

# PD L1V2.0 CHANGELOG

## Major modifications (in red)

New glyphs:

- Equivalence operator
- Annotation
- Submap terminal (were implicit)
- Empty set (replace Source and Sink)
- Subunits (were implicit)

Changes in glyphs:

- State variable: ellipse to stadium
- Simple chemical: circle to stadium

Changes in semantics:

- Process identity is now set to “instance”

## Edited sections (in blue)

Changes in the structure of the specification:

- Arcs section was broken into three new sections: Flux arcs, Modulation arcs, Logic arc
- Referring to other nodes and arcs section was moved towards the end of chapter 2
- Encapsulation section was moved towards the end of chapter 2

Changes in the style of the specification:

- Container, label and auxiliary units entries have been homogenized throughout the specification
- Figures have been redrawn with SBGN-ED, and homogenized throughout the specification
- Connectivity has been added for all nodes under the form of Incoming arcs and Outgoing arcs entries

## Modifications section by section

### 1 Introduction

- 1.1 SBGN levels and versions
- 1.2 Developments, discussions, and notifications of updates
- 1.3 Note on typographical convention

## 2 Process Description Glyphs

- For all glyphs:
  - homogenized the text (container, label and auxiliary units entries)
  - redrew all figures with SBGN-ED
- For all nodes:
  - added Incoming arcs and Outgoing arcs entries
- Added new subsection Annotating nodes and arcs

### 2.1 Overview

### 2.2 Controlled vocabularies used in SBGN Process Description Level 1

- 2.2.1 Entity pool node material types
- 2.2.2 Entity pool node conceptual types
- 2.2.3 Macromolecule covalent modifications
- 2.2.4 Physical characteristics
- 2.2.5 Cardinality

### 2.3 Auxiliary Units

- Added two new subsections: Subunits and Submap terminal

#### 2.3.1 Glyph: Unit of information

#### 2.3.2 Glyph: State variable

- Rewrote the standfirst
- Rewrote the label entry

#### 2.3.3 Glyph: Clone marker

### 2.4 Entity pool nodes

#### 2.4.1 Glyph: Unspecified entity

#### 2.4.2 Glyph: Simple chemical

#### 2.4.3 Glyph: Macromolecule

#### 2.4.4 Glyph: Nucleic acid feature

#### 2.4.5 Glyph: Multimer

- Added text to the standfirst
- Added Table 2.8 showing the different glyphs

#### 2.4.6 Glyph: Complex

#### 2.4.7 Glyph: Source and Sink

- Replaced by Empty set

#### 2.4.8 Glyph: Perturbing agent

#### 2.4.9 Examples of complex EPNs

### 2.5 Referring to other Nodes

- Moved this section towards the end of the document

#### 2.5.1 Glyph: Tag

- Rewrote standfirst

### 2.6 Defined sets of entity Pool nodes

#### 2.6.1 Glyph: Compartment

### 2.7 Encapsulation

- Moved this section towards the end of the document

#### 2.7.1 Glyph: Submap

- Rewrote standfirst
- Rewrote text explaining the examples

- Rewrote caption of figures

## 2.8 Process nodes

- For all glyphs:
  - Removed Origin and Target entries
- 2.8.1 Glyph: Process
- 2.8.2 Glyph: Omitted process
- 2.8.3 Glyph: Uncertain process
- 2.8.4 Glyph: Association
- 2.8.5 Glyph: Dissociation
- 2.8.6 Glyph: Phenotype

## 2.9 Arcs

- Split this section into three new sections: Flux arcs, Modulation arcs, Logic arc
- 2.9.1 Glyph: Consumption
  - Moved to new section Flux arcs
- 2.9.2 Glyph: Production
  - Moved to new section Flux arcs
- 2.9.3 Glyph: Modulation
  - Moved to new section Modulation arcs
- 2.9.4 Glyph: Stimulation
  - Moved to new section Modulation arcs
- 2.9.5 Glyph: Catalysis
  - Moved to new section Modulation arcs
- 2.9.6 Glyph: Inhibition
  - Moved to new section Modulation arcs
- 2.9.7 Glyph: Necessary stimulation
  - Moved to new section Modulation arcs
- 2.9.8 Glyph: Logic arc
  - Moved to new section Logic arc
- 2.9.9 Glyph: Equivalence arc
  - Moved to section Encapsulation
  - Rewrote standfirst

## 2.10 Logical operators

- Added a standfirst
- Added new subsection Equivalence operator
- For all glyphs:
  - Removed Origin and Target entries
- 2.10.1 Glyph: And
  - Rewrote the definition
- 2.10.2 Glyph: Or
  - Rewrote the definition
- 2.10.3 Glyph: Not
  - Rewrote the definition

## 3 Process Description Language Grammar

### 3.1 Overview

### 3.2 Concepts

### 3.3 The conceptual model

- Figure 3.1:
  - Removed Sink and Source
  - Added Empty set
  - Added Equivalence operator
  - Added Submap terminal
- Table 3.1:
  - Removed Sink and Source
  - Added Empty set
  - Added Equivalence operator
  - Removed "Subunits" from Complex and Complex multimer entry
  - Changed Process entry to "instance"

### 3.4 Syntax

#### 3.4.1 Node connectivity

- Table:
  - Removed Sink and Source
  - Added Empty set
  - Added Equivalence operator
  - Added Submap terminal

#### 3.4.2 Containment definition

- Table:
  - Removed Sink and Source
  - Added Empty set
  - Added Equivalence operator
  - Added Submap terminal

### 3.5 Semantic rules

- Added new subsection Equivalence operator at the end

#### 3.5.1 EPNs

#### 3.5.2 Process Nodes

- Reversible processes subsection:
  - Removed rule 2 on sinks

#### 3.5.3 Cloning

- Table 2.3:
  - Removed Sink and Source
  - Added Empty set
  - Added Equivalence operator
  - Removed Additional rule in Process entry

#### 3.5.4 Compartment spanning

#### 3.5.5 Submaps

## 4 Layout Rules for a Process Description

- Redrew all figures with SBGN-ED

### 4.1 Introduction

### 4.2 Requirements

- 4.2.1 Node-node overlaps
- 4.2.2 Node-edge crossing
- 4.2.3 Node border-edge overlaps
- 4.2.4 Edge-edge overlaps
- 4.2.5 Node orientation
- 4.2.6 Node-edge connection
- 4.2.7 Node labels
- 4.2.8 Edge labels
- 4.2.9 Compartments
- 4.3 Recommendations
  - 4.3.1 Node-edge crossing
  - 4.3.2 Labels
  - 4.3.3 Avoid edge crossings
  - 4.3.4 Branching of association and disso-
- ciation
- 4.3.5 Units of information
- 4.4 Additional suggestions

## 5 Acknowledgments

- [Added subsection Level 1 Release 2.0](#)
- 5.1 Level 1 Release 1.0
- 5.2 Level 1 Release 1.1
- 5.3 Level 1 Release 1.2
- 5.4 Level 1 Release 1.3
- 5.5 Comprehensive list of acknowledgments
- [Updated the list](#)

## Appendices

- [Added a new Appendix "Examples of use of the equivalence operator"](#)

### A Complete examples of Process Description Maps

- [Redrew all images with SBGN-ED](#)

### B Reference card

- [Updated with new glyphs](#)

### D Issues postponed to future levels

### E Revision History

- To be updated