $, $, $, $, $, $, $, $, $);
#10=SUPPLIER_BSU('112/3///_00', *);   /* ISO/IEC ICS */
/*

A.2 Root class data

The AAA000 IEC root class provides a name scope corresponding to the whole future IEC 61360-4 standard. It covers two trees, one for materials, one for components, therefore the class is defined as an item_class. It is a subtype of ICS root.
*/
#90=CLASS_BSU('OO', '001', #10); /* ICS root */
#100=CLASS_BSU('AAA000', '001', #1);
#101=ITEM_CLASS(#100, #3, '01', #102, TEXT('IEC root class that provides a name scope corresponding to the whole IEC 61360-4 standard. It covers two trees, one for materials, one for components'), $, $, $, #90, (#110), (), $, (#110), (), $);
#102=ITEM_NAMES(LABEL('IEC root class'), (), LABEL('IEC root'), $, $);
#110=PROPERTY_BSU('AAE000', '001', #100);
#111=NON_DEPENDENT_P_DET(#110, #3, '01', #112, TEXT('the type of tree: material or component'), $, $, $, $, (), $, $, #113, $);

```
#112=ITEM_NAMES(LABEL('type of tree'), (), LABEL('tree type'), $, $);
#113=NON_QUANTITATIVE_CODE_TYPE('A..8', #114);
#114=VALUE_DOMAIN((#120, #122), $, $, ());
#120=DIC_VALUE(VALUE_CODE_TYPE('MATERIAL'), #121, $);
#121=ITEM_NAMES(LABEL('material tree'), (), LABEL('mat tree'), $, $);
#122=DIC_VALUE(VALUE_CODE_TYPE('COMPONS'), #123, $);
#123=ITEM_NAMES(LABEL('component tree'), (), LABEL('comp tree'), $, $);
/*
```

A.3   Material data

```
*/
#200=CLASS_BSU('AAA218', '001', #1);
#201=MATERIAL_CLASS(#200, #3, '01', #202, TEXT('root class of the materials tree'), $, $,
$, #100, (#210, #230), (), $, (#210), (#205), 'MATERIAL');
#202=ITEM_NAMES(LABEL('materials root class'), (), LABEL('materials root'), $, $);
#205=CLASS_VALUE_ASSIGNMENT(#110, 'MATERIAL');
#210=PROPERTY_BSU('AAF311', '005', #100);
#211=NON_DEPENDENT_P_DET(#210, #3, '01', #212, TEXT('code of the type of material'),
$, $, $, $, (), $, 'A57', #213, $);
#212=ITEM_NAMES(LABEL('material type'), (), LABEL('material type'), $, $);
#213=NON_QUANTITATIVE_CODE_TYPE('M..3', #214);
#214=VALUE_DOMAIN((#220, #222, #224, #226), $, $, ());
#220=DIC_VALUE(VALUE_CODE_TYPE('ACO'), #221, $);
#221=ITEM_NAMES(LABEL('acoustical'), (), LABEL('acoustical'), $, $);
#222=DIC_VALUE(VALUE_CODE_TYPE('MG'), #223, $);
#223=ITEM_NAMES(LABEL('magnetic'), (), LABEL('magnetical'), $, $);
#224=DIC_VALUE(VALUE_CODE_TYPE('OP'), #225, $);
#225=ITEM_NAMES(LABEL('optical'), (), LABEL('optical'), $, $);
#226=DIC_VALUE(VALUE_CODE_TYPE('TH'), #227, $);
#227=ITEM_NAMES(LABEL('thermal-electric'), (), LABEL('th-electric'), $, $);
#230=PROPERTY_BSU('AAF286', '005', #100);
#231=NON_DEPENDENT_P_DET(#230, #3, '01', #232, TEXT('The nominal density (in
kg/m**3) of a material.'), $, $, $, #233, $, $, 'K02', #234, $);
#232=ITEM_NAMES(LABEL('density'), (), LABEL('density'), $, $);
#233=MATHEMATICAL_STRING('$I_d', '&rho;<sub>d</sub>');
#234=REAL_MEASURE_TYPE('NR3..3.3ES2', #235);
#235=DIC_UNIT(#236, $);
#236=DERIVED_UNIT((#237, #239));
#237=DERIVED_UNIT_ELEMENT(#238, 1.0);
#238=SI_UNIT(*, .KILO., .GRAM.);
#239=DERIVED_UNIT_ELEMENT(#240, -3.0);
#240=SI_UNIT(*, $, .METRE.);
/*
```

A.4   Component data

```
*/
#300=CLASS_BSU('EEE000', '001', #1);
#301=COMPONENT_CLASS(#300, #3, '01', #302, TEXT('root class of the components tree'),
$, $, $, #100, (#310, #330, #350), (), $, (#310), (#305), 'COMPONS');
#302=ITEM_NAMES(LABEL('components root class'), (), LABEL('components root'), $, $);
#305=CLASS_VALUE_ASSIGNMENT(#110, 'COMPONS');
#310=PROPERTY_BSU('AAE001', '005', #100);
#311=NON_DEPENDENT_P_DET(#310, #3, '01', #312, TEXT('Code of the main functional
class to which a component belongs'), $, $, $, $, (), $, 'A52', #313, $);
#312=ITEM_NAMES(LABEL('main class of component'), (), LABEL('main class'), $, $);
#313=NON_QUANTITATIVE_CODE_TYPE('M..3', #314);
#314=VALUE_DOMAIN((#320, #322, #324, #326), $, $, ());
#320=DIC_VALUE(VALUE_CODE_TYPE('EE'), #321, $);
#321=ITEM_NAMES(LABEL('EE (electric / electronic)'), (), LABEL('EE'), $, $);
#322=DIC_VALUE(VALUE_CODE_TYPE('EM'), #323, $);
#323=ITEM_NAMES(LABEL('electromechanical'), (), LABEL('electromech'), $, $);
```

```
#324=DIC_VALUE(VALUE_CODE_TYPE('ME'), #325, $);
#325=ITEM_NAMES(LABEL('mechanical'), (), LABEL('mechanical'), $, $);
#326=DIC_VALUE(VALUE_CODE_TYPE('MP'), #327, $);
#327=ITEM_NAMES(LABEL('magnetic part'), (), LABEL('magnetic'), $, $);
#330=PROPERTY_BSU('AAF267', '005', #100);
#331=NON_DEPENDENT_P_DET(#330, #3, '01', #332, TEXT('The nominal distance (in m)
between the inside of the two tapes used for taped products with axial leads'), $, $, $, #333,
(), $, 'T03', #334, $);
#332=ITEM_NAMES(LABEL('inner tape spacing'), (), LABEL('inner tape spac'), $, $);
#333=MATHEMATICAL_STRING('b_tape', 'b<sub>tape</sub>');
#334=LEVEL_TYPE((.NOM.), #335);
#335=REAL_MEASURE_TYPE('NR3..3.3ES2', #336);
#336=DIC_UNIT(#337, $);
#337=SI_UNIT(*, $, .METRE.);
#350=PROPERTY_BSU('AAE022', '005', #100);
#351=NON_DEPENDENT_P_DET(#350, #3, '01', #352, TEXT('The value as specified by level
(miNoMax) of the outside diameter (in m) of a component with a body of circular cross-
section'), $, $, $, #353, (), $, 'T03', #354, $);
#352=ITEM_NAMES(LABEL('outside diameter'), (), LABEL('outside diam'), $, $);
#353=MATHEMATICAL_STRING('d_out', 'd<sub>out</sub>');
#354=LEVEL_TYPE((.MIN.,.NOM.,.MAX.), #355);
#355=REAL_MEASURE_TYPE('NR3..3.3ES2', #356);
#356=DIC_UNIT(#357, #358);
#357=SI_UNIT(*, $, .METRE.);
#358=MATHEMATICAL_STRING('m','m');
/*
```

## A.5   Electric / Electronic component data

```
*/
#400=CLASS_BSU('EEE001', '001', #1);
#401=COMPONENT_CLASS(#400, #3, '01', #402, TEXT('electric / electronic components'), $,
$, $, #300, (#410, #470), (), $, (#410), (#405), 'EE');
#402=ITEM_NAMES(LABEL('EE components'), (), LABEL('EE components'), $, $);
#405=CLASS_VALUE_ASSIGNMENT(#310, 'EE');
#410=PROPERTY_BSU('AAE002', '005', #100);
#411=NON_DEPENDENT_P_DET(#410, #3, '01', #412, TEXT('Code of the category to which
an electric/electronic component belongs.'), $, $, $, $, (), $, 'A52', #413, $);
#412=ITEM_NAMES(LABEL('category EE component'), (), LABEL('categ EE comp'), $, $);
#413=NON_QUANTITATIVE_CODE_TYPE('M..3', #414);
#414=VALUE_DOMAIN((#420, #422, #424, #426, #428, #430, #432, #434, #436, #438, #440),
$, $, ());
#420=DIC_VALUE(VALUE_CODE_TYPE('AMP'), #421, $);
#421=ITEM_NAMES(LABEL('amplifier'), (), LABEL('amplifier'), $, $);
#422=DIC_VALUE(VALUE_CODE_TYPE('ANT'), #423, $);
#423=ITEM_NAMES(LABEL('antenna (aerial)'), (), LABEL('antenna (aer)'), $, $);
#424=DIC_VALUE(VALUE_CODE_TYPE('BAT'), #425, $);
#425=ITEM_NAMES(LABEL('battery'), (), LABEL('battery'), $, $);
#426=DIC_VALUE(VALUE_CODE_TYPE('CAP'), #427, $);
#427=ITEM_NAMES(LABEL('capacitor'), (), LABEL('capacitor'), $, $);
#428=DIC_VALUE(VALUE_CODE_TYPE('CND'), #429, $);
#429=ITEM_NAMES(LABEL('conductor'), (), LABEL('conductor'), $, $);
#430=DIC_VALUE(VALUE_CODE_TYPE('DEL'), #431, $);
#431=ITEM_NAMES(LABEL('delay line'), (), LABEL('delay line'), $, $);
#432=DIC_VALUE(VALUE_CODE_TYPE('DID'), #433, $);
#433=ITEM_NAMES(LABEL('diode device'), (), LABEL('diode device'), $, $);
#434=DIC_VALUE(VALUE_CODE_TYPE('FIL'), #435, $);
#435=ITEM_NAMES(LABEL('filter'), (), LABEL('filter'), $, $);
#436=DIC_VALUE(VALUE_CODE_TYPE('IC'), #437, $);
#437=ITEM_NAMES(LABEL('integrated circuit'), (), LABEL('IC'), $, $);
#438=DIC_VALUE(VALUE_CODE_TYPE('IND'), #439, $);
#439=ITEM_NAMES(LABEL('inductor'), (), LABEL('inductor'), $, $);
```

```
#440=DIC_VALUE(VALUE_CODE_TYPE('LAM'), #441, $);
#441=ITEM_NAMES(LABEL('lamp'), (), LABEL('lamp'), $, $);
/* etc. */
#470=PROPERTY_BSU('AAE754', '005', #100);
#471=NON_DEPENDENT_P_DET(#470, #3, '01', #472, TEXT('The number of electrical
terminals of an electric/electronic or electromechanical component'), $, $, $, #473, (), $, 'Q56',
#474, $);
#472=ITEM_NAMES(LABEL('number of terminals'), ('number of pins'), LABEL('nr of
terminals'), $, $);
#473=MATHEMATICAL_STRING('N_term', 'N<sub>term</sub>');
#474=INT_TYPE('NR1..4');
ENDSEC;
END-ISO-10303-21;  '
```
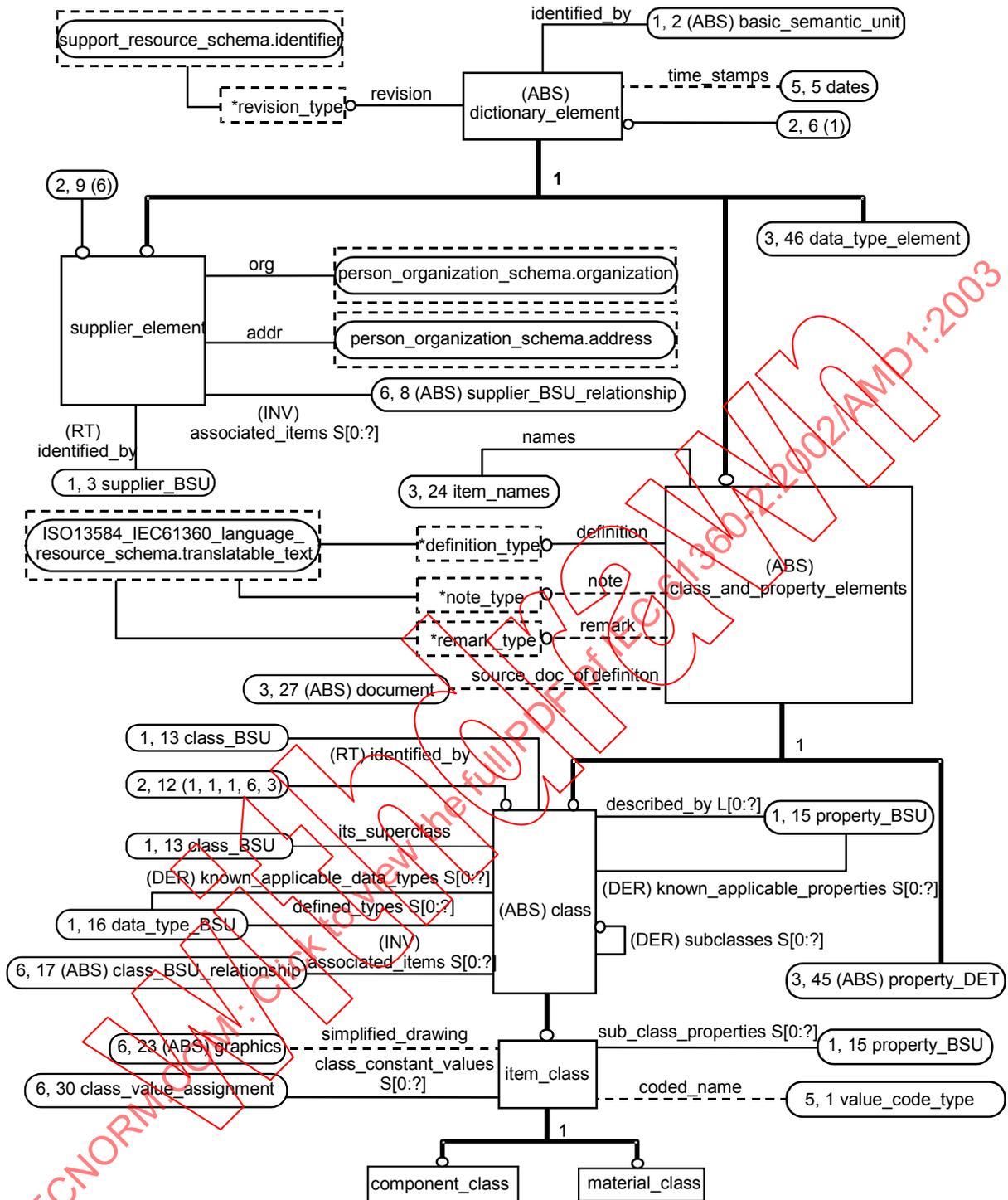
Pages 79 to 85

Replace figures B.1 to B.7 by the following new figures:
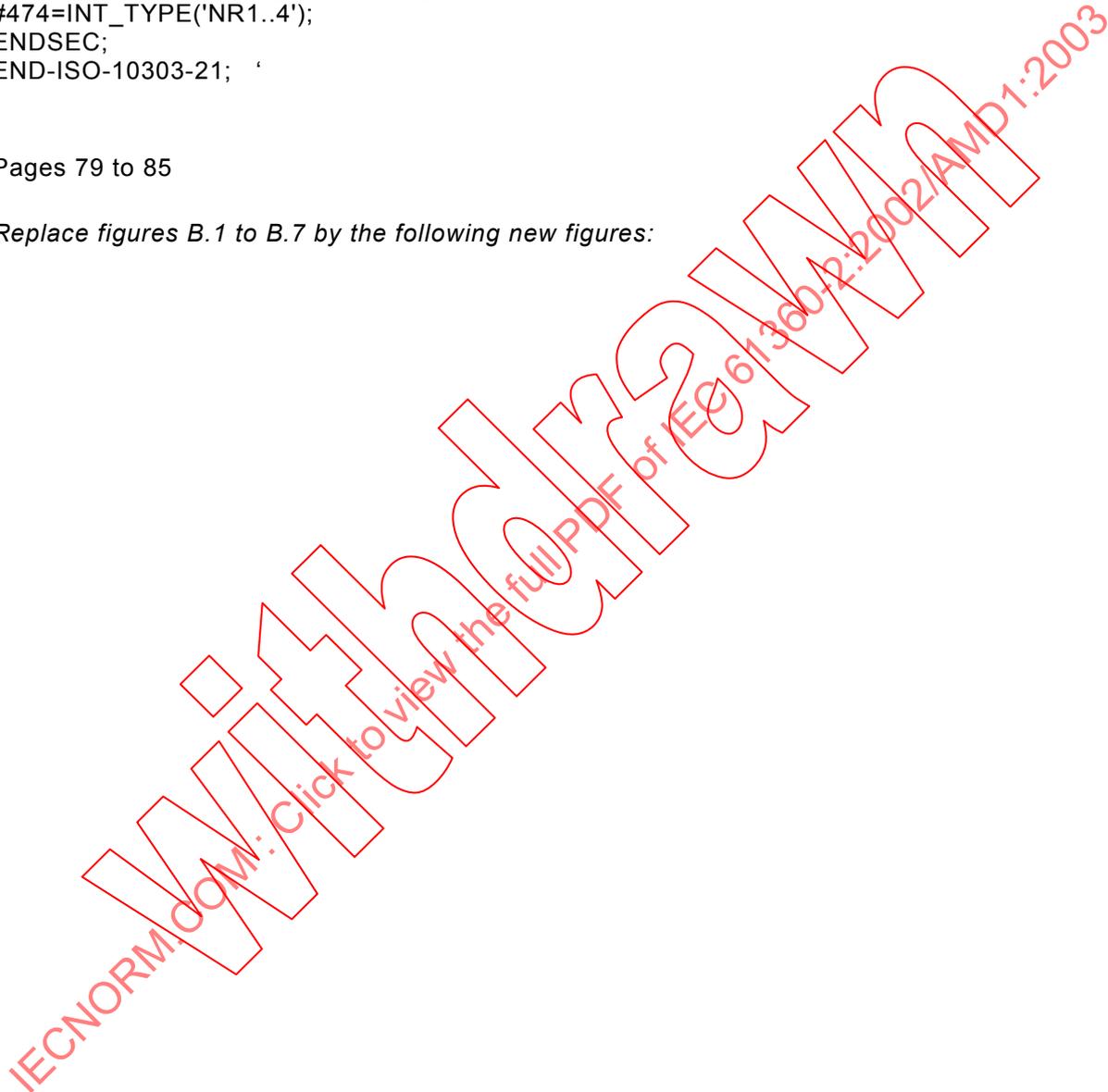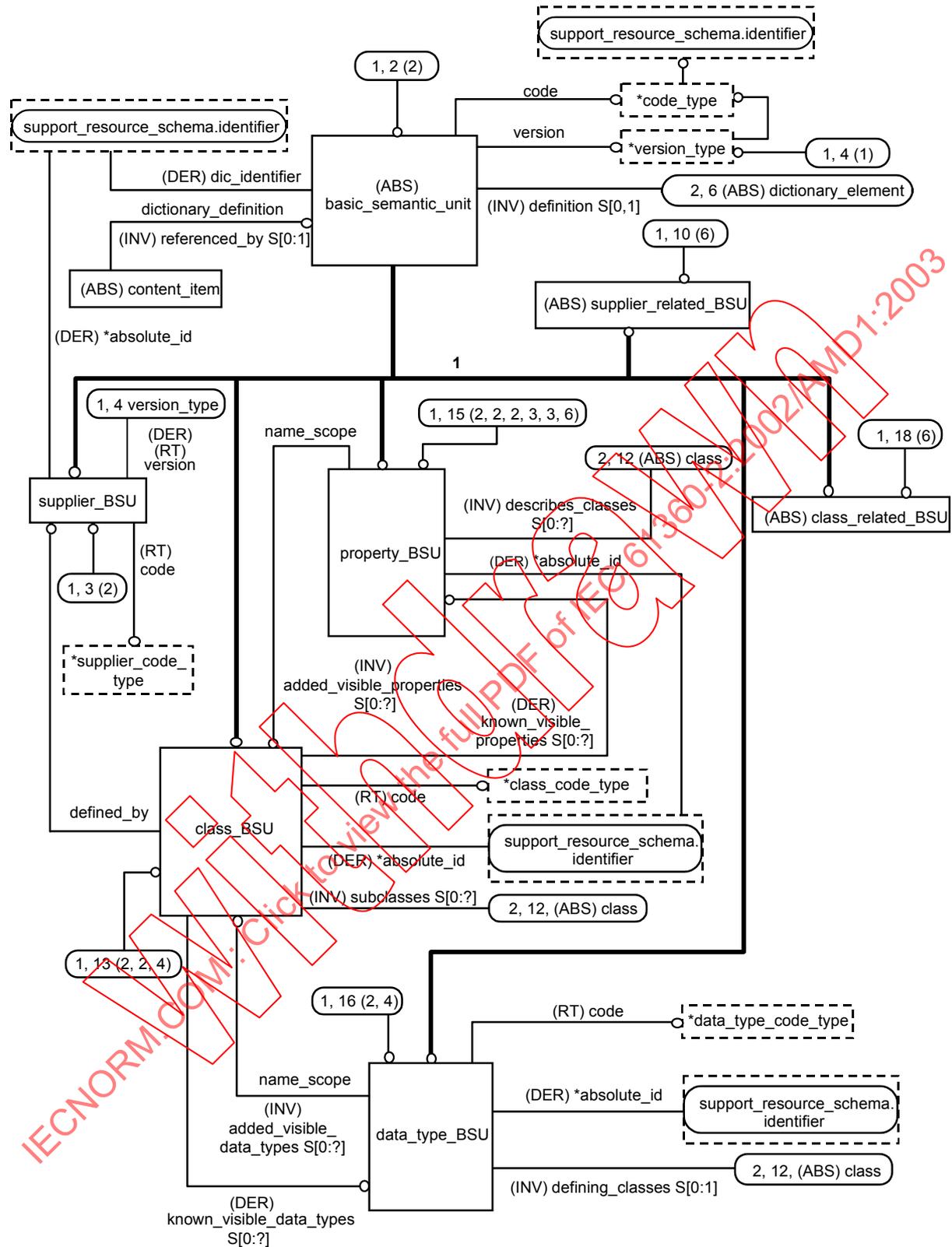
**Figure B.1 — ISO13584_IEC61360_dictionary_schema – Basic semantic units –
EXPRESS-G diagram**

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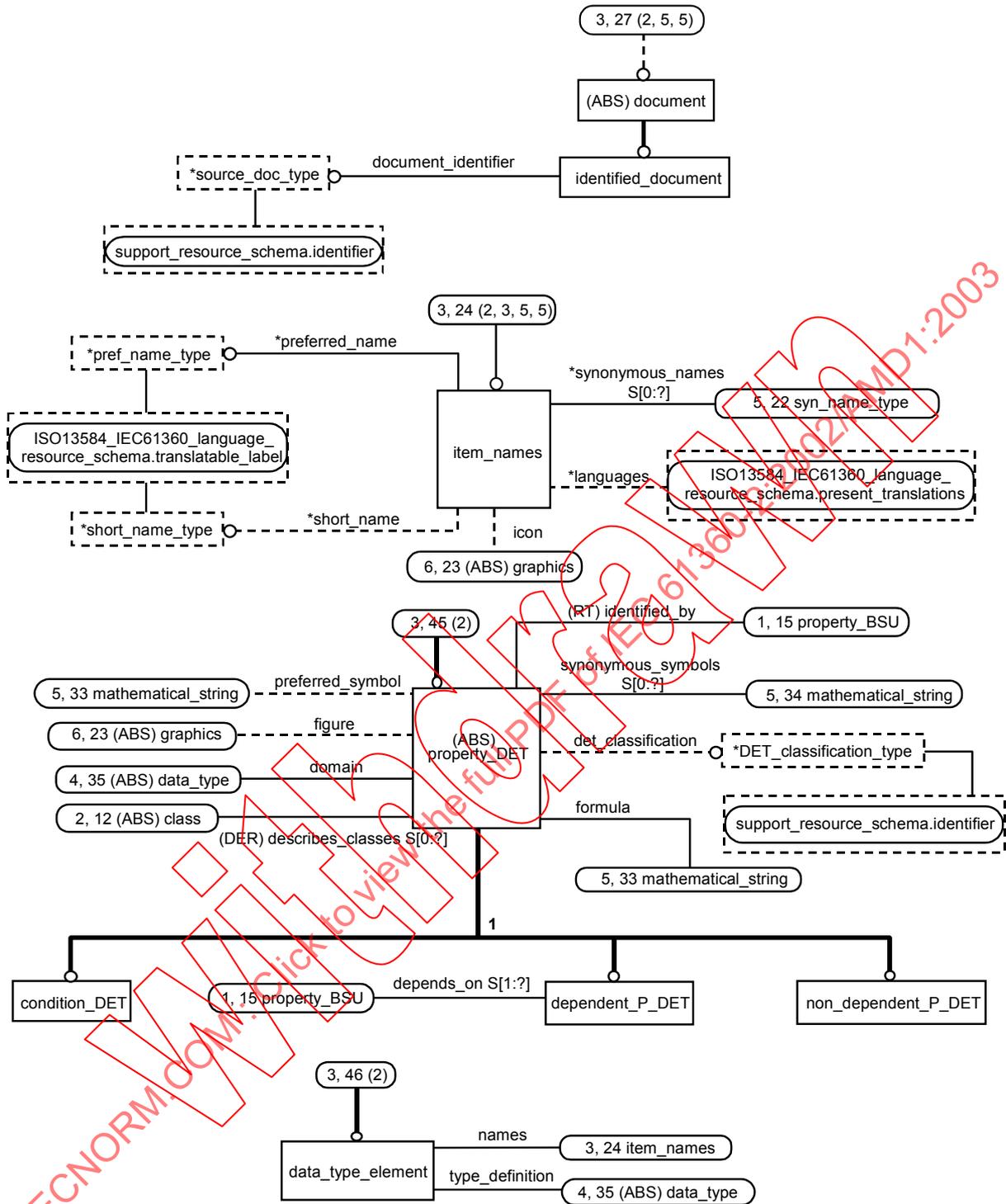**Figure B.2 — ISO13584_IEC61360_dictionary_schema – Dictionary elements – EXPRESS-G diagram**
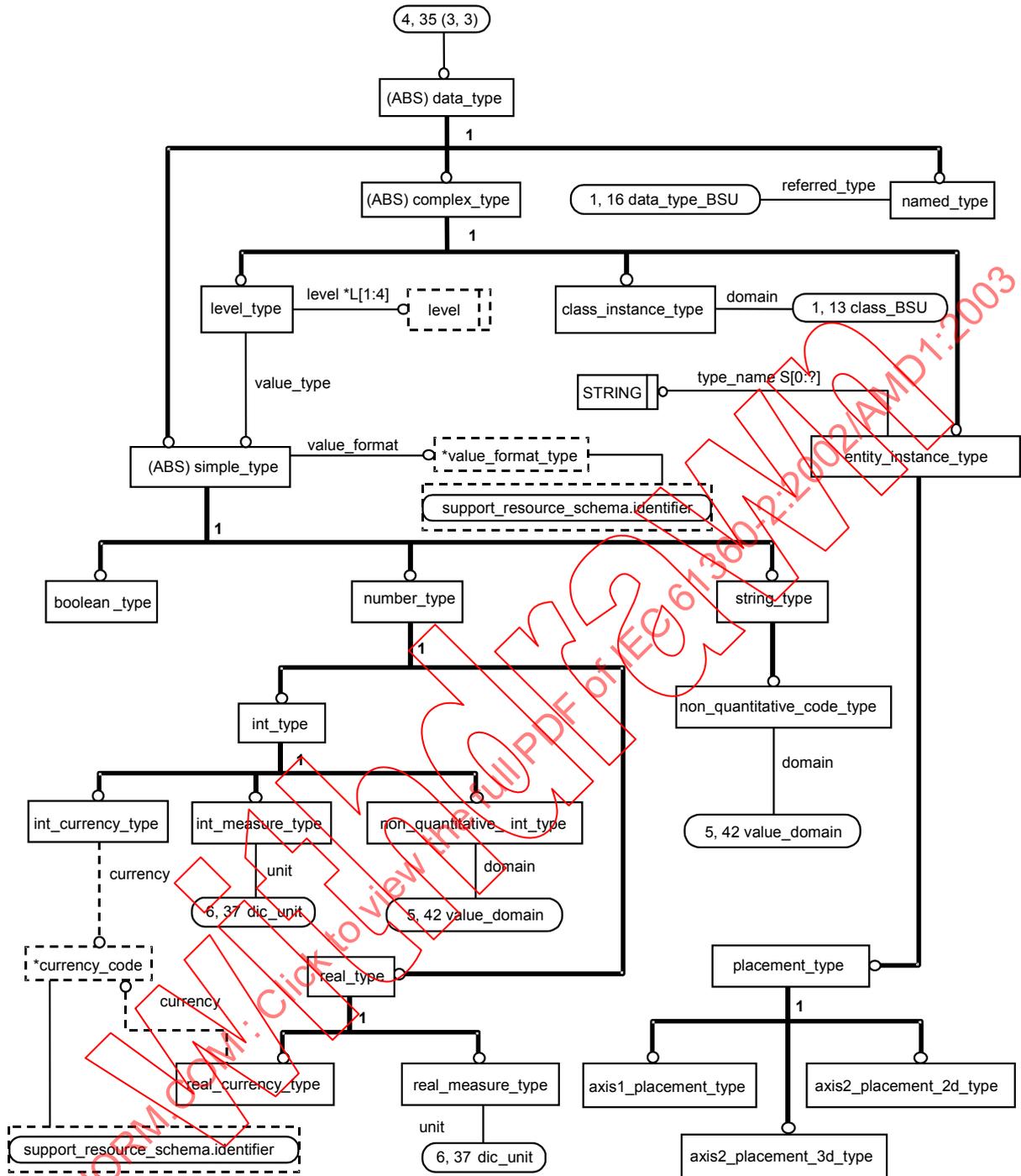
Figure B.3 – ISO13584_IEC61360_dictionary_schema – EXPRESS-G diagram

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Figure B.4 – ISO13584_IEC61360_dictionary_schema – The type system – EXPRESS-G diagram