

# D-Case EDITOR

# **USER'S MANUAL**



Ver. 1.0.1 English

# **Revision History**

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#### 1 <u>Introduction</u>

#### 1.1 What is this manual?

This manual describes how to install and how to use 'D-Case Editor' which is an assurance case editor having type checking feature.

#### 1.2 Definition

Term	Description
Diagram	Visualized representation of D-Case.
D-Case Document	A file which describes D-Case and/or its module.
GMF Diagram Information File	A file which represents layout information, such as position, size or color of each element in D-Case and/or its module. The filename format is 'D-Case name or module name.dcase_diagram'.
GMF Model Information File	A file which describes logical structiure of each element in D-Case and/or its module. The filename format is 'D-Case name or module name.dcase_model'.
Attribute	Property information of node or link. Ex.) Name, Desc, Attachment, Userdef001~016, Etc.
Pallet viewer	A functional module which enables users to select nodes or links in D-Case Editor visually in Eclipse environment.
View	A functional module which provides tabbed information in Eclipse environment.
Preference store	A data storage area in Eclipse environment which stores plugin settings according individually in Eclipse workspace.

#### 1.3 Related Documents

• Matsuno Yutaka, Takai Toshinori, Yamamoto Shuichiro, D-Case for beginners (in Japanese), Daitec Holdings Co., Ltd (Free of Charge), ISBN 978-4-86293-079-8

- D-Case Website (http://www.dcase.jp/)
- The Eclipse Foundation (http://www.eclipse.org/)
- · JRE java.com (http://java.com)

# 2 <u>How to Install</u>

#### 2.1 System Environment

This manual is based on following system environment to install D-Case Editor.

\*Note: GMF Runtime and OCL Classic SDK will be installed automatically together with D-Case Editor.

- Microsoft® Windows® 7 Professional SP1
- Oracle Java SE Runtime Environment 7 Update 75
- Eclipse IDE for Java Developers (4.4.2 / Luna 32bit)
- Graphical Modeling Framework(GMF) Runtime (1.8.1)
- OCL Classic SDK (5.0.2)
- Pattern project (D-CasePattern.zip)
- Extractor utility for zipped file

# 2.2 Installation

At the beginning, prepare a Windows PC in which JRE (Java Runtime Environment) has been installed.

# **Installing Eclipse**

1. Go to Eclipse official website and click 'Downloads' to download 'Eclipse IDE for Java Developers'. This manual downloads an archive file for Windows 32bit.

- 2. Unzip the archive file.
- 3. Execute 'eclipse.exe'

# Installing D-Case Editor Plugin

- 1. Start Eclipse.
- 2. Select 'Install New Software...' in 'Help' menu.
- 3. Type 'http://dimensions-japan.org/dcase/eclipse/' in 'Work with' area.

4. Check 'D-Case Editor' and proceed. If it does not appear, uncheck 'Group items by category'.

5. Click 'OK' when following dialogue appears.

0	Warning: You are installing software that contains unsigned content. The authenticity or validity of this software cannot be established. Do you wan to continue with the installation?

# **Importing Pattern Project**

- 1. Start Eclipse.
- 2. Select 'Import...' in 'File' menu.
- 3. Open 'General' and select 'Existing Projects into Workspace'. Then click 'Next'.

4. Check 'Select archive file' and click 'Browse...'. Then select the archive file of patter project named 'D-CasePattern.zip'.

5. Check 'Copy projects into workspace' and click 'Finish'.

# 3 Basic Usage

#### 3.1 Creating New Project

You can create new project to handle D-Case document by following steps.

- 1. Click 'File' menu and select 'New' $\rightarrow$ 'Project'
- 2. Click 'General' and select 'Project' and click 'Next'.
- 3. Type your project name in 'Project name' and click 'Finish'.

# 3.2 Creating D-Case Document

You can create new D-Case document by following steps.

- 1. Right-click the project you just created in subsection 3.1 and select 'New' $\rightarrow$ 'Other...'.
- 2. Open 'D-Case Editor' and select 'D-Case Diagram' and click 'Next'.
- 3. Input filename in 'File name' area and click 'Next'. Note that you should not rename the filename extension which is originally set as '.dcase\_diagram'.

4. Click 'Finish'.

# 3.3 Creating Node and Link

Soon after creating D-Case document as described in subsection 3.2, you will see the D-Case editor as shown in Fig.1

📛 Java – test_Dcase/default dcase_diagn	m - Eclipse	_ 🗆 ×
Elle Edit Diagram Navigate Search B	oject Bun D-Qase Window Help	
	- <b>3 5 8 -</b> 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
Tahoma 💌 🖗 💌	→	Quick Access
# Package Explorer 12 🛛 🖷 🛸 🔍 🖛 🗖	📽 default.dcase_diagram 🛤	😁 🗆 🗑 Tesk List 🕮 👘 🗖 🍙
e ⊕ D-CasePatem is ⊕ test (Dase } i default dase diagram ⊢∥i default dase model		It     Palette     It     It
	A     By Problems @ Javadoc B Declaration @ Error Log X  Workspace Log	× Kesponsib ↓Link ♪ ♡ ♡ +   B <sub>K</sub> ¥ ⊇ Ø * = □
	type filter text	
	Warning The environment variable HOME is not set. The following directory will     Warning EGit couldn't detect the installation path "gitPenfix" of native Git Hom     Error initializing element type "DesaeLink003" specified eclass does not exist.     Error initializing element type "CasaeLink002" specified eclass does not exist.     Error initializing element type "CasaeLink002" specified eclass does not exist.	be used to store the Gituser global configuration and to the GGIt can't respect system levelGit settings which mig It will be ignored. It will be ignored.

Fig.1 D-Case Editor

To add a node, select a node you need from 'Palette' list and click any position in a white canvas on the middle of the screen. The node will be set on that position.

To add a link which shows the relation between nodes, select a link from 'Palette' list in the same manner. Next, drag between nodes to be connected. Otherwise, right-click a node and select 'Add Child' $\rightarrow$ 'Create a New Node' and select a new node so that both nodes will be connected each other (Fig.2).

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OEvidenc [Undefined]	Add Note	k k		<ul> <li>Assumption</li> <li>Undevelop</li> <li>Module</li> <li>Contract</li> <li>D-Case </li> <li>Monitor</li> </ul>	Connect Mylyn <u>Connect</u> to your ta ALM tools or <u>creat</u> task. Be Outline ⊠
_	Delete from Diagram X Delete from Model Format	•		<ul> <li>■ Pattern</li> <li>● Action</li> <li>■ External</li> </ul>	E .
	Add Child	۲.	Create	⊧a New Node 🔸	Context
ems @ Javadoc 🕵 D	Convert ridde Type Attachment Show/Hide Children Select subtree Create Module Set Public/Private Flag External Commands Refresh Create/Update d*	, , , ,		Supported By K In Context Of Responsib	Assumption Module Contract Pattern External Userdef002 Userdef003
<u>œ Log</u>	Show Properties View Properties				
	Remove from Context	Ctrl+Alt+Shift+Down			
aming: The environmer	it vanable HUME is not set.	I he following directory wil	i be used	to store the Gitus	er global configuration a

aming. The environment variable FIUME is not set. The following directory will be used to store the Gituser global configuration ( aming: EGit couldn't detect the installation path "gitPrefix" of native Git. Hence EGit can't respect system levelGit settings whiror initializing element type "DcaseLink003" specified eclass does not exist. It will be ignored.

Fig.2 Adding a child

You can double-click some node to change properties of the node as shown in Fig.3.

Set properties				_ 🗆 🗙
Name: G_1				
Desc:				▲ ▼
•				Þ
more				*
Desc Format String:	•		▲ ▼ ↓	
Attachment:				Browse
Responsibility Name:				
Responsibility Address				
Responsibility Icon:				Browse
Valid Until:				
Script:				
Name Value		Type	Node	
		OK		Cancel

Fig.3 Properties

open the properties  $\rightarrow$  'Show View'  $\rightarrow$ 

view by clicking 'Window' 'Other...'→'General'→ 'Properties' (Fig.4).

Otherwise, you can also

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Property	Value	
🗉 Info		
derived	false	
editable	true	
last modified	April 14, 2015 at 10:01:17 PM	
linked	false	
location	C:¥Users¥macbookpro¥eclipse_workspace¥test_Dcase¥default.dcase_diagram	
name	default.dcase_diagram	
path	/test_Dcase/default.dcase_diagram	
size	534 bytes	

Fig.4 Properties view

#### 3.4 Automatic Diagram Arrangement

Automatic diagram re-arrangement is available for D-Case document. Click 'Diagram'  $\rightarrow$  'Arrange'  $\rightarrow$  'All' to re-arrange the document automatically and vertically (Fig.5).



Fig. 5 Automatic arrangement of D-Case document

Also you can click 'D-Case'  $\rightarrow$  'Arrange direction'  $\rightarrow$  'Horizontal' to arrange the document automatically and horizontally.

#### 4 <u>Modules</u>

#### 4.1 What are Modules?

A module handles multiple sub-trees of D-Case to help users easily recognize and manage complicated D-Case having large number of nodes.

A module is composed by GMF diagram information file whose suffix is 'dcase\_model' and by GMF model information file whose suffix is 'dcase\_model', as with normal D-Case. When you divide a D-Case into multiple modules, two module files appear; one module file includes top node and another module file includes is divided piece.

#### 4.2 Modularization

There are two ways for modularization. One is a modularization of D-Case subtree; you can simplify complicated D-Case by substituting subtree(s) into module(s). Another is setting reference information for a Module node or Goal node (so-called Away Goal node) after adding these nodes.

To modularize D-Case subtree, right-click a root node on a sub-tree and select 'Create Module' as shown in Fig.6.



Fig. 6 Right-clicking a root node

On a diagram box (Fig.7), type your module name and click 'OK'.

×	Set Module Name	
Type Module name.		
Module Name:		
	Cancel	ок

Fig.7 Module name dialogue box

Then a new subtree will be created as a module and the original subtree in the D-Case will be substituted as a Module node, as shown in Fig.8.



Fig.8 Modularization of subtree

To set reference information for a Module node or Goal node, right-click the added node and click 'Attachment' $\rightarrow$ 'Select from Module...' as shown in Fig.9.

7	Add Child Convert Node Type		₩ 1 ₩ 4-1 0 1		
	Attachment		Select from Module 🕨		
	<u>S</u> how/Hide Children <u>P</u> arameters	)	Select from Workspace Select from Web		
	DS-Bench	•	Open		
	Show Properties View		create a local task. 플 Out 🎦 Te 🏼 🗖 🗖		

Fig.9 Module selection

Select the node from node list to be referred. Note that the node to be referred should be 'Public node'. You can set a node as 'Public node' by right-clicking the node and select 'Set Public/Private Flag'  $\rightarrow$  'Public'. If you do not want that the node will be referred, select 'Private'.

#### 4.3 Module Expansion View

To see details, such as referring module or node contents, of a Module node or Away Goal node, right-click the node and select 'Show/Hide Module'  $\rightarrow$  'Show Module' (Fig.10).

Restore <u>M</u> odule Set Flags	,
Show/Hide Module	Show Module
Adjust Reference	Hide Module
Show Properties View	
Properties	

Fig.10 Module expansion menu

Then, reference information of the module will appear as shown in Fig.11. It will disappear by clicking 'Hide Module'.



Fig.11 Module expansion view

#### 4.4 Canceling Modularization

You can cancel a modularization and restore a Module node to an original subtree by right-clicking the Module node and select 'Restore Module' as shown in Fig.12. Not that the module file to be referred will not be deleted automatically in this process. To delete the module file, see next subsection.

<u>E</u> dit Delete from Diagram	•
Delete from Model	
For <u>m</u> at	•
Restore Module	
D-Case DB	

Fig.12 Canceling modularization

#### 4.5 Module Management

The 'Modules view' shows list of modules and public nodes in a D-Case project and provides manipulation feature for the listed items. It helps users to understand logical relation of nodes. To see 'Modules view', Click 'Window'  $\rightarrow$  'Show View'  $\rightarrow$  'Other...', and expand 'D-Case Editor' menu and click 'Modules' as shown in Fig.13.

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type fil	ter text		
P PC			2
_	VS		-
🕆 😂 D	-Case Editor		
	Benchmark Res	sults	
	D-Case DB		
	Modules		
	Requirements		
	Templates		
	Test Scenarios		
Þ 🕞 D	ebug		
▼ 🕞 G	eneral		
	Bookmarks		

Fig.13 Modules view selection

Fig.14 shows an example of Modules view.

🕗 Tasks 🔲 Properties 🗖 Modules 🛱	📮 Console			🗢 🗙	▽ - E
Name	Node#	Link#	Reference		
🐱 main	9	0			
main/G_1		1	test5/G_9		
遇 main2	6	1	main/D_1		
main2/G_5		0			



Modules view lists module name, public node name, number of nodes in the module, number of links and referring source node (module name and node name).

You can open a module by double-clicking it. You can delete a module by clicking 'X' only if the module is not referred (e.g. number of links is 0).

#### 4.6 Exporting Node List

To export a node list, select 'File'  $\rightarrow$  'Convert File Type'  $\rightarrow$  'From GMF to Text' as shown in Fig.15.

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			parameter and a second s	
2 2	Import Export		Console Properties 23 ロモジュール ロバ	
	Convert File Type	•	From GMF To D-Case Model	
	Properties     Alt+Enter       1 newsample.dcase_diagram [D-CasePattern]       2 sub.dcase_diagram [test20131125/all]		From D-Case To GMF Model	
			From GMF To SACM From GMF To ARM	
	3 main.dstar_diagram [test20131125] 4 functionality.dcase_diagram [test20]		From GMF To Text	
	Exit		:	

Fig.15 Exporting node list

Then the wizard will appear (Fig.16).

×□	Convert Model To Text Forma	t Wizard	
Conversion File De Enter input mode	finition Page I file path.		
Input : GMF Form	at Model File		
			Browse
Output : Text For	nat File		
			Browse
Option	put model file.		
?		Cancel	Finish

Fig.16 File exporting wizard

Input a GMF model information file name and text file name for exporting and click 'Finish'.

Following is the example of the text file. It contains one node information on one line; node name, Desc and Attachment (Referent).

[Goal]
 "G\_11", "fault-tolerance satisfaction", ""
 "G\_12", "redundancy of all servers", ""
 "G\_13", "RAID1 redundancy of storages", ""

[Strategy]

"S\_5", "classification of fault-tolerance metrics" , ""

[Module]

"M\_1","","module1"

Omitted below...

#### 5 <u>Pattern</u>

#### 5.1 What is Pattern?

You can set 'Patterns' for a D-Case to be used frequently. D-Case Editor handles 'Patterns' in 'D-Case pattern' project.

#### 5.2 Adding Patterns

To add a pattern on a diagram, right-click any position in the diagram and select 'Add Pattern' as shown in Fig.17, aAd select a pattern to be added from a list.

Calculate the Score	
Attachment	•
Parameters	•
Add Pattern	•
Red <u>m</u> ine	•

Fig.17 AddPattern menu for a diagram

To add a pattern under a node, right-click any node and select 'Add Child' $\rightarrow$ 'Add Pattern to node' as shown in Fig.18, and select a pattern to be added from a list.

	For <u>m</u> at	By Representat of
	Add Child	Create New Node
	Convert Node Type	Add Pattern to node
	Attachment	Add Pattern
d>	Show/Hide Children	Develop Sub-goals from the Component Diagram
ere	Parameters	1.7.0/bin/java (2012/09/28 20:56:01)

Fig.18 Pattern adding menu

# 5.3 Pattern Node

You can add multiple patterns using 'Pattern' node in a subtree having a root node which is linked with the Pattern node by 'InContextOf' link.

Pattern node has SubType property whose value would be 'Parameter', 'Loop', 'Choice' or 'Multiplicity'. For more information about 'Parameter' property, see Section 6.

'Loop' property is used to add target subtree as a pattern onto some leaf node repeatedly as shown in Fig.19. You can select the leaf node to be modified by clicking a node and select 'AttributeDialog'  $\rightarrow$  'LeafNode' property'. A dialogue will ask you the number of loop of pattern addition when you add patters



Fig.9 Loop process

'Choice' property is used to add a part of target subtree as a pattern as shown in Fig.20 where n is number of nodes in target subtree. You can set n, i and j properties on 'AttributeDialog'.



Fig.20 Choice process

'Multiplicity' is used to add patters by duplicating target subtree as shown in Fig.21. You can set i and j properties on 'AttributeDialog'.



Fig.21 Multiplicity process

# 6 <u>Parameters</u>

#### 6.1 What are Parameters?

Parameters are used to abstract modules and/or patterns to re-use them easily on various D-Case systems. You can define Parameters and set their values on 'Pattern' node. The Parameters you created can be used in a tree having a root node which refers Pattern node by 'InContextOf' link. If modularized, you can track all parameters by tracking parent modules. If multiple parameters have a same name, closer node parameters are used.

# 6.2 Parameter Definition and Setting

To define Parameters, right-click a Pattern node and select 'Parameters'  $\rightarrow$  'Define Parameters...' as shown in Fig.22.

	Show/Hide Children	Þ	
_	<u>P</u> arameters	Þ	Set Parameters
$\int$	Select su <u>b</u> tree		DefineParameters
/	Create <u>M</u> odule	_	Show Parameters
	Set Flags	+	
_	Show/Hide Module	Þ	

Fig.22 Parameter definition menu

Then a parameter setting dialogue appears (Fig.23).

×□ 銀定	
割り込み禁止usec	追加
	編集
	削除
キャンセル	ок

Fig.23 Parameter setting dialogue

Click 'Add' to add parameters by typing parameter name, value and type.

Click 'Edit' to modify the definition of a Parameter.

Click 'Delete' to erase the Parameter.

To change values of Parameter, right-click the Pattern node and select 'Parameters'→'Set

Parameters...' and re-type values on a dialogue.

#### 6.3 Parameters' References

In 'AttributeDialog', 'Desc' attribute is set according to 'Desc Format String' attribute; string value written in '{parameter name}' formatted text in 'Desc Format String' attribute will also be used in 'Desc' attribute as a parameter value. 'AttributeDialog' also lists available parameters in a node as shown in Fig.24.

×□	Set p	roperties	
Name: A_1			
Desc:			
▼more			
Attachment:			Browse
Status:			
Responsibility:			
Desc Format Str	ing:		
Script:			
Name	Value	Туре	Node
u1str	U1文字列	string	test2/U_1
s5str	test2のS5よ	string	test2/S_5
g10int	100	int	test2/G_10
attachmentDoub	100.00	double	test1
attachmentRaw	6666	raw	test1
		Cancel	ОК

Fig.24 AttributeDialog (Set properties)

The dialogue shows parameter name, value, type and node information ('module name / node name' formatted), and does not show parameter information which is not able to be referred.

Click a parameter to copy the 'Name' onto the clip board. Double-click the parameter to copy '{Name}' onto the clip board, that may be useful to set 'Desc Format String' attribute.

#### 7 <u>Others</u>

#### 7.1 Language Setting

D-Case Editor is a multilingual application. It runs in Japanese or English mode according to your Windows system setting. To change the language mode, set an option for Eclipse on command line as followings.

Japanese mode

```
$ eclipse -nl ja
```

English mode

```
$ eclipse -nl en
```

If you want to see all Eclipse menu in Japanese except D-Case Editor, you also can install 'Pleiades' from following URL.

http://mergedoc.sourceforge.jp/

#### 7.2 Previous Version Compatibility

Without file format converting, you cannot directly open D-Case data (GMF diagram information file and GMF model information file) created by previous version if D-Case Editor (before version 0.8.15), since previous version has different schematic data from current version. To convert the file format from previous version to current version, select 'File'  $\rightarrow$ 'Convert File Type'  $\rightarrow$ 'From Old GMF to New GMF Model' as shown in Fig.25.

2	Import Export		Console Properties 23 ロモジュール ロパタ
	Convert File Type		From GMF To D-Case Model
	Properties	Alt+Enter	From D-Case To GMF Model
			From Old GMF To New GMF Model
	1 newsample.dcase_diagram [D-CasePattern]		From GMF To SACM
	2 sub.dcase_diagram [test20131125/all]		From GMF To ARM
	3 main.dstar_diagram [test20131125]		From GMF To Text
	4 functionality.dcase_diagram [test20]		XSL Transform From GMF Model
	Exit		

Fig.25 File format transforming

Then, the converting wizard appears (Fig.26).

Convert Model To New GMF Format Wizard	
Conversion File Definition Page	
Enter input model hie path.	
Input : GMF Format Model File	
	Browse
Output : GMF Format Model File	
	Browse
Option	
overwrite output file.	
2	Einich
	Carce

Fig.26 File converting wizard

Type or select previous version GMF model information file, and set output filename and click 'Finish'. After that, right-click the GMF model information file and select 'Initialize dcase\_diagram diagram file' as shown in Fig.27.



Fig.27 Initializing D-Case diagram file

To prevent confusion in Modules view or d\*, you should not store both old version file and new version file in a same project.

#### 7.3 Converting to SACM

To convert D-Case document to SACM (Structured Assurance Case Metamodel) file, as shown in Fig.25, select 'File'→'Convert File Type', and select 'From GMF to SACM'.

If you want to create expanded SACM which supports Parameters, select 'From GMF to ARM'.