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(Common) Language-Independent Datatypes
Disposition of Ballot Comments on (1st) CD 11404

The following is the disposition of the national body comments on the ballot for progression of (1st) CD11404 to DIS (SC22 N970). The comments are contained in SC22 N1069.

N1069, comments from Canada:

The Working Group interpreted the comment from Canada as having two major technical points and significant supporting material. The two major points were:

1. Character type is intrinsically unordered.
   Response: Accepted in principle. The text has been modified to specify Character type as unordered and to indicate that ordering is an application-defined extension to the type semantics.

2. Add a datatype called Structured-Alphabetic (with description, characterizing operations, etc.)
   Response: Not accepted. The Working Group noted that this is a proposal for an entirely new datatype with which no language or applications group has experience, except apparently for some experimentation in Canada. The Working Group also notes that the proposal appears to deal primarily with the semantics and representation of character sets, which is outside the scope of CD 11404. We suggest that this proposal be submitted first to SC2 (Character Sets) or to SC22/WG20 (Internationalization) for acceptance, development and/or refinement. If the result of work on this proposal by international standardization activities relating to character sets is the identification of one or more useful datatypes, then it becomes appropriate for those datatypes to be included in the next revision of the Language-Independent Datatypes.

N1069, comment from Germany requires that all outstanding issues be resolved.

Response: Agreed. Resolution of all identified issues is complete in the second committee draft. Two interim drafts were produced in committee in order to complete this resolution and alignment with ISO CD 11578 (Remote Procedure Call) before circulation of the second CD.

N1069, comment from Japan requires that all outstanding issues

be resolved. See response to the similar comment from Germany.

N1069, comment from New Zealand:

1. Determine relationship to LI Procedure Calling (JTC1.22.16) before further progression.

Response: Agreed. Working Group 11 has released a working draft of LI Procedure Calling to CD registration ballot simultaneously with the 2nd CD 11404. Therefore, the study of the interactions between these documents is nearly complete, and this work has been carefully aligned with that on CD 11578 (Remote Procedure Calling) to ensure that interactions therewith have also been considered.

It is agreed that the Language-Independent Datatypes syntax will be compatible with that of the LIPC and RPC Interface Definition Notation, and that both LIPC and RPC will reference (DIS) 11404 for the definition of datatypes and language mappings. It is also agreed that LI Datatypes will defer to LI Procedure Calling the complete semantics of the characterizing operations on the Procedure datatype.

Certain datatypes needed for either LIPC or RPC have been incorporated in the second committee draft of LI Datatypes. It is agreed any further datatypes required will be added before the document progresses to JTC1 ballot. At this time, however, no such additional datatypes are foreseen.

2. Add an annex specifying the relationship to POSIX (JTC1.22.21).

Response: Not accepted. There has been for several years close liaison between the LI Datatypes development in WG11 and the Language-Independent Specification activity in WG15, and the POSIX LIS relationship to LI Datatypes is traceable. It is the opinion of WG11, however, that the informative annex relating these standards should not be a part of the LI Datatypes standard. Rather such an annex is specific to the POSIX application of the LI Datatypes, and it may be appropriate in the POSIX LIS draft, but that is in the purview of WG15.

N1069, comment from the United Kingdom requires that all outstanding issues be resolved. See response to the similar comment from Germany.

N1069, comment from the United States:

(All of these resolutions were accepted by the United States. The numbers below refer to the Item numbers in the U.S. comment)

1. Make CLID a Reference Model. Not accepted.
   Subdivided into 4 groups of proposed changes:
   (1) Change Scope to call it a reference model. Rejected. Direct compliance and indirect compliance are meaningful and make formal requirements.
   (2) Move definitive paragraphs to Clause 6. Accepted.
   (3) through (6) Change the conformance rules. Accepted.
   (7) Delete Annex A and all references to it. Accepted.

2. Relate Type of Compliance to type of conforming entity. Accepted.

3. Add Late-binding concept. Accepted with editorial changes.

4. Redefine Null and delete Undefined. Accepted.

5. Redefine Choice per agreement in Arles. Accepted, with additions and corrections.

6. Define Pointer model. Accepted in principle. The "variable" notion is removed, but the text of the change was significantly reworked, per compromise with the U.K. position.

7. Criteria for CLI datatypes. Accepted in principle. The proposed text is explanatory and therefore a Note. The proposed Note was deleted.

8. Support of Datatypes. accepted.

9. Syntax fix for trailing subtypes and attributes. accepted.

10. Relative error. accepted.

11. Private. accepted.

12. Syntax for unspecified bounds. Proposed change not accepted. Problem resolved by [US 3].

13. Value notation for declared datatypes. Accepted.

14. Move Annex B and C into the main text.
    1. accepted.
    2. accepted.
    3. accepted.
    4. Modulo and Integer-modulo kept but redescribed.

15. Delete Annex D. Accepted in principle. The current text of Annexes B and C represents what consensus could be obtained. Annex B has been reduced to a list of representational concerns which are agreed to lie outside the scope of the standard. [France would prefer to retain some annotation syntax for these; the U.K. doesn't care as long as it is not normative; the U.S. and the Netherlands are concerned that the Annex has not got enough attention to determine whether it is complete, correct or appropriate in any detail.]

16. ISO 2375. accepted.

17. Pointer to procedure. Determined to be an issue appropriately addressed in LIPC and RPC. There is nothing unusual about the conceptual datatype; the problem lies in the implementation of the notion "procedure-value".

18. Distinguished-name. accepted in principle; distinguished-name was added to the Defined-Datatypes with the operations specified.

19. Object-identifier. accepted in principle; object-identifier was left as a Defined-Datatype, but redeclared and value syntax added.

20. Revise procedure-type syntax. Resolved, but not accepted. The principal result type was added as requested, but syntax directly supporting the mathematical model would greatly complicate mappings to/from ISO programming languages. Resolved by using the mathematical model in defining the datatype semantics and explaining its relationship to the syntactic constructs.

Actions taken to complete resolution of previous comments from France on the registration ballot (SC22 N906):

14. Some examples of compliance have been added to the Notes in Clauses 5.1 and 5.2, but it is not clear that this meets the intention of the French comment.

59. An informative Annex, providing a draft mapping to Pascal has been added.

Document JTC1/SC22/WG11 N271, a formal comment from AFNOR, not appearing as the official ballot comment from France:

1. Abstraction. Agreed in principle. An effort was made to remove all unnecessary formal mathematics.

Ex 1. Real. Resolved by significant changes in the model and value notations.

Ex 2. Set. Accepted.

Ex 3. Bag. Resolved by complete change in the model.

2. Remove characterizing operations. Rejected. The document says that the characterizing operations chosen are "usual" operations (Note 4 of the comment) that facilitate the recognition of the type and the distinction of its values. The total removal of characterizing operations would make it difficult to distinguish any two types with value spaces of the same cardinality, such as Boolean and Character from subranges of Integer. What properties would the mapping be required to maintain?

Re: Note 2. The problem is that if two truly distinct internal datatypes of a programming language are mapped onto a single CLI datatype, they will never be distinguishable in language-independent interface specifications. This is not a problem, so long as any reasonable representation of the one datatype will support all "characterizing" operations on the other, but that latter requirement is the reason for characterizing operations.

Re: Note 3. Numeric has been redefined to reveal its true purpose, support of representation in different radices.

The question of whether Ordinal should be a subtype of Integer was deemed unimportant. A proposal to move it to Clause 9 may well be accepted, but was not made.

3. Equal. Accepted in principle for primitive types, and the requested statement is made in 6.3.1. But 6.3.1 cannot be deleted without deleting the constructive definitions of Equal for generated datatypes, and for generated datatypes the requested statement is neither clear nor obviously true.

4. Accepted. Note added to 6.7.1.

5. Accepted. This comment on the registration ballot was accepted and the editor apologizes for the failure of the change to appear in the balloted CD.

6. Accepted. Clause 7.3.7 revised.

7. Accepted. Datatype Undefined removed to resolve [US 4].

8.1 Could not determine what should be changed.
8.2 Atomicity. accepted. Addition of 6.4.
8.3 Corrected.
8.4 Changed. Does this correct the problem?
8.5 Corrected.
8.6 Yes.
8.7 Corrected.
8.8 7.1.12 rephrased to remove the term.
8.9 Selecting -discrete. accepted, changed to Exact.
8.10 Excluding -discrete. accepted, changed to Exact.
8.11 Corrected.
8.12 Corrected as part of the revision of Choice. [US 5]
8.13 Corrected.