

## How to Use Profile Diagram to Manage Stereotypes?

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<u>Unified Modeling Language (UML)</u> is a general purpose modeling language which is widely used in modeling software systems. In some occasions, UML may not be precise enough for modeling specific problem domain. The <u>UML Profile</u> is an extension mechanism to customize the models for specific domains or platforms. This tutorial will teach you how to create customized profile in <u>Visual</u> <u>Paradigm</u>.

## Drawing a UML Profile Diagram

1. Create a profile by selecting **Modeling > Profile > New Profile** from the application toolbar.



2. A new profile diagram is created and you are prompted to enter a name. Enter *Vehicle Engineering Profile* as name and press **Enter** to confirm.



3. You are going to model your profile in this diagram. Let's create a stereotype first. Select the **Stereotype** tool from the diagram toolbar.



4. Click on the diagram to create a stereotype. You are immediately prompted to choose the base type of this stereotype, which is the type of element for which the creating stereotype will be used. Expand the **Class** node and select **Class**.

Select Base Type of	Stereotype	×
Model element types	Filter	
Display model element types in-use	Tree view: Hierarchical view	~
B		

- 5. Click **OK** to confirm.
- 6. A stereotype is created in the diagram. Enter *Vehicle* as its name and **Enter** to confirm.



- 7. Let's define some tags associated with this stereotype. Right-click on the *Vehicle* stereotype and select **Open Specification...** from the popup menu.
- 8. Open the **Tagged Value Definitions** tab.
- 9. At the bottom of the tab, click **Add** and then select **Floating Point Number Tag** from the popup menu.

Reset	OK Cano	Add Remove Text Tag
Reset	OK Can	_
		Multi-line Text Tag Model Element Tag Enumeration Tag Integer Tag
		Floating Point Number Tag Boolean Tag

10. Enter *speed-limit* as tag name and press **Enter** to confirm.

	Stereotype	e Specifi	cation		
Projec Constraints General	t Management Diagrams Tagged Value Definitions	Quali Tracea Re		Comments Reference Chart Relatio	ons 1
Name	Туре		Default Va	alue	Œ
speed-limit	Floating Point N	umber		0.0	

11. Create two integer tags passenger and id, and one enumeration tag automatic-transmission.

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Constraints		Diagrams Tra		Traceability Refer		es 👘
General	Tagged	Value Definitions	ue Definitions Relations		Chart Relati	ions
Name speed-limit passenger id		Type Floating Point Nur Integer Integer	nber	Default Va	0.0	
automatic-tran	smission	Enumeration		<unspecifi< td=""><td>-</td><td></td></unspecifi<>	-	

12. Let's configure the possible values for the enumeration tag *automatic-transmission*. Click on the ... button in its **Default Value** cell.

speed-limit	Floating Point Number		0.0
passenger	Integer		0.0
id	Integer		0
automatic-transmission	Enumeration	<unspecified></unspecified>	18.1

13. In the **Edit Enumeration** window, click **Add** to add and then enter *yes* as value. Add another value *no*.

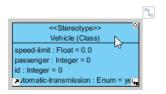
<b>\$</b>	Edit Enumeration	×
Enumeration: yes no		*
Default value	Add Remov	/e
	OK Cance	el

14. Select yes and check **Default value** to make it the default option.

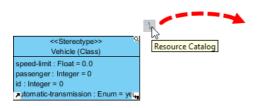
	Edit Enumeration	×
Enumeration: yes no		*
	Add Remove	
	OK Cancel	

- 15. Click **OK** to confirm and return to the specification window.
- 16. Click **OK** in the specification window to return to the diagram.

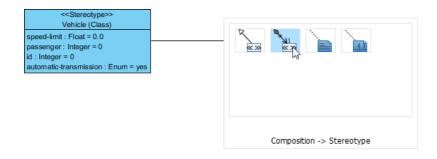
17. Let's create the other stereotypes in this profile. Move your mouse pointer over the *Vehicle* stereotype.



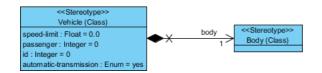
18. Press on the **Resource Catalog** button that appear at the top right of shape. Drag it out.



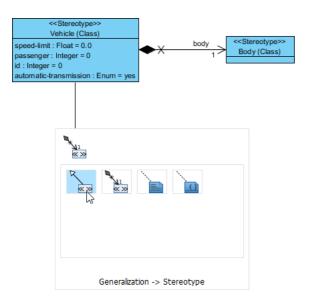
19. Release the mouse button in empty space. Select **Composition -> Stereotype** from Resource Catalog.



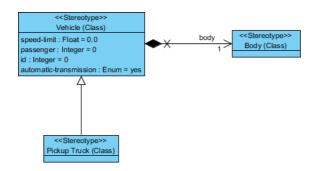
20. A new stereotype is created and has **Class** automatically chosen as base type. Enter *Body* as name and press **Enter** to confirm.



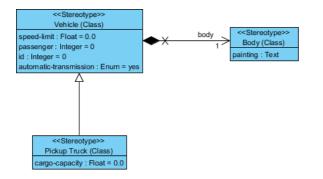
21. Besides composition, you can also create specialized stereotypes. Let's create a stereotype *Pickup Truck* which is a specialized type of vehicle, using Resource Catalog. This time, choose the resource **Generalization -> Stereotype**.



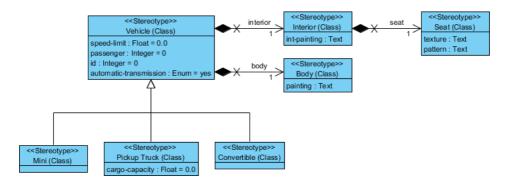
22. Up to now, your profile diagram should look like this:



23. Apply the techniques taught above to add tags to the new stereotypes. Add a text tag *painting* to *Body* and a floating point number tag *cargo-capacity* to *Pickup Truck*.



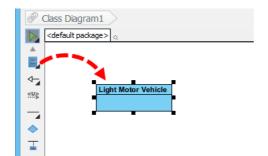
24. Draw two more specialized stereotypes *Mini* and *Convertible* from *Vehicle*. Draw another composite stereotype *Interior* from *Vehicle*, and another composite stereotype *Seat* from *Interior*. Add a text tag *int-painting* to *Interior* and two text tags *texture* and *pattern* to *Seat*. Your diagram should look like this:



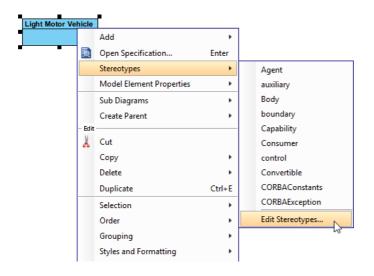
## **Creating a Class with Stereotype**

The profile is now ready to use. Let's create a <u>class diagram</u> with the stereotype defined in Profile Diagram.

- Create a class diagram by selecting Diagram > New from the application toolbar. Select Class Diagram in the New Diagram window and click Next. Keep the diagram name as provided and click OK to confirm.
- 2. Create a class *Light Motor Vehicle*.



3. Right-click on *Light Motor Vehicle* and select **Stereotypes > Edit Stereotypes** from the popup menu.



4. Select **Pickup Truck** on the left hand side and then click > to add it.

5. Open the **Tagged Values** tab. The tags defined in the stereotypes are listed. Besides the tag defined in <<Pickup Truck>>, there are tags defined under its generalized stereotype <<Vehicle>> and its composited stereotypes.

Template Parameters	Class Code D			Java Annotations Stere Relations Chart Rela		otypes
General Attribute	s Operati Project Manag			uality	Chart Relat	
Tagged Values	Constraint		Diagrar		Traceab	
						,
Name	Туре	Value	Multi	Stereot	ype	
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id	Integer	0	<unsp< td=""><td>&lt;<picku< td=""><td>o Truck&gt;&gt;</td><td></td></picku<></td></unsp<>	< <picku< td=""><td>o Truck&gt;&gt;</td><td></td></picku<>	o Truck>>	
automatic-transmission	Enumeration	yes	<unsp< td=""><td>&lt;<pickup< td=""><td>o Truck&gt;&gt;</td><td></td></pickup<></td></unsp<>	< <pickup< td=""><td>o Truck&gt;&gt;</td><td></td></pickup<>	o Truck>>	
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Configure Default	Open Spec	ification		Add	Remo	× ve

6. Click the ... button in the **Value** cell of *Body* tag. The **Sub-level Tagged Values** window is shown. You can specify the tagged values of the *Body* stereotype there.

	automatic-transmission	Enumeration	yes	<unsp< th=""><th>&lt;<pickup truck="">&gt;</pickup></th><th></th></unsp<>	< <pickup truck="">&gt;</pickup>	
	cargo-capacity	Floating Poi	0.0	<unsp< th=""><th>&lt;<pickup truck="">&gt;</pickup></th><th></th></unsp<>	< <pickup truck="">&gt;</pickup>	
	body	< <body>&gt;</body>			< <pickup truck="">&gt;</pickup>	
	interior	< <interior>&gt;</interior>	l	à	< <pickup truck="">&gt;</pickup>	
<b>\$</b>	Su	b-level Tag	ged Va	lues - b	ody	
Tagged values:						
	_		Value		Multipli	rity
Name	Туре		value		marapi	urcy

## **Related Links**

- What is Profile Diagram in UML?
- Know-how: Define and specify stereotype in BPD



Visual Paradigm home page (https://www.visual-paradigm.com/)

Visual Paradigm tutorials (https://www.visual-paradigm.com/tutorials/)