# D-Case Editor Functional Description

*For D-Case Editor Ver. 0.8.6*

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DEOSC

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## Overview

D-Case Editor is implemented as an Eclipse plug-in. This means D-Case Editor realizes the features of the diagram editing with Eclipse basic feature.

Many features can be used same as Eclipse's features. If you want to use D-Case Editor, you should know Eclipse's basic concept and workflow.

This document describes the features about D-Case Editor. If you need to know Eclipse's basic features, show other documents about Eclipse.

D-Case Editor uses Eclipse's file management features as the diagram files monument. And editor uses workspace, project, folders which are provided by Eclipse's features

# 1. Preferences

## 1.1. Preferences

Set some configurations in “Window” >“Preferences” >“D-Case Diagram”.

### Parameters

In the section, you can define parameters which can be used at D-Case diagram.

The parameters which can be defined are below.

*Table 1 type of parameters*

| type | attribute |
|---|---|
| string | min：minimum of string length<br>max：maximum of string length |
| raw | min：minimum of string length<br>max：maximum of string length |
| int | min：lower bound<br>max: upper bound |
| double | min：lower bound<br>max: upper bound<br>digit: the number of decimal places<br>inc: the unit of increment. |
| enum | items: the list of enumerated items |

The characters below can’t be used as parameter name.

, ; { } =

The terms below can’t be used as parameter name because of reserved words.

Id

Requirements

n

The characters below can’t be used as item name of enum.

, ; { }

Parameter definitions

Parameter definitions can be import / export as XML files.

Parameters already defined aren’t deleted when importing another xml file. If same parameter already defined, it is overwritten.

If parameter name in an xml file is reserved word, it is not imported.

### Bookmarks

In the section, you can register a URL and bookmark name which can be used in D-Case diagram.

### Converters

In the section, you can register XSL files and converter names.

# 2. Creating and Saving a Diagram

## 2.1. Creating a New Diagram

### Creating a New Diagram

To create a new D-Case diagram, follow the procedure below and generate a new diagram in the project folder.

**New Diagram Creation Flow**

*Table 2 New Diagram Creation Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select “New” > “Other...” from the File menu of eclipse | A new wizard is displayed. | Wizard is activated. |
| 2 | Select “D-Case Diagram” in the “D-Case Editor” category and click the “Next” button. | “D-Case Diagram” is selected. Page transition. | Enter the required information in the wizard.<br>Select to create a new “D-Case Diagram” from the menu. |
| 3 | Select the folder to store the new diagram. | The name of the selected folder is displayed in the text box of the parent folder. | Enter the required information in the wizard.<br>Select the folder to store the diagram from the wizard tree. |
| 4 | Enter the name of the GMF diagram information file of the diagram to be created and click the “Next” button. | Page transition. | Enter the required information in the wizard.<br>A D-Case diagram consists of a diagram file and a model information file. Enter the name of the diagram file first. |
| 5 | Enter the name of the GMF model information file of the diagram to be created and click the “Finish” button. | A new diagram is created and the editor window opens. | When the name of the GMF model information file is entered, a D-Case diagram (diagram, model) will be generated and displayed in the editor window. |

## 2.2. Opening a Diagram

Double click the D-Case GMF diagram information file that is displayed in the project explorer to open a diagram in the editing window. The diagram can then be edited.

## 2.3. Saving a Diagram

To save a file, select one of the following items in the “File” menu.

1. “Save” item
   The contents of the selected editing window will be saved in the model information file and the diagram information file.
2. “Save As...” item
   The contents of the selected editing window will be saved in the model information file and the diagram information file with a different name.
3. “Save All” item
   The contents of all editing windows will be saved in the corresponding model information files and the diagram information files.

## 2.4. Renaming a Diagram (Rename)

The name of the diagram file and the model information file will be changed at the same time to the specified name when a diagram is renamed.

The files of the diagrams that are being displayed cannot be renamed.

The diagram file and the model information file will have the same name after renaming (extensions are different).

**File Renaming Flow**

*Table 3 File Renaming Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select a diagram file in Package Explorer. | | |
| 2 | Select"D-Case">"File">"Rename..." from the menu bar. | Dialog for entering the file name is displayed. | |
| 3 | Enter a new file name. | | |
| 3.1 | Click the "OK" button. | File name dialog closes.<br>The name of the diagram file and the model information file is changed to the new file name. | |
| 3.2 | Click the "Cancel" button. | File name dialog closes. | |

## 2.5. Copying a Diagram (Copy To)

Diagram file and model information file will be copied at the same time when a diagram is copied.

The copied diagram file and model information file will have the same file name (with different extensions).

**File Copying Flow**

*Table 4 File Copying Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select a diagram file in Package Explorer. | | |
| 2 | Select"D-Case">"File">"Copy To..." from the menu bar. | Dialog for entering the file name is displayed. | |
| 3 | Enter a new file name. | | |
| 3.1 | Click the "OK" button. | File name dialog closes.<br>The copied diagram file and model information file will have the specified file name. | |
| 3.2 | Click the "Cancel" button. | File name dialog closes. | |

# 3. Editing Function

## 3.1. Editing a Diagram

### Selecting an Element from Palette

Nodes and links selected from Palette can be added to the canvas.

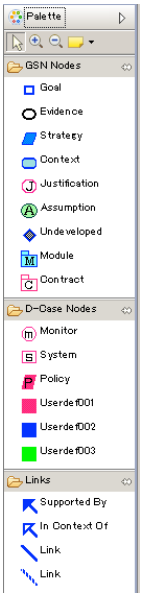


*Figure 1 Elements Menu in Palette*

The following elements are available in Palette.

*Table 5 Elements in Palette*

| category | element | note |
|---|---|---|
| GSN Nodes | Goal | |
| | Evidence | |
| | Strategy | |
| | Context | |
| | Justification | |
| | Assumption | |
| | Undeveloped | |
| | Module | It doesn't conform to GSN standard. |
| | Contract | It doesn't conform to GSN standard |
| D-Case Nodes | Monitor | |
| | System | |
| | Policy | |
| | Userdef001 | |
| | Userdef002 | |
| | Userdef003 | |
| Links | Supported By | Solid line with arrow. |
| | In Context Of | Solid line with arrow(outlined) |
| | Link | Solid line |
| | Link | Dotted line |

### Node Addition Flow

*Table 6 Node Addition Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Click a given node in Palette. | The clicked node becomes selected. | |
| 2 | Click a spot in canvas to place the node. | The node is added to the canvas at the specified position. | |
| | | | |

### Link Connection Flow

*Table 7 Link Connection Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Click a link in Palette. | The clicked link becomes selected. | |
| 2 | Click a node and drag and drop it to another node. | The first node is connected to the second node by a link. | |
| | | | |

## Selecting a Node in the Popup Menu

Popup menu opens when the mouse cursor is placed in the graphic-object editing area and is kept still for a moment. A node can be created by selecting the corresponding icon in the menu.


*Figure 2 Popup Menu*

## Creating a Link with “Arrow with Square”

A link can be created by dragging the square part of the link icon displayed outside the border of a node and connecting it to another node.


*Figure 3 Arrow with Square*

## Copying and Pasting an Element

Elements in a diagram can be copied and pasted.

To copy an element, select the element and click “Copy” in the “Edit” menu. The copied element can be pasted by clicking “Paste” in the “Edit” menu without selecting any element.

### Changing the Attributes

To edit the node attributes, click to select an item and perform either of the following.

1. Click to edit the characters that are displayed.
2. Change the attribute value displayed in “Properties View.”
3. Select the menu bar button and change the attributes.

When “Properties View” is not displayed, right click the graphic-object editing area and select ”Show Properties View” to display “Properties View.”

### Changing the Attribute in the Attribute Input Dialog

Attribute can be set in the attribute input dialog.

**Attribute Input Flow**

*Table 8 Attribute Input Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select a node in diagram. | | |
| 2 | Double click the node or click the “Enter” key. | Attribute input dialog is displayed. | |
| 3 | Enter the attribute. | | |
| 4.1 | Click the “OK” button. | Attribute input dialog is closed and the attribute is updated. | |
| 4.2 | Click the “Cancel” button. | Attribute input dialog is closed. | |

### Deleting a Node or a Link

To delete a node or a link, click to select the node/link and perform either of the following.

1. Press the “BS” key.
2. Press the “Delete” key.
3. Select “Delete” from the “Edit” menu.
4. Right click the item and select “Delete from Model” from the context menu.

※Argument can be deleted. But child elements are also deleted and the argument cannot be edited ever.

## 3.2. Editing a Diagram Using Templates

### Displaying the Template View

A template project must be prepared in advance in the work space same as the D-Case project.

- The structure of the template project is independent from the D-Case Editor plug-in and can be changed at a given timing. However, the template view must be closed and opened again for the latest changes to be reflected.

### Template View Display Flow

*Table 9 Template View Display Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Display the “Show View” dialog. | The “Show View” dialog is displayed. | Select”Window” > “Show View” > “Other” from the menu. |
| 2 | Select the template view. | ”Templates View” becomes selected. | Select “Templates” from the “D-Case Editor” category. |
| 3 | Click the “OK” button. | Template view is displayed. | |

## Creating a New Template Diagram

Create a project folder for storing the template before creating a new template D-Case diagram

**New Template Diagram Creation Flow**

*Table 10 New Template Diagram Creation Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select “New” > “Other…” from the “File” menu of eclipse. | A new wizard is displayed. | Wizard is activated. |
| 2 | Select “D-Case Diagram” in the “D-Case Editor” category and click the “Next” button. | “D-Case Diagram” is selected. Page transition. | Enter the required information in the wizard.<br>Select to create a new “D-Case Diagram” from the menu. |
| 3 | Select a given folder in the D-Case Template project to store the new template diagram. | The name of the selected folder is displayed in the text box of parent folder. | Enter the required information in the wizard.<br>D-Case Template folder needs to be created in advance. |
| 4 | Enter the name of the GMF diagram information file of the diagram to be created and click the “Next” button. | Page transition. | Enter the required information in the wizard.<br>A D-Case diagram consists of a diagram file and a model information file. Enter the name of the diagram file first. |
| 5 | Enter the name of the GMF model information file of the diagram to be created and click the “Finish” button. | A new diagram is created and the editor window opens. | When the name of the GMF model information file is entered, a D-Case diagram (diagram, model) is generated and displayed in the editor window. |

## Editing a Template Diagram

**Template Editing Flow**

*Table 11 Template Editing Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Open a template diagram. | Template diagram is displayed. | Open a template diagram that is already created.<br>Same as when creating a normal D-Case diagram. |
| 2 | Add, edit, or delete the elements. | Diagram is changed. | Same as editing a normal D-Case diagram. |
| 3 | Save the changes. | Diagram information file and GMF model information file are saved. | GMF model information file will be used as the template. |

## Adding Elements from Template to Diagram

To add elements from template to diagram, follow the procedure below.

- Element(s) to be added from template is/are selected.

- Element(s) to be added from template is/are to be placed around the middle of the diagram. (Position cannot be specified when adding the element[s].)

### Template Addition Flow

*Table 12 Template Addition Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Activate the diagram to add a template to. | The target diagram becomes active. | Perform either of the following.<br>– Create a new D-Case diagram.<br>– Open an existing D-Case diagram.<br>– Activate a non-active diagram.<br>When creating a new diagram or opening an existing diagram, click the canvas of the diagram once.<br>When there is no active D-Case Editor, an error message will be displayed. |
| 2 | Select a template. | Template becomes selected in the template view. | Expand the tree structure and click to select a pattern or a library.<br>Only one template can be selected at a time.<br>Template will not become selected when only a folder under the tree structure is selected. |
| 3 | Add the template. | Template is added and the elements are automatically arranged in the diagram.<br>The added element(s) is/are selected.<br>File is updated and the “*” mark is displayed.<br>When a node with parameters is included in the template, the parameter value input dialog will be displayed. When the parameter values are entered, the template will be added to the diagram. | Click the icon (plus symbol) of the tool bar in the template view.<br>Alternatively, select “Add Template” from the pull-down menu of the template view. |

### Adding Element(s) to Diagram from Template View

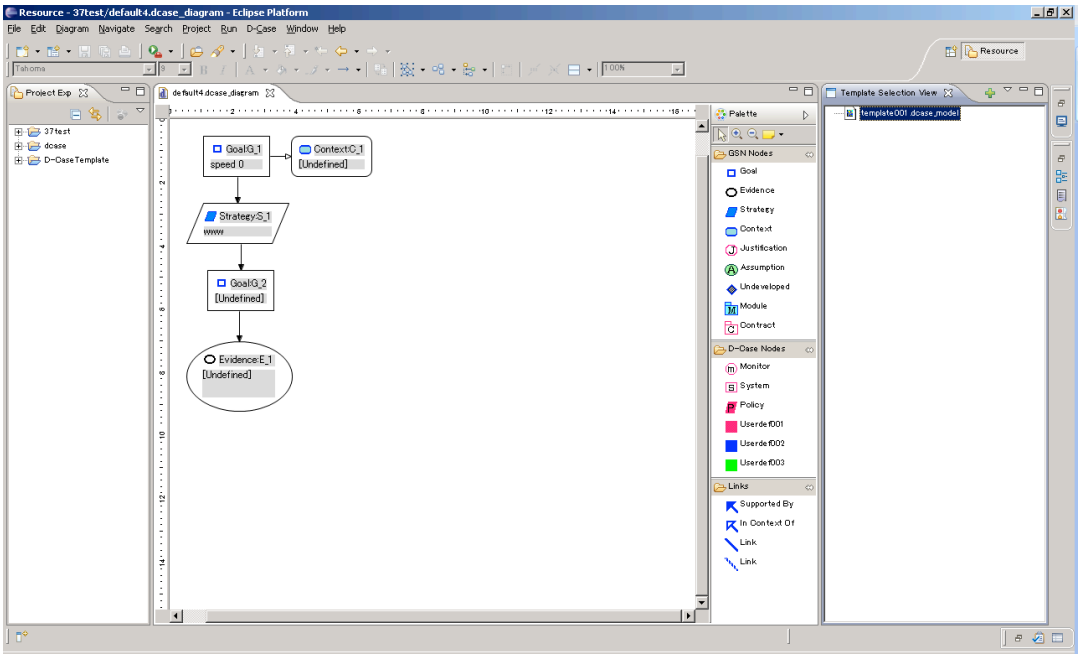


*Figure 4 Adding Element(s) to Diagram from Template View*

### 3.3. Setting an Attachment File

Every node can be set attachments.

Attachment

You can select attachment files from the places below.

・Workspace

・Web

・Selection from Workspace

Display the context menu of a node or a canvas.

And select “Attachment” > “Select from Wworkspace”.

・Selection from Web

Display the context menu of a node or a canvas.

And select “Attachment” > “Select from Web”.

In Web browser dialog, you can select urls which is set as bookmarks

サブツリーの一括選択

選択したノードから連なるノードを全て選択状態にする。

1. 特定のノードを選択して右クリックし、コンテキストメニューを表示する。
2. メニューから"Select subtree"を選択する。

## 3.4. Parameters

Parameters can be set in node.

The parameter settings can be used for formatting the character string of Desc and generating scripts.

### Configuring Parameters

The parameters can be set to each node and argument. The parameters set to an argument can be referred as "global parameters" from all nodes in the argument.

#### Parameters Configuration Flow

*Table 13 Parameters Configuration Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select an node or a diagram and right click | Context menu is displayed. | |
| 2 | Select "Parameters">"Configure Parameters" in the context menu. | Configure Parameters dialog is displayed. | |
| 3 | Configure the parameters. | | |
| 4.1 | Click the "OK" button. | Configure Parameters dialog is closed and the parameters configuration is updated. | |
| 4.2 | Click the "Cancel" buttons. | Configure Parameters dialog is closed. | |

**Configure Parameters Dialog**

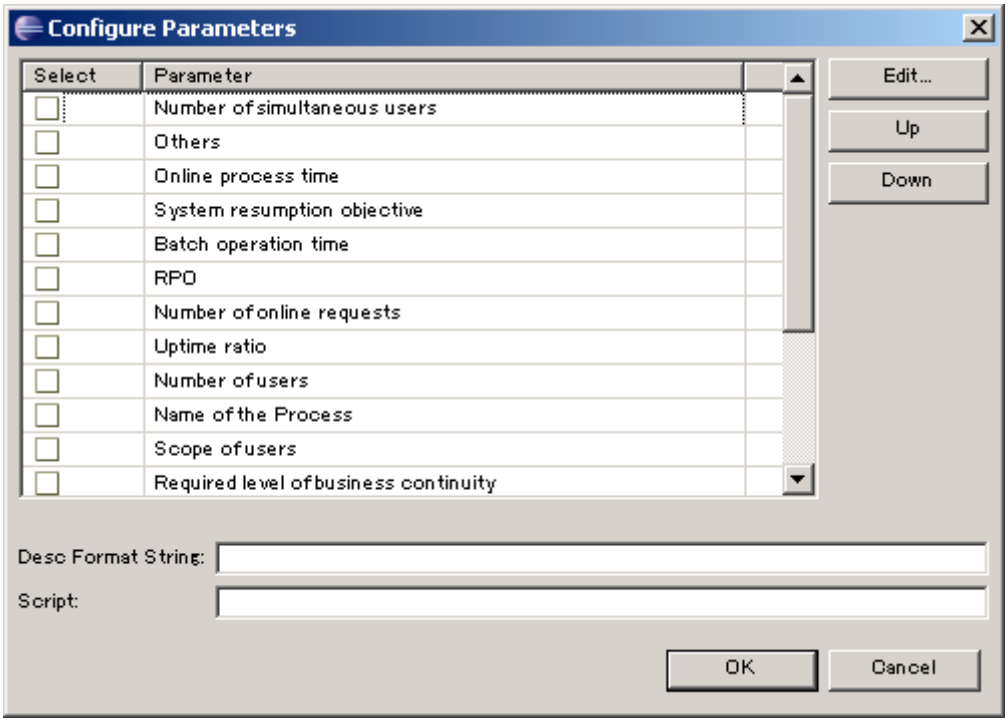


*Figure 5 Configure Parameters Dialog*

## Setting Parameter Values

For nodes with parameters, the parameter values can be set according to the parameter configuration.

Global parameters can be changed in an argument.

*Table 14 Attributes of Goal Node*

| Attribute | Value | Settings | Example |
|---|---|---|---|
| Userdef005 | Formatted character string for Desc | Combination of *{parameter name}* and character string. | Input example: CPU usage is {CPU} or lower.<br><br>Desc display example: CPU usage is 60 or lower. |
| Userdef006 | Script | *Combination of {parameter name}* and character string | |
| Userdef007 | Parameter | When there are multiple sets of *Parameter name* = *Parameter value*, each set is separated from the next one by a | Input example: CPU=60 |

| Attribute | Value | Settings | Example |
|---|---|---|---|
| | | comma.<br><br>Values can be entered in the attributes set to parameters. These attributes can also be used in the formatted character strings for Desc.<br><br>“id” is a reserved word indicating the node id. Therefore, it cannot be used as a parameter. | |

### Parameter Values Setting Flow

*Table 15 Parameter Values Setting Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select a node or a canvas which has parameters and right click. | Context menu is displayed. | |
| 2 | Select”Parameters”>”Set Parameters” in the context menu. | Set Parameters dialog is displayed. | |
| 3 | Set the parameters. | | |
| 4.1 | Click the “OK” button. | Set Parameters dialog is closed and the parameter values are updated.<br>Desc is updated according to the formatted character string and parameter values.<br>If global parameters are set, it updates the nodes which use these parameters. | |
| 4.2 | Click the “Cancel” buttons. | Set Parameters dialog is closed. | |

### Set Parameters Dialog

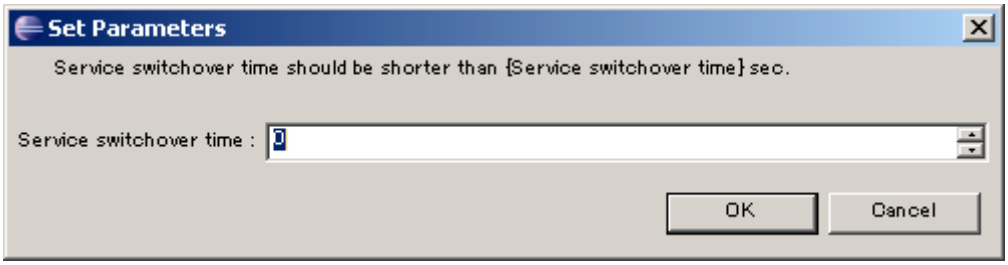


*Figure 6 Set Parameters Dialog*

### 3.5. Performing Validation

- Links between nodes are checked.
- The attribute values of nodes and links are checked.
- Cycle structure of the entire diagram or a part of the diagram is checked.
- Detectable errors are all detected and the markers indicating the places where the errors occurred are displayed along with the description of the errors in the view of eclipse.
- The displayed markers will be cleared when Validation is performed again.

**Performing Validation**

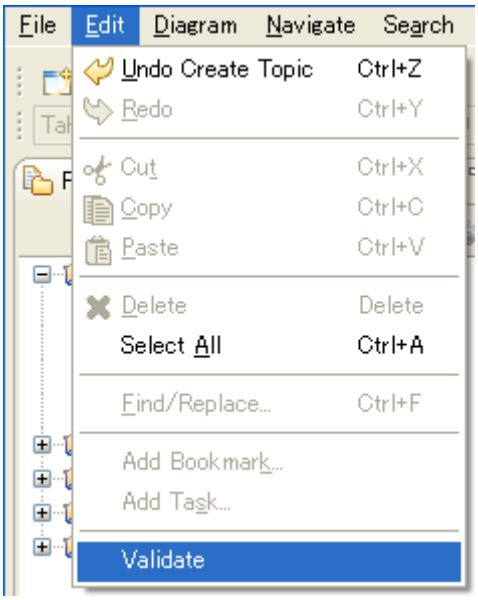


*Figure 7 Performing Validation*

**Results of Validation**

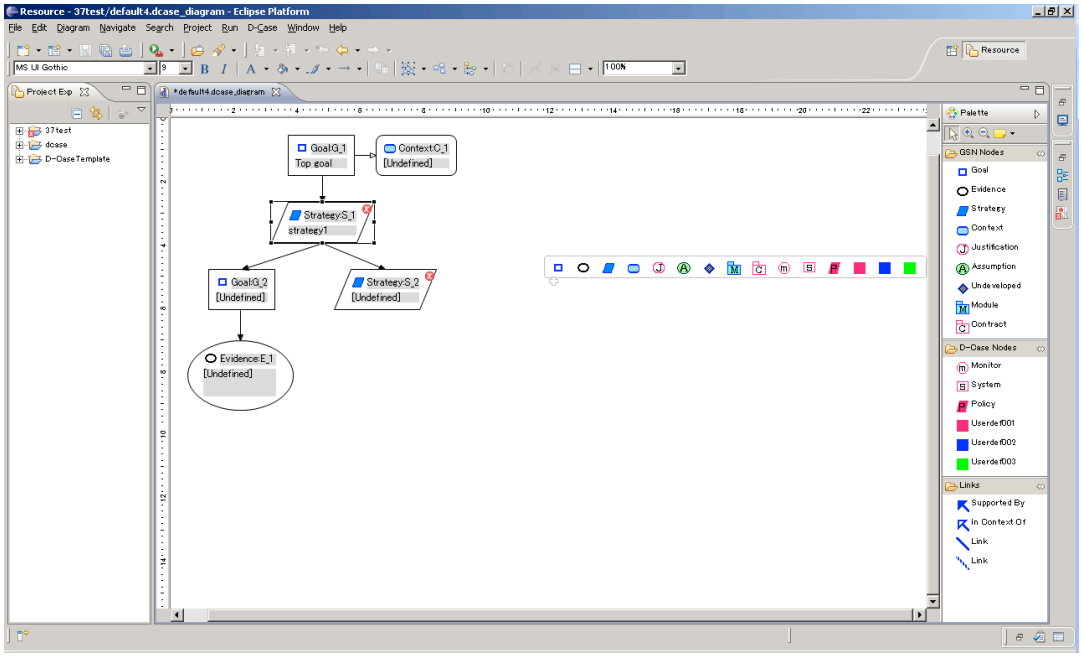


*Figure 8 Results of Validation*

- The items to be checked by the Validation function can be selected from Preferences.

**Validation Function Settings**

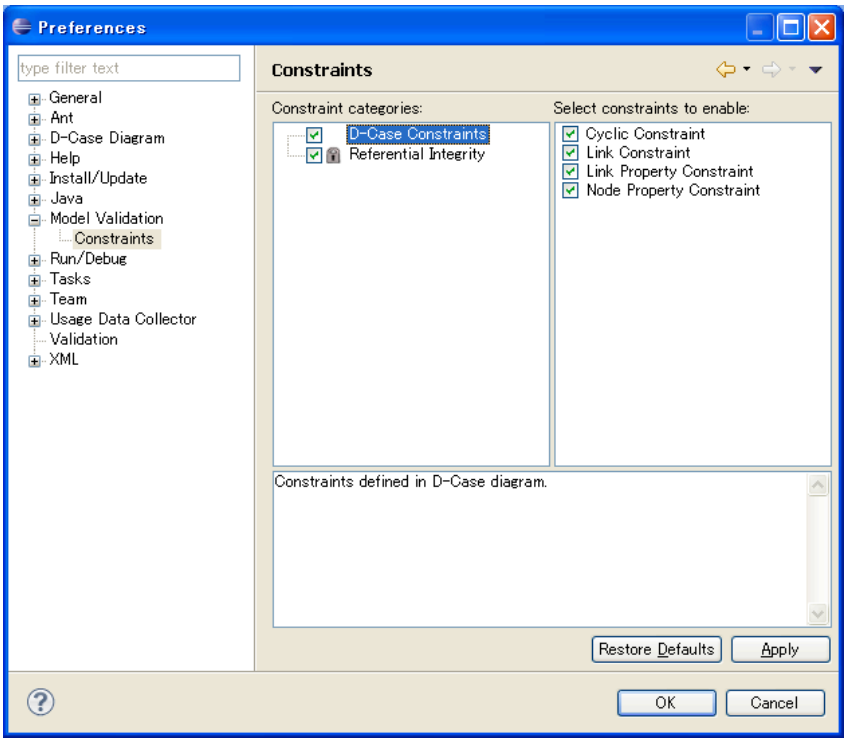


*Figure 9 Validation Function Settings in the Preferences Dialog*

Validation rules.

Multiplicity between nodes

| | | Target | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Goal, System** | **Undeveloped** | **Strategy** | **Evidence** | **Monitor** | **Context** | **Justification** | **other** |
| Source | **Goal, System** | – | 1..* : 0..1 | 1..* : 0..1 | 1..* : 0..1 | 1..* : 0..1 | 0..1 : 0..* | 1 : 0..* | 0..* : 0..* |
| | **Undeveloped** | – | – | – | – | – | – | – | 0..* : 0..* |
| | **Strategy** | 1..* : 1..* | – | – | – | – | 0..1 : 0..* | – | 0..* : 0..* |
| | **Evidence** | – | – | – | – | – | 0..1 : 0..* | – | 0..* : 0..* |
| | **Monitor** | – | – | – | – | – | 0..1 : 0..* | – | 0..* : 0..* |
| | **Context** | – | – | – | – | – | – | – | 0..* : 0..* |
| | **Justification** | – | – | – | – | – | – | – | 0..* : 0..* |
| | **other** | 0..* : 0..* | 0..* : 0..* | 0..* : 0..* | 0..* : 0..* | 0..* : 0..* | 0..* : 0..* | 0..* : 0..* | 0..* : 0..* |

*Table 16 multiplicity between nodes*

There are some restrictions in connection from goal.

- Goal cannot connect to Undeveloped, Strategy, Evidence, Monitor in the same time.
- Justification cannot connect to Goal which connects to Evidence or Monitor.

There are also restrictions in connection from Context.

- A Context can connect to just one Goal or Strategy or Evidence or Monitor.

The table below shows connection rules from Goal and System. Goal

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| condition | to Strategy | Y | Y | Y | Y | N | – | – | N | – | – | N | – | N |
| | to Undeveloped | N | Y | – | – | Y | Y | Y | N | – | – | N | – | – |
| | to Evidence | N | – | Y | – | N | Y | – | Y | Y | Y | N | – | N |
| | to Monitor | N | – | – | Y | N | – | Y | N | Y | – | Y | Y | N |
| | to Context | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | to Justification | – | – | – | – | N | – | – | N | – | Y | N | Y | – |
| behavior | Validation error occurs | N | Y | Y | Y | N | Y | Y | N | Y | Y | N | Y | N |

*Table 17 Rules of connection from goal*

The table below shows connection rules to Context.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| condition | from Goal, System | Y | Y | Y | Y | N | – | – | N | – | N |
| | from Strategy | N | Y | – | – | Y | Y | Y | N | – | N |
| | from Evidence | N | – | Y | – | N | Y | – | Y | Y | N |
| | from Monitor | N | – | – | Y | N | – | Y | N | Y | Y |
| 動作 | Validation error occurs | N | Y | Y | Y | N | Y | Y | N | Y | N |

*Table 18 Rules of connection to Context*

Valid node attribute value

The value of attribute “weight” of Goal/System must be greater than 1.

## 3.6. Calculating the Score

The score of Goal is calculated based on the connection status and importance of Evidence to measure the dependability.

・Goals that have sub goals　the sum of (score * weight) / the sum of the weight of sub goal

・Goals that don't have sub goals　1 if evidences exist Evidence, 0 else.

- For score calculation, the System node is treated as equivalent to the Goal node.
- For score calculation, the Monitor node is treated as equivalent to the Evidence node.
- Calculated results will be set in the Score property.
- The scores of all Goal and System nodes are initialized at calculation. Initial value is 0.

The table below shows the rules of calculation of the score.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| condition | connected Strategy from Goal、System | － | － | － | Y | Y | Y | N | N |
| | connected Evidence from Goal, System | － | － | － | N | Y | － | Y | N |
| | connected Undeveloped from Goal, System | － | － | － | N | － | Y | － | － |
| | Connected Strategies from Goal, System | Y | － | － | N | N | N | N | N |
| | The weight is not integer greater than 1 | － | Y | － | N | N | N | N | N |
| | The connection is loop | － | － | Y | N | N | N | N | N |
| behavior | The score | 0 | 0 | null | *1 | 0 | 0 | 1 | 0 |
| | Validation error occurs | Y | Y | N | N | Y | Y | N | N |

*Table 19 the calculation of the score*

＊1　the sum of (score * weight) / the sum of the weight of sub goal. If no sub goal, then 0.

Sub goal is the Goal or the System which are connected Goal or System through Strategy.

The pattern which doesn't exist at the table isn't processed.

### Score Calculation Flow

*Table 20 Score Calculation Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Right click on canvas to open the popup menu. | Popup menu is displayed. | |
| 2 | Select "Calculate the Score." | The score of each Goal is calculated and the results will be displayed in Score. | |

### Performing Score Calculation

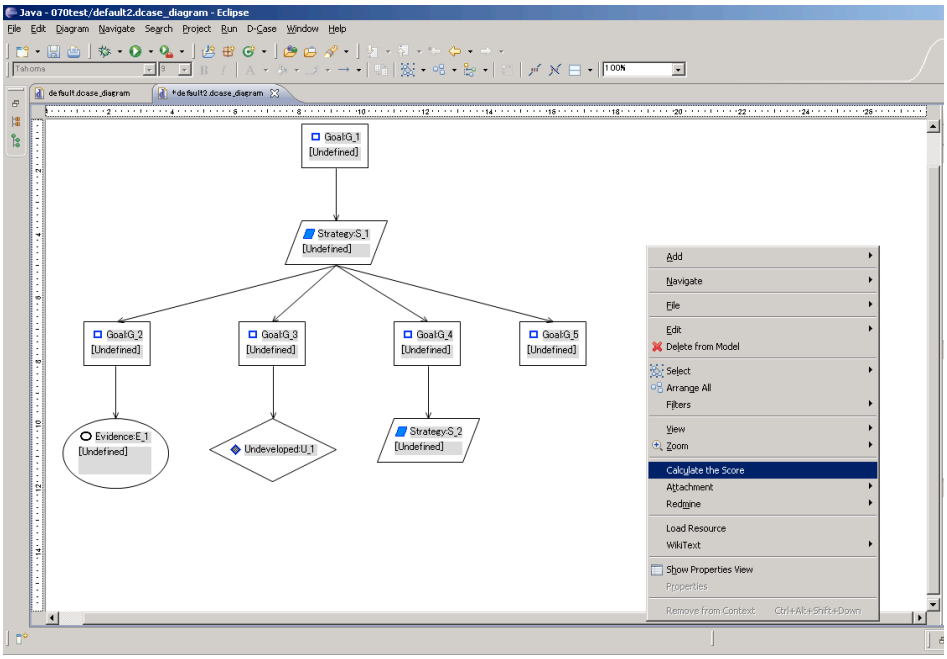


*Figure 10 Performing Score Calculation*

## 3.7. Autocomplete

This function provides a list of child nodes that can be connected to a given node for the user to select from.

Child nodes are to be selected from new nodes or templates.

### Adding a New Node

Nodes that can be connected to the selected node as its child nodes are displayed.

#### Node Addition Flow

*Table 21 Node Addition Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Right click a given node in Palette. | Context menu is displayed. | |
| 2 | Select “Add Child” >”Create a New Node” from the context menu. | A list of the nodes that can be added is displayed in the context menu. | |
| 3 | Select the node to be added. | A new node is added and connected to the selected node. (Link is connected from the selected node to the added node. | |

### Adding from Templates

Templates that are associated with the selected node by definition file are displayed.

#### Adding from Templates Flow

*Table 22 Adding from Templates Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Right click a given node in Palette. | Context menu is displayed. | |
| 2 | Select “Add Child” >”Add a Template” from the context menu. | A list of the templates associated with the node by definition file is displayed in the context menu. | |
| 3 | Select the template to be added. | Template is added. | |

## Associating Templates with Nodes

Nodes and Templates are associated with each other by the definition file.

Diagrams that satisfy the following condition can be included in the autocomplete list.

Node type

One of the keywords (comma, period, space) included in the Desc attribute of node corresponds to tag.

The schema of definition file is shown below.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
targetNamespace="http://www.dependable-os.net/2010/09/dcase/complement"
elementFormDefault="qualified"
xmlns="http://www.dependable-os.net/2010/09/dcase/complement"
xmlns:mstns="http://www.dependable-os.net/2010/06/dcase/complement"
xmlns:xs="http://www.w3.org/2001/XMLSchema" version="0.3.0">
  <xs:element name="ComplementChoices">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="Template" maxOccurs="unbounded" minOccurs="0">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="tags" maxOccurs="1" minOccurs="1">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element name="tag" type="xs:string" maxOccurs="unbounded"
minOccurs="0" />
                  </xs:sequence>
                </xs:complexType>
              </xs:element>
            </xs:sequence>
            <xs:attribute name="type" use="required">
              <xs:simpleType>
                <xs:restriction base="xs:string">
                  <xs:enumeration value="Goal" />
                  <xs:enumeration value="Strategy" />
                  <xs:enumeration value="Evidence" />
                  <xs:enumeration value="Undeveloped" />
                  <xs:enumeration value="Context" />
                  <xs:enumeration value="Monitor" />
                  <xs:enumeration value="Justification" />
                  <xs:enumeration value="System" />
                  <xs:enumeration value="Policy" />
                  <xs:enumeration value="Userdef001" />
                  <xs:enumeration value="Userdef002" />
                  <xs:enumeration value="Userdef003" />
                  <xs:enumeration value="Assumption " />
                  <xs:enumeration value="Contract " />
                  <xs:enumeration value="Module " />
                  <xs:enumeration value="All" />
                </xs:restriction>
              </xs:simpleType>
            </xs:attribute>
            <xs:attribute name="path" type="xs:string" use="required" />
```

```
                <xs:attribute name="name" type="xs:string" />
              </xs:complexType>
            </xs:element>
          </xs:sequence>
        </xs:complexType>
      </xs:element>
</xs:schema>
```

*Table 23 Autocomplete Candidates Definition File: Schema Details*

| No | Name | Type | Description |
|---|---|---|---|
| 1 | Complement Choices | element | Choices displayed in the autocomplete function.<br>**Template:** Template |
| 2 | Template | element | Templates displayed in the autocomplete function.<br>**Tags:** List of tags. When tags are not specified, the node to be placed under a node will be determined by its type.<br>**@type:** Type of node<br>**@path:** Path of template<br>**@name:** Name to be displayed in the context menu. |
| 3 | tag | element | Tag |

Definition file is to be located as follows.

*D-Case Template Project*/Complement.xml

## 3.8. Setting the Order of Siblings

The order of the siblings is set for the links that have Strategy as their source.

The order of the siblings will be decided according to the x-coordinate. The node with the smallest x-coordinate will be the first one, and the rest of the order will be decided in ascending order. When there are multiple nodes with the same x-coordinate, the order will be decided according to their y-coordinate. Again, the node with the smallest y-coordinate will be the first one.

### Sibling Order Setting Flow

*Table 24 Sibling Order Setting Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select and right click a Strategy node in diagram. | Context menu is displayed. | |
| 2 | Select”Set Sibling Order” from the context menu. | The sibling order will be set for the links that have the selected node as their source. | |

### 3.9. Requirement setting

D-Case Editor can set requirements of target system to Context Node.

Goal node set the association with the requirement.

#### Setting

To show the requirement setting dialog, display context menu of Context node and choose "Set Requirements…"

Requirement can use global parameters as format identifier.

ex)

{LoginUserCount} users can login at same time.

The requirements users set appear the Desc Format String o Context by using the format identifier below.

{Requirements}

The list below shows the example of the display.

Requriement1

Requriement2

.

.

.

Requriement*n*

#### Make an association with goal.

User can associate a Goal and requirement in Property dialog.

#### confirmation

select the below menu from menu bar.

"Window"＞"Show View"＞"Other…"＞"D-Case Editor"＞"Requirements"

## 3.10. Automatic Arrangement

Positions of the nodes in the diagram that is being edited are automatically arranged.

They are arranged in a tree according to their links.

Nodes to be connected to the same source node are placed under the source node in the ascending sibling order starting 縦方向の場合は from the left、横方向の場合は上から. Sibling Order の指定が無いノードは、name プロパティのソート順に配置する。However, Context node and Justification are to be placed on the right of the source node 縦方向の場合は. 横方向の場合は下に

name プロパティのソート順は以下の通りとする。

・　数値が出てくるまでの文字列を辞書順で比較する。

・　上記で一致する場合は、さらに数値部分を大小比較する。

### Automatic Arrangement Flow

*Table 25 Automatic Arrangement Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select Diagram">"Arrange">"All" from the menu bar. | Entire diagram is automatically arranged. | デフォルトの整列方向は縦。方向指定の整列を行った後は、その方向で整列する。 |

### 方向指定自動整列フロー

| No. | 操作 | アクション | 詳細 |
|---|---|---|---|
| 1 | キャンバスの右クリックでコンテキストメニューを表示 | | |
| 2.1 | "Arrange">"Vertical"を選択する | ダイアグラム全体を縦方向に自動整列 | |
| 2.2 | "Arrange">"Hrizontal"を選択する | ダイアグラム全体を横方向に自動整列 | |

*表 1 方向指定自動整列フロー*

# 4. Display Function

## 4.1. Enlargement and Reduction

There are four ways to enlarge or reduce the display of the graphic-object editing area.

1. In the menu area:
   Select the editing window and click an item in the “Zoom” submenu in the “Diagram” menu.

2. In the button area:
   Click an item in the magnification menu displayed in the button area.

3. In the Palette area:
   Click the enlarge/reduce icon displayed in the upper part of the Palette area.

4. In the graphic-object editing area:
   Right click the graphic-object editing area without selecting any node or link to display the context menu. Click an item in the “Zoom” submenu.

To enlarge the selected node to fully fit the graphic-object editing area, select a node and click “Diagram>Zoom>Fit to Selection” in the Diagram menu.

## 4.2. Changing the Part to Be Displayed

“Outline View” shows the relation of the part that is being displayed to the entire diagram. The gray area in the “Outline View” is the part displayed in the graphic-object editing area.

There are two ways to change the part displayed in the graphic-object editing area.

1. In the graphic-object editing area:
   Move the scroll bar.
2. In the “Outline View”:
   Drag and move the gray part.

## 4.3. Collapsing the Child Nodes

All the child nodes can be displayed and hidden in the context menu of a selected node.

- The child nodes of the node defined in D-Case Editor can be collapsed. This cannot be done with the general graphic objects.
- Nodes with collapsed child nodes are made identifiable by changing the background color.
- Switching from collapsed to expanded can only be done for the collapsed child nodes. Child nodes that are already displayed cannot be expanded.
- The collapsed state of the child nodes is not saved. All the nodes and links will be displayed when the file is opened the next time.
- All nodes are always displayed in the tree display of the outline view.
- Collapsed nodes are not printed. Print area including the collapsed nodes can be specified.

**Child Nodes Collapsing Flow**

*Table 27 Child Nodes Collapsing Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select “Show/Hide Children” from the context menu of node. | The “Hide Children” and “Show Children” submenus are displayed when the “Show/Hide Children” item is selected from the menu. | |
| 2 | Select “Hide Children” from the cascaded submenu. | The background color of the selected node is changed and all child nodes are hidden. | |

**Child Nodes Displaying Flow**

*Table 28 Child Nodes Displaying Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select “Show/Hide Children” from the context menu of node. | The “Hide Children” and “Show Children” submenus are displayed when the “Show/Hide Children” item is selected from the menu. | |
| 2 | Select “Show Children” from the cascaded submenu. | The background color of the selected node is changed to the default color (white), and all child nodes are displayed. | When the background color is changed by the user, the information of the changed color will not be stored. |

* Hidden nodes can be selected in the Outline View. Hidden nodes cannot be selected by the “Select All" function.

### Collapsing Child Nodes

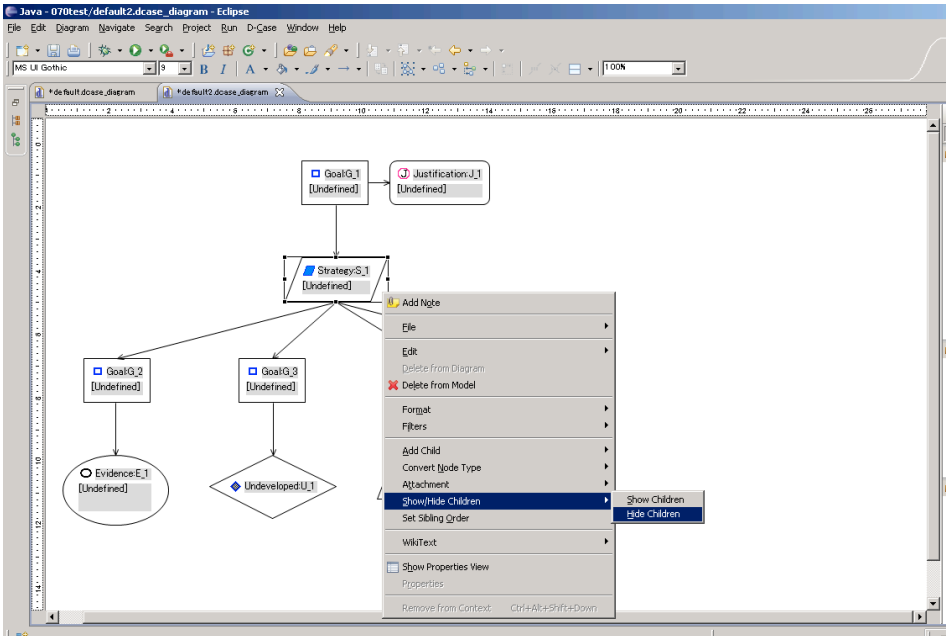


*Figure 11 Collapsing Child Nodes*

### Displaying Child Nodes

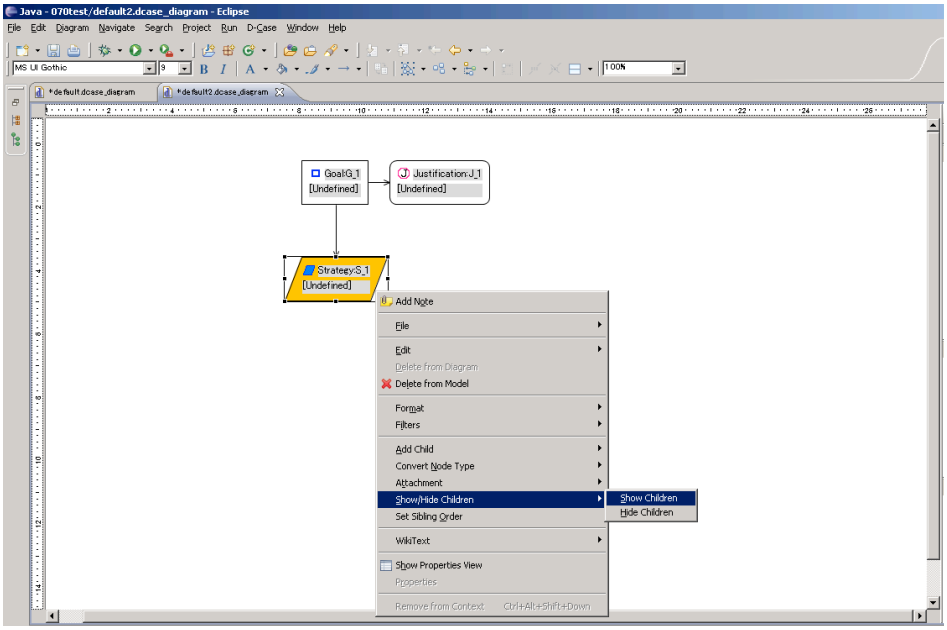


*Figure 12 Displaying Child Nodes*

## 4.4. System Node

The D-Case diagram to be referenced is set and displayed.

### Setting the Diagram to Be Referenced

#### Reference Selection Flow

*Table 29 Reference Selection Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Right click a given System node in Palette. | Context menu is displayed. | |
| 2 | Select “Node Link” > “Select a Workspace...” from the context menu. | Reference selection dialog is displayed. | D-Case diagram in the workspace is displayed. |
| 3.1 | Cancel the reference selection. | Reference selection dialog is closed. | |
| 3.2 | Select a reference. | Reference selection dialog is closed.<br>The selected reference is added to the System node. | |

### Displaying the Referenced Diagram

#### Displaying Reference Flow

*Table 30 Displaying Reference Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Right click a given System node in Palette. | Context menu is displayed. | |
| 2 | Select “Node Link” > “Open with D-Case Editor” from the context menu. | Diagram to be referenced is displayed. | |

## 4.5. Open the Attachment

User can open the workspace file and URL which is set to Attachment property.

User can open the attachment with the default editor.

**Open the attachment with the default editor**

*Table 31 flow in the default editor.*

| No. | procedure | behavior | details |
|---|---|---|---|
| 1 | Right click a node | Editor displays context menu | |
| 2 | Select “Attachment” -> “Open” from context menu | Editor opens url with browser If attachment is url.<br>Or Editor opens with default editor | |

## 4.6. Displaying the Differences

A file is compared with a specified file (model) and the differences between the two files are displayed.

The following changes can be extracted for all links and nodes.

- New additions – An ID in the current file does not exist in the original file.
- Updates – The attribute of the node or link with the same ID is different in the original file and the current file.
- Deletions – An ID in the original file does not exist in the current file.

The extracted differences will be displayed as follows.

**In Diagram**

- New – The frame of node and the line of link become blue.
- Updates - The frame of node and the line of link become red.
- No changes - Black

**In Console**

The information that cannot be displayed in diagram will be displayed in console in text.

- Results of the comparison of Arguments (output only when there are changes).

Argument changed.

- Information of the deleted nodes.

Node: "Node name" [parents: "Parent node name"] deleted.

- Information of the deleted links

Link: "Link name" [source: "*source node name*"][target:"*target node name*"] deleted.

**Displaying the Differences Flow**

*Table 32 Displaying the Differences Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select "D-Case">"File">"Compare To,,," from the menu bar. | Diagram file selection dialog is displayed. | |
| 2 | Select the diagram file to be compared with the current file. | The differences are displayed in diagram and console. | |

The source file and the target file can be switched while the differences are displayed in the diagram.

**Source-Target Switching Flow**

*Table 33 Source-Target Switching Flow*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Display diagram a. | | |
| 2 | Display the differences between diagram a and diagram b in diagram a. | | |
| 3 | Select "D-Case">"File">"Switch Source and Target" from the menu bar. | Diagram b is displayed and the differences from diagram, extracted and displayed. | |

## 4.7. find / replace

User can find or replace the word from the all nodes in a diagram in a canvas.
Select the below menu from menu bar, and show the Find/Replace dialog.

"D-Case"＞"Find/Replace"

If a node is selected, the finding starts there. Otherwise, the finding starts from top-left node. The direction of finding if forward only.

The target of finding is Name と Desc. Replace manipulation replace Desc Format String. Parameters aren't target of find/replace.

If the word is found, Editor shows the Set Properties dialog, and selects the substring from Desc.

## 4.8. converting node type.

All node type can be converted to others. To convert a node type, select the target node and display the context menu and select “Convert Node Type” > the type.

Id and name are reassigned after conversion. Other properties are copied from the original node.

If the original node has the properties that aren’t included the target node properties, the properties be added to the property called Userdef008with the format below.

*property_name =property_value*

If Userdef008 already has a value, the string data above is concatenated the value.

# 5. Input/Output Function

## 5.1. Conversion

### Converting GMF Model Information File to D-Case Model Information File

GMF model information file can be converted to D-Case model information file.

**Flow of Conversion from GMF Model Information File to D-Case Model Information File**

*Table 34 Flow of Conversion from GMF Model Information File to D-Case Model Information File*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select “Convert D-Case File” > “From GMF to D-Case” from the “D-Case” menu of eclipse. | “Convert Model to D-Case” wizard is displayed. | Wizard is activated. |
| 2 | Click the “Browse” button to display the file selection dialog. Specify the name of the GMF model information file to be converted and the name of the D-Case model information file to which it will be converted. | The name of each file is displayed in the wizard. | Enter the required information in the wizard. |
| 3 | Click the “Finish” button. | File is converted and a D-Case model information file is created. | D-Case model information file is created. |

### Converting D-Case Model Information File to GMF Model Information File

D-Case model information file can be converted to GMF model information file.

* When the type of the attribute value is not correct, set the defined value.

* When there is a decimal point in the value of an integer attribute, truncate the value to a whole number.

**Flow of Conversion of D-Case Model Information File to GMF Model Information File**

*Table 35 Conversion of D-Case Model Information File to GMF Model Information File*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select “Convert D-Case File” > “From D-Case to GMF” from the “D-Case” menu of eclipse. | “Convert Model to GMF” wizard is displayed. | Wizard is activated. |
| 2 | Click the “Browse” button to display the file selection dialog. Specify the name of the D-Case model information file to be converted and the name of the GMF model information file to which it will be converted. | The name of each file is displayed in the wizard. | Enter the required information in the wizard. |
| 3 | Click the “Finish” button. | File is converted and a GMF model information file is created. | GMF model information file is created. |

### Converting from D-Case model file to ARM file

D-Case Editor can convert a D-Case model file to ARM file.

**Conversion from D-Case model file to ARM file**

*Table 36 conversion from D-Case model file to ARM file*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select eclipse “Convert D-Case File” →“From D-Case to ARM” from top menu “D-Case” | Convert Model to ARM wizard is displayed. | |
| 2 | Open the file chooser by Browse button and input the D-Case model filename and ARM filename. | The wizard shows filenames. | |
| 3 | Press Finish button. | D-Case Editor creates ARM file. | |

## Convert D-Case model file with XSLT

D-Case Editor can use XSLT to convent D-Case model file.

### Using XSLT to convert D-Case model file

*Table 37 using XSLt to convert D-Case model file*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select eclipse “Convert D-Case File” →“XSL Transform From GMF Model” from top menu “D-Case” | Submenu shows converters that are registered. | |
| 2 | Select a converter from submenu. | The wizard opens. | |
| 3 | Open the file chooser by Browse button and input the D-Case model filename and target filename, | The wizard shows filenames. | |
| 4 | Pres Finish button | D-Case editor executes the conversion. | |

## 5.2. Automatically Generating a Diagram

### Generating a GMF Diagram File from a GMF Model Information File

Handling of graphic items by D-Case Editor is not possible with GMF model information file alone. GMF diagram file is also necessary for a graphic use of D-Case Editor.

To enable the handling of GMF model information file in D-Case Editor, a function for generating GMF diagram file from GMF model information file is provided.

**Flow of Generating GMF Diagram File from GMF Model Information File**

*Table 38 Flow of Generating GMF Diagram File from GMF Model Information File*

| No. | Procedure | Behavior | Details |
|---|---|---|---|
| 1 | Select the GMF model information file from which GMF diagram file is to be generated from the File list view of project Explorer. | The color of the file name is inverted and the file becomes selected. | File becomes selected. |
| 2 | Select "Initialize D-Case Diagram diagram file" from the context menu. | Wizard is displayed. | Enter the required information in the wizard. |
| 3 | Select a folder under which GMF diagram file is to be generated. | Folder is selected and the default GMF diagram file name is set in Filename. | Enter the required information in the wizard. |
| 4 | Click the "Finish" button. | The function is executed and GMF diagram file is generated. | GMF diagram file is generated. |

## 5.3. Printing a Diagram

The following operations regarding printing are available under the "File" menu.

1. "Print Preview" item: Print preview
2. "Print..." item : Print
3. "Page Setup..." item : Print settings

## 5.4. Creating EPS file

D-Case Editor can create EPS file from a diagram.

Select a canvas or nodes, links, and choose "File">"Save As EPS File…" from the context menu.

D-Case Editor uses the batchfile which executes Ghostscript to create EPS file.

The batchfile is in the place below.

At the workspace

dcase/convertPdfToEps.bat

# 6. Appendix

## 6.1. Access Key of Menu

Each menu can be called by typing the appropriate key(s) on the keyboard. The underlined character in the menu list below is allocated as the access key to each menu.

**Menu Bar**

*Table 39 Menu Bar*

| | | |
|---|---|---|
| D-Case | Convert File Type | From GMF To D-Case Model |
| | | From D-Case To GMF Model |
| | | From GMF To ARM |
| | | XSL Transform From GMF Model |
| | Find/Replace | |
| | File | Copy To... |
| | | Rename... |
| | | Compare To... |
| | | Switch Source and Target |

**Context Menu of Argument and Node**

*Table 40 Context Menu of Argument and Node*

| | | |
|---|---|---|
| Parameters | Configure Parameters...<br>*exclude Argument | |
| | Set Parameters...<br>*exclude Argument | |
| | Configure Global Parameters...<br>*Argument only | |
| | Set Global Parameters...<br>*Argument only | |
| Set Requirements... | | |
| Arrange | Vertical<br>*Argument のみ | |
| | Horizontal<br>*Argument のみ | |
| Select subtree<br>*Argument を除く | | |
| Add Child | Create a New Node | Goal |
| | | Strategy |
| | | Evidence |
| | | Monitor |
| | | Assumption |
| | | Undeveloped |
| | | Module |
| | | Contract |
| | | Context |
| | | Justification |

| | | |
|---|---|---|
| | | System |
| | | Policy |
| | | Userdef001 |
| | | Userdef002 |
| | | Userdef003 |
| | Add a Template | Dependent on the definition in Complement.xml. |
| | | |
| Convert Node Type | Goal | |
| | Strategy | |
| | Evidence | |
| | Monitor | |
| | Assumption | |
| | Undeveloped | |
| | Module | |
| | Contract | |
| | Context | |
| | Justification | |
| | System | |
| | Policy | |
| | Userdef001 | |
| | Userdef002 | |
| | Userdef003 | |
| Calculate the Score | | |
| Attachment | Select from Workspace | |
| | Select from Web... | |
| | Open | |
| Node Link | Select from Workspace... | |
| | Open with D-Case Editor | |
| Risk Analysis | Open with Web Browser | |
| Show / Hide Children | Show Children | |
| | Hide Children | |
| DS-Bench | Select Test Scenario<br>※Strategy only | |
| | Set Parameters...<br>※Goal only | |
| | Execute<br>※Goal only | |
| | Refresh<br>※Goal only | |
| Set Sibling Order | | |
| File | Save As Eps File... | |

**Context Menu of Model Information File**

*Table 41 Context Menu of Model Information File*

| | | |
|---|---|---|
| Initialize dcase_diagram diagram file | | |

# 7. Limit

## 7.1. Copying a diagram

D-Case diagram consists of two files. If you copy a diagram, don’t use drag and drop , instead use the function described in 2.5 Copying a diagram.