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ITU-T Implementer's guide

TELECOMMUNICATION STANDARDIZATION SECTOR OF ITU

(September 2016)

SERIES Z: LANGUAGES AND GENERAL SOFTWARE ASPECTS FOR TELECOMMUNICATION SYSTEMS

Formal description techniques (FDT) – Specification and Description Language (SDL)

Specification and Description Language implementer's guide – Version 3.0.1

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Summary

The purpose of this implementer's guide is to compile reported defects with resolutions and other agreed changes for the ITU-T Specification and Description Language related ITU-T Recommendations (Z.100, Z.101, Z.102, Z.103, Z.104, Z.105, Z.106, Z.107, Z.109, Z.111 and Z.119) prior to these changes being published in approved Recommendations.

This implementer's guide includes all changes agreed by Q12/17 to the texts of the relevant Recommendations consented or in-force at the date the guide is approved by SG17 and applies until either the implementer's guide is updated to following version or all the changes are incorporated into the relevant Recommendations and the implementer's guide is updated to version 3.0.2. It is assumed that consented Recommendations will subsequently be approved.

Source

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Keywords

change requests, Closed item list, error reports, Implementer's guide, Master list of changes, Open item list, SDL-2010, Specification and Description Language.

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Specification and Description Language implementer's guide – Version 3.0.1

1 Introduction

This Guide is a compilation of reported defects and maintenance issues with their resolutions for the Specification and Description Language ITU-T Recommendations:

- Z.100, Z.101, Z.102, Z.103, Z.104, Z.105, Z.106, Z.107, Z.109, Z.111 and Z.119.

The Recommendations ITU-T Z.111 and Z.119 are included in the above list because they are essential normative references. Agreed changes to these documents that have not yet been issued in approved Recommendations are therefore listed here.

This Guide is intended to be an additional authoritative source of information for implementers to be read in conjunction with the Recommendations themselves.

This Guide itself is not an ITU-T Recommendation. However, it records agreed corrections to reported defects.

This Guide is for the SDL-2010 version of the language. The earlier Guide version 1.0.2 was for the SDL-2000 version of the language and therefore did not include Recs. ITU-T Z.101, Z.102 and Z.103, and included the previous Z.107 (withdrawn in 2008). The changes to SDL-2000 versions of the relevant superseded Recommendations can be found in Annex C of Z.Imp100 (04/15) Version 2.0.2 documents and is not repeated in this version.

1.1 Scope of the Guide

The Guide records the resolution of defects and maintenance in the following categories as described in Rec. ITU-T Z.100 Appendix II Guidelines for maintenance of the Specification and Description Language:

- errors
- open items
- deficiencies
- clarifications
- modifications
- decommitted features
- extensions

NOTE: This Guide addresses proposed changes (extensions, deletions, or modifications) to the Recommendations that are strictly related to maintenance of the Specification and Description Language as described in the Z.100 series. Proposals for new features should be made in the normal way through contributions to ITU-T Study Group 17, but if agreed may result in maintenance changes (extensions, deletions, or modifications).

1.2 Approval of the Guide

This Guide is approved by ITU-T Study Group 17.

1.3 Distribution of the Guide

This Guide is available on-line at no charge from the ITU-T at (http://www.itu.int/rec/T-REC-Z.Imp100/en).

1.4 Contact

Any comments should be addressed to the ITU/TSB Secretariat for Study Group 17:

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2 Error reporting procedure

2.1 Submission of error reports and change requests

Any implementer of the Specification and Description Language defined in the ITU-T Z.100, Z.101, Z.102, Z.103, Z.104, Z.105, Z.106, Z.107 and Z.109 Recommendations is invited to submit a report using the form found in Appendix II of Z.100 and copied below in Annex A. The report should be submitted to the ITU-T Study Group 17 Secretariat (see clause 1.4). Each form should cover a single error ("error correction") or proposed change. Where the form reports an error, it is important that the form is completed accurately, especially the sections that relate to the base material against which the error report is being raised.

2.2 Resolution of errors

ITU-T Study Group 17 will address the submitted error. Following agreement on a resolution to the error, the proposed resolution will be approved using the appropriate procedures in ITU-T.

Please note that individual responses are not given specifically to those submitting reports, and that the procedure is not intended as a consulting service.

2.3 Documenting the Resolution of Defects and maintenance changes

The ITU-T Recommendations that have errors or agreed changes, are recorded in Annex B with defects and their resolutions including the changes, or with the reasons for maintenance and the changes.

Annex A
Change Request Form

Change Request Form

Please supply the following details.		
Type of change:	❑ error correction	❑ clarification (or question)
	❑ simplification	❑ extension
	❑ modification	❑ decommission

Short summary of change request		
Short justification of the change request		
Is this view shared in your organization?	❑ yes	❑ no
Have you consulted other users?	❑ yes	❑ no
How many users do you represent?	⑧ 1-5 ⑧ 11-100	⑧ 6-10 ⑧ over 100
Your name and address		

Please attach further sheets with details if necessary.

SDL (ITU-T Z.100) Rapporteur, c/o ITU-T, Place des Nations, CH-1211 Geneva 20, Switzerland.
Fax: +41 22 730 5853, e-mail: SDL.rapporteur@itu.int.

Annex B

Master List of Changes

This is the master list of changes for the ITU-T Z.100 (SDL) series Recommendations for approved by the Working Party 5 of Study Group 17 in 2013 according the rules for maintenance in Rec. ITU-T Z.100 itself.

History: The previous version of this list was published in version 2.0.2 of this document, which replaced versions 2.0.0, 1.0.2, 1.0.1 and 1.0 of this document and the earlier document COM 17-TD 3250 [2001-2004] one of the documents of July 2004 WP C/17 meeting. COM 17-TD 3250 [2001-2004] records the history up to that point, and there seems to be no benefit repeating that historical information in this document.

In accordance with Appendix II to Recommendation ITU-T Z.100, the information in this document is distributed to users by various means including sdlnews@sdl-forum.org.

B.1 Objectives and scope

The purpose of this document is to record agreed changes to SDL Recommendations (ITU-T Z.100 to Z.109) and issues that require study and are therefore "open", or have been studied and a decision has been made that the issue is "closed": that is no further study should be undertaken.

The agreed changes come in two categories:

a) Correction of *errors* and *clarifications* (see definitions below and in Rec. ITU-T Z.100, Appendix II);

b) *Extensions* and *modifications* (see definitions below and in Rec. ITU-T Z.100, Appendix II).

The rules for maintenance in an Appendix to Rec. ITU-T Z.100, state that *errors* and *clarifications* published in the Master list of changes "come into effect immediately". Such changes should be published in a Corrigendum, Addendum or revision of the Recommendation as soon as is practical.

Modification and *extensions* imply some change to SDL. The rule in this case is "Unless there are special circumstances requiring such changes to be implemented as soon as possible, such changes will not be recommended until Rec. ITU-T Z.100 is revised."

B.2 Terminology

An *error* is an inconsistency in one or more Recommendations ITU-T Z.100 to Z.109.

A *textual correction* is a change in the text or diagrams of Recommendations that corrects clerical or typographical errors.

An *open item* is an issue identified but not resolved.

A *deficiency* is an issue identified where the semantics of SDL are not clearly defined in the Recommendations.

A *clarification* is a change to the text (or diagrams) in a Recommendation that does not (intentionally) change the meaning of SDL, but is intended to make the Recommendations less ambiguous or easier to understand.

A *modification* changes the semantics of SDL.

An *extension* is a new feature that does not change the semantics of SDL defined in the approved Recommendations for SDL.

B.3 Maintenance of Z.100 to Z.109

A Rec. ITU-T Z.100 Appendix documents the procedure to be followed for the maintenance of Recommendations ITU-T Z.100, Z.101, Z.102, Z.103, Z.104, Z.105, Z.106, Z.107 and Z.109. This procedure requires error corrections, proposed modifications and extensions to be widely publicized and a Master list of changes to be maintained. Clarifications or corrections for errors and deficiencies in the list of changes come into effect "immediately" (that is as soon as the Working Party or Study Group approves the list). Other changes take effect only when the relevant Recommendation is updated.

B.4 Z.100 changes

B.4.1 *Textual correction* – Heading 7.2, Language

The language of Heading 7.2 is corrected to "English UK" instead of "French".

B.5 Z.101 changes

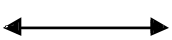
B.5.1 *Textual correction* – Language

Change all parts of the main body (from page 1) text marked as "French" or "Swiss French" or "English (US)" or "Spanish" or "German (Switzerland)" to "English (UK)".

B.5.2 *Textual correction* – Non-breaking hyphens in abstract syntax names

Abstract syntax rule names are always in italic, start with an uppercase letter followed by lowercase letters and hyphens and ending in a lowercase letter. To make it easy to find the abstract syntax rule names in the MSWord macros used to maintain SDL-2010, these should not be non-breaking hyphens. Change any non-breaking hyphen in abstract syntax names to normal (line breaking) hyphens. If this causes the line to break on a hyphen in an abstract syntax name, a line break (^l) is inserted immediately before the abstract syntax name.

B.5.3 *Textual correction* – 8.1.4 Gate, *Concrete grammar*, <gate symbol 2>

Change the symbol  to the symbol . The horizontal line was missing between the arrows.

B.5.4 *Textual correction* – 10.1 Channel, *Semantics*, fifth paragraph

The hyphens in "First-In-First-Out" should be consistent (all normal or all non breaking). Change to normal (line break) hyphens (a line break should be inserted before if needed).

NOTE "First-In-First-Out" is not an abstract syntax name.

B.5.5 *Textual correction* – 12.1.3 Operation signature, *Abstract grammar*, first paragraph after abstract syntax

Change "Procedure-*identifier*" to all italics: "*Procedure-identifier*".

B.5.6 *Textual correction* – 12.1.6.1 Literals constructor, *Semantics*, sixth paragraph

The hyphens in "less-or-equal-than" should be consistent (all normal or all non breaking). Change to normal (line break) hyphens (a line break is inserted before).

B.5.7 *Textual correction* – 12.1.6.3 Choice data types, *Semantics*, ninth paragraph (ignoring NOTE paragraphs)

Change the hyphens in "*field-present-name*" to normal hyphens and insert a line break before "*field-present-name*".

B.5.8 *Textual correction* – 12.3.1 Variable definition, *Abstract grammar*, NOTE 1

Change "Aggregation-kind" to italic: "*Aggregation-kind*" (twice in NOTE).

B.5.9 *Textual correction* – 12.3.3.1 Extended variable *Model*

Change the format of the line

<variable> **(** <actual parameter list> **)** <is assigned sign>

to "z.100 text" (rather than "z.100 syntax").

Change the format of the text

<variable> <left square bracket> <actual parameter list> <right square bracket> <is assigned sign> <expression>

to "z.100 text" (rather than "z.100 syntax").

B.5.10 *Textual correction* – 12.3.4.2 Pid expression, *Concrete grammar*, <pid expression>

Insert a ">" after "<offspring expression" in the syntax rule <pid expression>.

B.5.11 *Textual correction* – 12.3.4.2 Pid expression, *Concrete grammar*, <pid expression>

Insert a ">" after "<offspring expression" in the syntax rule <pid expression>.

B.6 Z.102 changes

B.6.1 *Textual correction* – Language

Change all parts of the main body (from page 1) text marked as "French" or "Swiss French" or "English (US)" or "Spanish" or "German (Switzerland)" to "English (UK)".

B.6.2 *Error correction* – 8.3.2 Agent context parameter, *Concrete grammar*, <agent signature>

<aggregation kind> was missing in <agent signature>.

Change the syntax for <agent signature> to include <aggregation kind> before <sort> (twice), so that the revised syntax is:

<agent signature> ::=
<sort list>
| [<end>] **fpar** <aggregation kind> <sort> {, <aggregation kind> <sort> }

B.6.3 *Textual correction* – 11.12.2.4 Return, *Concrete grammar*

Remove the MSWord comment on the last line of the syntax for <return area>.

B.6.4 *Textual correction* – 11.14 Statement lists, *Concrete grammar*

Remove the MSWord comment on <return body> in the syntax for <return statement>.

B.7 Z.103 changes

B.7.1 *Textual correction* – Language

Change all parts of the main body (from page 1) text marked as "French" or "Swiss French" or "English (US)" or "German (Switzerland)" to "English (UK)".

B.7.2 *Textual correction* – 11.11.2 State aggregation, *Model*

Remove the comment "Unlabelled entry/exit -> Z.102".

B.8 Z.104 changes

B.8.1 *Textual correction* – Non-breaking hyphens in abstract syntax names

Abstract syntax rule names are always in italic, start with an uppercase letter followed by lowercase letters and hyphens and ending in a lowercase letter. To make it easy to find the abstract syntax rule names in the MSWord macros used to maintain SDL-2010, these should not be non-breaking hyphens. Change any non-breaking hyphen in abstract syntax names to normal (line breaking) hyphens. If this causes the line to break on a hyphen in an abstract syntax name, a line break (^l) is inserted immediately before the abstract syntax name.

B.8.2 *Textual correction* – 11.13.4 Output, *Abstract grammar*

The items *Expression* and *Encoded-expression* need to be distinguishable in the abstract grammar. Therefore change:

Encoded-expression = *Expression*

to

Encoded-expression :: *Expression*

B.8.3 *Clarification* – 12.1 Data definitions, *Model*

Change

"or syntype definition in the context of which" in the 1st paragraph

to

"(or syntype definition) in the context where".

B.8.4 *Textual correction* – 12.1 Data definitions, *Model*

Change "is is" in the 2nd paragraph to "is".

B.8.5 *Textual correction* – 14.7.1 Definition for Real Sort

Change the font from red to Auto for: (" **or** ('e' **or** 'E') (" **or** '+' **or** '-') ('0':'9')* ('0':'9')).

B.8.6 Annex C – MSWord comment on title

Delete the comment on the title "Replaced by Annex C of Z.104 (2011) Amendment 1 (10/12) - NOT change marked.".

B.9 Z.105 changes

B.9.1 *Textual correction* – Language

Change all parts of text marked as "English (US)" to "English (UK)".

B.9.2 *Textual correction* – 10 Definitions in package Predefined for SDL-2010, first line

Change the "and" after "`Predefined`" from the character style "z100code" to the default paragraph font (that is: apply the Normal style).

B.10 Z.106 changes

B.10.1 *Textual correction* – Language

Change all parts of the main body (from page 1) text marked as "French" or "Swiss French" or "English (US)" or "Spanish" or "German (Switzerland)" to "English (UK)".

B.10.2 *Textual correction* – Introduction, page v

Insert a full stop and a paragraph mark at the end of the text in the second paragraph after "information".

B.10.3 *Textual correction* – 5.7.11.2.4 Return

Remove the comment on <return body>:

"Z.101 changed so that <expression> in <return body> is optional (see <return area> in Z.101)."

B.11 Z.107 changes

B.11.1 *Textual correction* – Language

Change all parts of the main body (from page 1) text marked as "French" or "Swiss French" to "English (UK)".

B.12 Z.109 changes

None.

B.13 Z.111 changes

None.

B.14 Z.119 changes

None.

B.15 List of Open Items

The following is a list of issues classified as open items according to the rules for maintenance for SDL. It was agreed in September 2015 that each item on the list at that time should be progressed and removed from this list once the item has been included in the revised SDL-2010.

B.16 List of Closed items (see B.1 for meaning of a "closed" item)

To facilitate the tracking of items each item uses the identifier of the form (month/year).<number> given when the item was first put onto the open item list. For example "(04/97).3". If the items were never on the open item list, the numbers are consecutive to the open items for the meeting at which the closed item is identified.

B.16.1 allow algorithmic operators with external data

This was listed as an item in COM-10-1 in 1997 but the requirement is not clear.

B.16.2 more flexible USE syntax

Originally listed as item (04/97).25 of Q.6/10 (SDL) Meeting, 29 April – 05 May 1997.

The proposal was to `use p1, p2, p3;` instead of `use p1; use p2; use p3;` to use packages `p1`, `p2` and `p3`. A <package use clause> has an optional <definition selection list> after the package name and <definition selection list> is a comma separated list of names, so that allowing list of comma separated package names would lead to syntactic ambiguity. Therefore the proposed change has no benefit.

B.16.3 operators returning sets of values (multivalued operators)

This issue was originally listed as item (10/96).13 of COM-10-1 1997.

This is adequately be handled by **`struct`**.

B.16.4 signal priority

Originally listed as item (04/97).18 in the Q.6/10 (SDL) Meeting, 29 April – 05 May 1997 report.

The concept is to give signals a (possibly dynamic) priority. The selection signals for consumption is already relatively complex and a fundamental part of SDL-2010.

In SDL-2010 it is possible to state the availability time for signals determined by the sending agent. Signals are not available to be consumed from the input port of the recipient until the specified time has been reached. Two or more signals that become available at the same time are ordered according to a priority specified by the senders.

In SDL-2010 which available signal instance is selected for consumption depends on the current state, the priority of the input for the signal in that state and the order of the signals in the input port.

B.16.5 **`virtual`** as default

Originally listed as item (04/97).31 in the Q.6/10 (SDL) Meeting, 29 April – 05 May 1997 report.

In SDL-2010 (and SDL-2000 and SDL-92) a type in which <virtuality> is omitted treated as **`finalized`**. This had been extensively discussed (and **`virtual`** as default rejected) when SDL-92 was formulated, and has implications on the use of constraints.

B.16.6 remote process creation

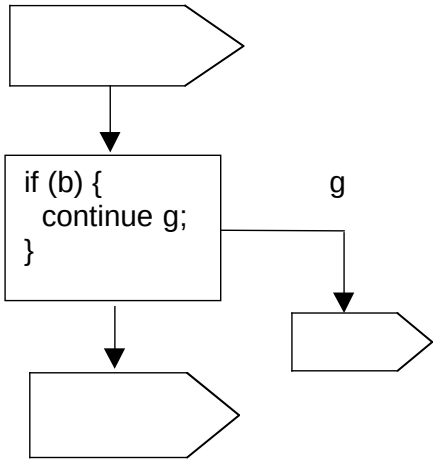
Originally listed as item (04/97).31 in the Q.6/10 meeting 21-25 September 1998 report.

The need is satisfied by remote procedure in the state machine of an agent, and it was decided an additional construct made the language too complex.

B.16.7 exit connection points for tasks

Listed as an issue (06/00).1 in the Report of Q.6/10 meeting Oslo 8-9 June 2000, 6.6.

The issue is whether to allow a statement in a textual algorithm in a task symbol to transfer control to an additional exit point from the task symbol. The following diagram gives an outline example where g is an exit connection point.



This issue is considered closed. There should only be one exit point from a task symbol.

B.16.8 Issues that are closed because no proposals were received over several years

These items had been listed as additional open items in Z.Imp100 for a considerable time, but no proposals were received. It was decided in September 2015 to close these items.

- Data type library extensions (predefined object types, Standard Template Library analogue)
- Memory management issues
- Instance sets vs. container types and navigation into composite agents
- Broadcast mechanisms
- Interrupts

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