ISO/IEC JTC1/SC22

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TITLE: Editor's notes to DIS 11404: Information Technology - Programming languages, their environments and system software interfaces - Language-independent datatypes

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DIS 11404 will be circulated by ISO/IEC ITTF.

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Language-Independent Datatypes
Editor's Notes to the DIS (WD 8)

A. Overview

A.1 Status

This draft is a revision of LI Datatypes CD 11404.2, as balloted in SC22 (SC22 N1305) in April 1993. All changes reflect committee decisions of WG11 at the editing meeting in Amsterdam (July, 1993), and an alignment meeting with the RPC (ISO CD 11578) Editor's Group (from JTC1/SC21/WG8) in Cambridge, Massachusetts, (April, 1993).

This draft contains all changes required by resolution of the SC22 ballot comments (SC22 N1354) including a late-received comment from Canada (SC22 N1458). Except for one of the comments from Canada, all national body comments are resolved in this draft. Document SC22/WG11 N371 describes the resolution of the national body comments.

In spite of continuing close liaison with the RPC Editor's group, it is not clear that complete alignment with ISO DIS 11578 has yet been achieved.

Section B below, Annotations to Changes, identifies individual changes clause-by-clause and the source of those changes.

A.2 The major changes from the second Committee Draft are:

1. Table was redescribed to align with SQL (ISO/IEC 9075:1990).

A.3 Outstanding Alignment Issues between LID and RPC:

1. A solution to aligning the value syntax was not found. The RPC "value-reference" is a purely syntactic factorization of value-expressions which begin with an identifier. This includes all dependent-values and formal-parametric-values but only SOME independent-values. Independent-value is correctly used in lieu of value-expression in the productions for value-declaration and the composite values (choice, record, ...). Thus factoring out value-reference is semantically meaningless.

A.4 Outstanding issues

1. The UK proposed the addition of an example mapping to a language unlike Pascal as an informative annex, but has not made a draft of such an annex available.

B. Annotations to Changes

In this draft, all text changes from the Second Committee Draft are indicated by "change bars" in the document margins.

B.1 Abbreviated references

[CAN n]: change resulted from comment "n" from Canada.

[NZ n]: change resulted from comment "n" from New Zealand.

[SWE n]: change resulted from comment "n" from Sweden.

[UK n]: change resulted from comment "n" from the United Kingdom.

[US n]: change resulted from comment "n" from the United States.

[RPC n.n]: change made to align with RPC/LIPC, by agreement "n.n" reached in Cambridge, documents SC22/WG11 N353 and N360.

[SC2]: change resulted from comments from the SC2 liaison, document SC22/WG11 N358.

[ITTF] refers to editorial changes made to conform to ITTF requirements.

[WG] refers to other editorial direction given by the working group.

B.2 Global changes

1. All references to the "ordering" relationship changed to "order". [WG]

2. All references to "parameters" of a datatype or generator have been changed to "parametric datatypes" and "parametric values", and the syntactic objects to "formal-parametric-type" and "formal-parametric-value", except in clauses 8.5 and 9.1. In clauses 8.5 and 9.1, a generic syntactic object is needed - an "actual-type-parameter" in 8.5 and a "formal-type-parameter" in 9.1. The term "component datatype" has been retained as a synonym for "parametric datatype". [Ed./WG, because of change 3]

3. All occurrences of the term "argument" have been changed to "parameter" and, except for syntactic objects in 8.5 and 9.1, "parameter" now refers only to procedure parameters. [WG, to align with LIPC and RPC]

4. All occurrences of "this draft International Standard" changed to "this International Standard". [ITTF]

5. Document reformatted to ITTF (A4) specifications. [ITTF]

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B.3 Changes by clause:

Foreword, new.
Made from ISO template and the appropriate text of the former "Foreword". [ITTF]

Introduction, former "Foreword".
Renamed to conform to ISO requirements. [ITTF]

2. Conformance, former clause 5 "Compliance"
Moved and renamed. [ITTF]

2.1 Direct Conformance, former 5.1
Provisions reordered. [WG]
Provision iii clarified. [WG]

2.2 Indirect Conformance, former 5.2.
Note 1 added. [UK 2]

3. Normative References, former 2. [SWE 1]
ISO 8601 reference corrected.

4.1 actual parametric type, formerly 3.1
The word "parametric" was added as part of the "parameter" terminology change, resulting in a change in the alphabetical order. [Ed.]

4.2 actual parametric value, formerly 3.2
The word "parametric" was added as part of the "parameter" terminology change. [Ed.]

4.11 Definition of Datatype, former 3.11.
reworded. [UK 1]

4.18 formal parametric type, formerly 3.30
The word "formal" was added as part of the "parameter" terminology change, resulting in a change in the alphabetical order. [Ed.]

4.19 formal parametric value, formerly 3.31
The word "formal" was added as part of the "parameter" terminology change, resulting in a change in the alphabetical order. [Ed.]

4.32, parametric datatype, formerly 3.30
redefined to match new usage (no longer syntactic). [Ed.]

4.33, parametric value, formerly 3.31
redefined to match new usage (no longer syntactic). [Ed.]

5.1 Formal Syntax, former 4.1.
All references to "marks" corrected to align with ISO/IEC 10646-1. [SWE 2]
Table 5-1 changed to describe Metanotation. [SC2]

6.1 Datatype
Definition copied from revised 3.11.
Additional text and notes on characterizing operations added. [UK 1]

6.8.5 Access Method
Relationship of indexing to ordering clarified. [US 1]

7. Elements of the language

Reference to LIPC corrected [Ed.].

7.1 IDN Character-Set
Subclause renamed to clarify relationship to clause 4.1. [SWE 2]
References to ISO/IEC 10646-1 corrected. [SWE 3]
Table of IDN characters moved from clause 4. [SWE 2]
Angle brackets changed back to square brackets. [RPC 2.3]

7.3 Lexical objects
Definition corrected. [RPC 2.2]

7.3.4 Keywords
Subclause made from last paragraph of 7.3.1 and extended to define reserved words. [RPC 2.2]

7.4 Annotations
Delimiters changed to square brackets. [RPC 2.3]

7.5 Values
(formal-)parametric-value made an alternative of value-expression (not independent-value). [RPC 2.14]

7.5.1 Independent Values
"Qualified-value" deleted, and all references to it. [RPC 2.18]
Syntax rules and corresponding text for explicit-value corrected and simplified. [RPC 2.14]
Notes 1 and 2 revised to remove "qualified value". [RPC 2.18]

8.1.2 State
Reference to qualified-value removed. [RPC 2.18]
Note added. [RPC 2.18]
Example (Switch) added. [US 8]

8.1.3 Enumerated
Reference to characterizing operations in the definition struck. [WG]
Reference to qualified-value removed. [RPC 2.18]
Note added. [RPC 2.18]

8.1.4 Character
Example reworded to coincide with SC2 usage. [UK 2]
Reference to ISO/IEC 10646-1 corrected. [SWE 3]
Reference to Latin alphabet No. 1 corrected. [SWE 4]
Handling of multiple repertoires reworded. [US 3]
Character-name syntax modified to require the space separator. [SC2]
Note 5 added. [SC2]
Object-identifier in example corrected. [Ed.]

8.1.6 Date and Time.
Value-syntax requirements modified to coincide with ISO 8601:1988. [SWE 5]

former 8.1.7 Bit
Moved to 10.1.2 and defined as modulo(2). [US 5]

8.1.7 Integer, former 8.1.8
Promote (b: bit) removed from characterizing operations. [US 5]

8.1.9 Scaled, former 8.1.)

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Examples numbered. [Ed.]
Example 1 elaborated to contain a proper definition of Currency. [US 11]

8.2.1 Range
Colon between base and range keyword removed. [RPC 2.19]

8.2.2 Selecting
Colon between base and selecting keyword removed. [RPC 2.19]

8.2.3 Excluding
Colon between base and excluding keyword removed. [RPC 2.19]

8.2.4 Extended
Colon between base and plus keyword removed. [RPC 2.19]
Notes numbered. [Ed.]
Note 2 added. [RPC 2.18]

8.2.5 Size
Colon between base and size keyword removed. [RPC 2.19]

8.2.6 Subtype
Colon between base and subtype keyword removed. [RPC 2.19]

8.3.1 Choice.
Syntax changes to align with RPC. [RPC 2.9]
Requirement for alternative values to cover the tag type removed, corresponding changes to definition of the value space. [RPC 2.10]
IsType replaced by Discriminant, related changes to Cast and Equal. [US 6]
Former Note 2 deleted by the inclusion of discriminant in the syntax. [RPC 2.9]
New Note 2 added. [RPC 2.10]
Notes 4 and 5 added. [US 6]
Example (Optional) added. [NZ 1]

8.3.2 Pointer.
Note 6 added. [US 7]

8.3.3 Procedure.
Argument names made optional (again), because the syntactic ambiguity has been removed. [RPC 2.19]
"argument" changed to "parameter" in all cases. [WG]

8.4.1 Record
Property list split. [Resolution of US 1]

8.4.2 Set
Properties corrected to exact. [Resolution of US 1]
Property list split. [Resolution of US 1]

8.4.3 Bag
Properties corrected to exact. [Resolution of US 1]
Property list split. [Resolution of US 1]

8.4.4 Sequence.
Property list split. [Resolution of US 1]

8.4.5 Array.
Property list split. [Resolution of US 1]
Note 4 added. [Resolution of US 1]

8.4.6 Table
Redescribed to support the SQL notion of table. [US 2], liaison statement from SC21/WG3 (Databases) (SC21/WG3 N1452). Property list split. [Resolution of US 1]
Notes added to explain the relationship to SQL. [US 2]

8.5 Defined datatypes
"actual-parameter" changed to "actual-type-parameter". (see global change 2).

9.1 Type declarations
"formal-parameter" changed to "formal-type-parameter". (see global change 2).

10.1 Defined Datatypes
Option (3) - qualified-value - for defined-datatypes removed. [RPC 2.18]
Option (2) revised to cover all other cases. [Ed.]
Option (2) corrected to match value syntax changes. [RPC 2.14]

former 10.1.1 Switch deleted. [US 8]

10.1.1 NaturalNumber is former 10.1.2 Cardinal renamed. [US 9]

10.1.2 Modulo, former 10.1.5.
Moved to define modulo before Bit. [US 5]

10.1.3 Bit
Moved from 8.1.7, with changes to declaration syntax. [US 5]

10.1.5 Character String, former 10.1.4
Changed to unordered. [CAN 1]
Note 3 added. [US 10]

former 10.1.6 Currency deleted. [US 11]

10.1.6 TimeInterval is former 10.1.7 Interval renamed. [US 12]

10.1.7 Octet

10.1.8 Octetstring. New.
Added to convey encodings which are not bit-strings, such as characters. [SC2]

10.1.9 Private.
Parameter "size" changed to "length"; "size" is reserved. [Ed.]

10.1.10 Object-Identifier.
Value syntax extended to incorporate repertoire-identifiers. [RPC 2.6]

former 10.1.11 Distinguished Name deleted. [US 13]

11.4 Support of Datatypes.
former Clause 11, Support of Datatypes, moved into former Clause 12 Mappings, becoming 11.4. [WG]
Definition of support clarified. [Resolution of US 1]
Note added. [Resolution of US 1]

Annex A.
Text completely replaced. [SC2]
Note on limitations of character-set standards added. [CAN 1]

Annex D.

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Text updated. [Ed.]

former E.1.7 bit moved to E.4.1 to correspond to changes to
clause 8. [US 5]

E.4.1 Bit. former E.1.7. [US 5]

E.2.9 Table.
  restructured to match 8.4.6. [US 2]

former E.4.6 Distinguished-Name deleted. [US 13]

Annex F.
  Text completely reorganized. [Paris resolution, unimplemented in
CD.]
  Minor editorial changes, to replace "CLID" with "LI
Datatypes" and the like, are marked but not noted here.

Issue 3, former issue 21.
  Revised to use "annotation" terminology. [RPC]

Issue 10, former issue 1.
  Extended to reflect the Paris decision on the common IDN. [RPC]

Issue 13, former issue 26.
  Wording revised to reflect SC2 comments. [SC2]

Issue 17, former issue 10.
  Wording revised to reflect new type and value names and
resolution of [NZ 1].

Issue 18, former issue 11.
  Wording revised to reflect resolution of [NZ 1].

Issue 19,; former issue 16.
  Set issue separated. [Ed.]

Issue 23, former issue 23.
  Revised to fix syntax and align with RPC discussions. [Ed.]

Issue 26, former issue 16.
  Selecting issue separated. [Ed.]

Issue 27, new.
  Created from former issue 16 to explain the related decision
for Bag. [Ed.]

Issue 32, former issue 8.
  Revised to match changes to Bit, Switch, etc. [US 5] [US 8]

Issue 34, former issue 26.
  Revised to separate Character from Character-String. [Ed.]

Issue 38, new.
  Resolution of [US 1].