Tutorial

Domain Diagram Type

Tutorial	Actifsource Tutorial – Domain Diagram Type
Required Time	• 30 Minutes
Prerequisites	• Actifsource Tutorial – Installing Actifsource • Actifsource Tutorial – Simple Service • Actifsource Tutorial – Statemachine
Goal	• Create a user defined diagram type to display and edit domain specific diagrams
Topics covered	• Create a user defined diagram type to display and edit domain specific diagrams • Create a domain diagram based on the diagram type to edit the underlying root resource • Define a highlight path from node to node over any edge • Define a tooltip for elements on the domain diagram
Notation	↳ To do • Information • **Bold**: Terms from actifsource or other technologies and tools • **Bold underlined**: actifsource Resources • Underlined: User Resources • *UnderlinedItalics*: Resource Functions • `Monospaced`: User input • *Italics*: Important terms in current situation
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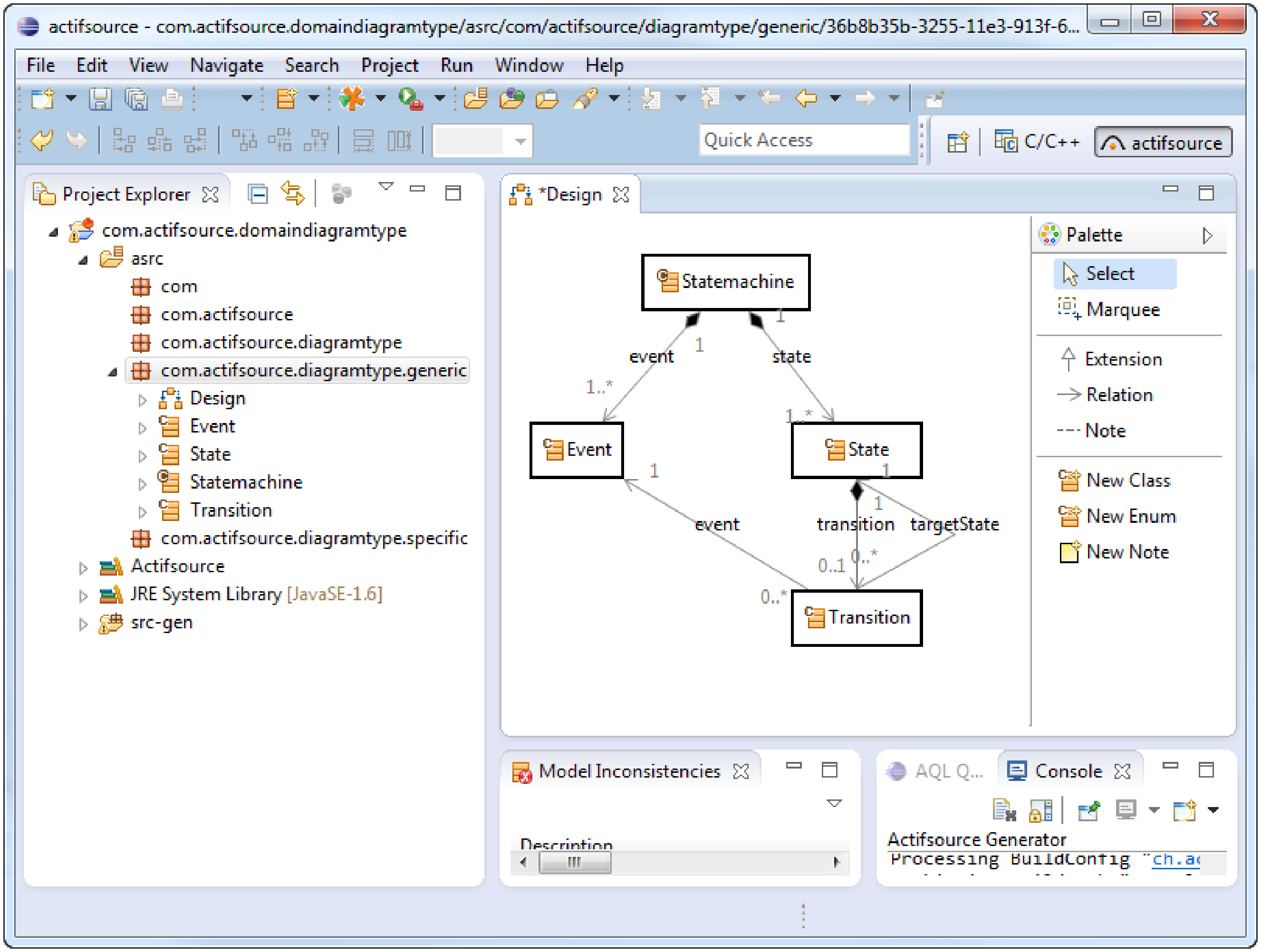
Compatibility	Created with **actifsource** Version 5.9.0

Overview

- Create a user defined diagram type to display and edit domain specific diagrams
- Create a domain diagram based on the diagram type to edit the underlying root resource
- Define a highlight path from node to node over any edge
- Define a tooltip for elements on the domain diagram

Part I: Preparation



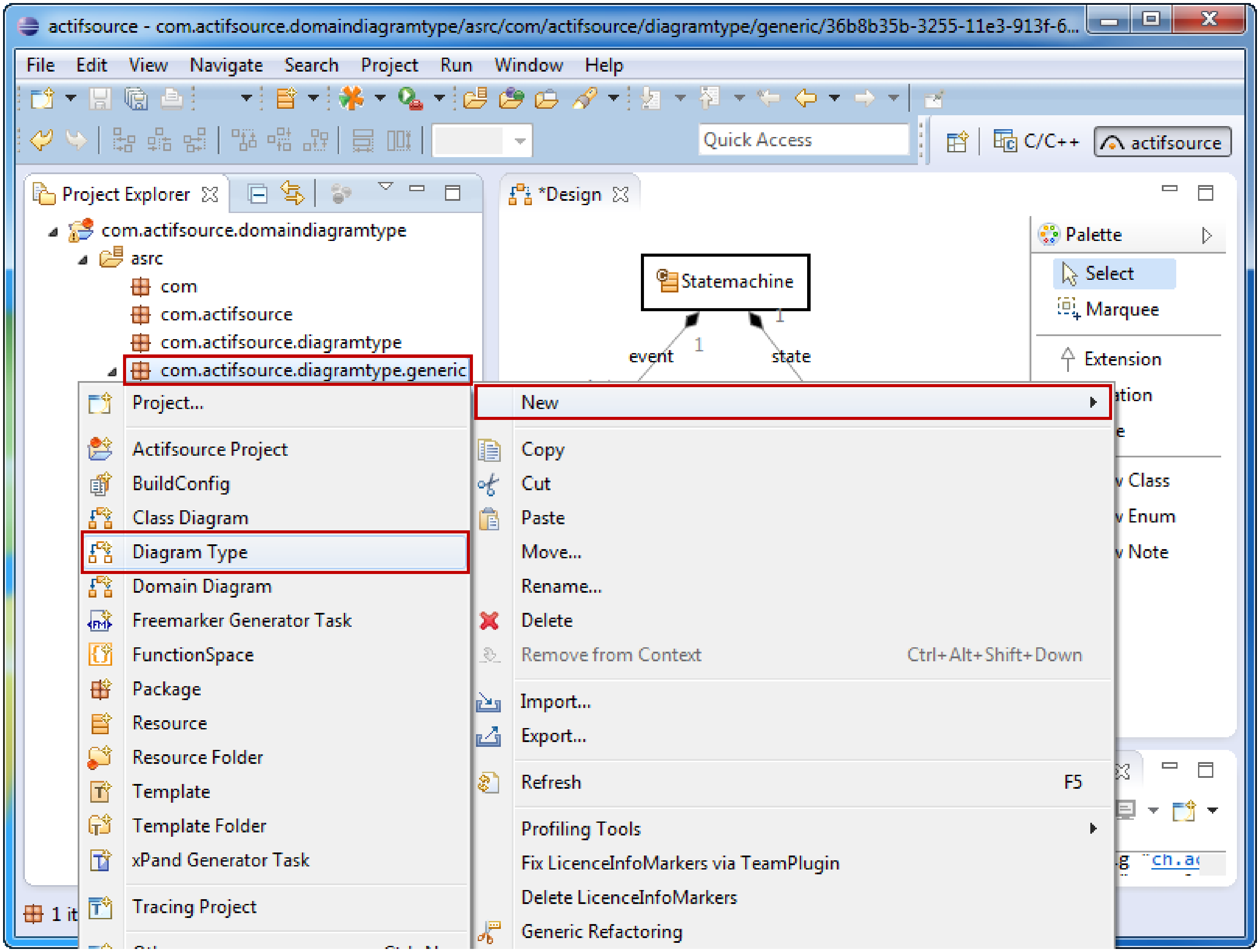
```
Actifsource Generator
Processing BuildConfig "ch.a
```

- Prepare a new actifsource Project as seen in the Actifsource Tutorial – Statemachine
- Create a generic Domain Model as shown above
- State.transition → Decorating Relation with Decorator State.-state.event
- Transition.targetState → Use Relation with RangeRestriction Transistion.-transition.-state.state

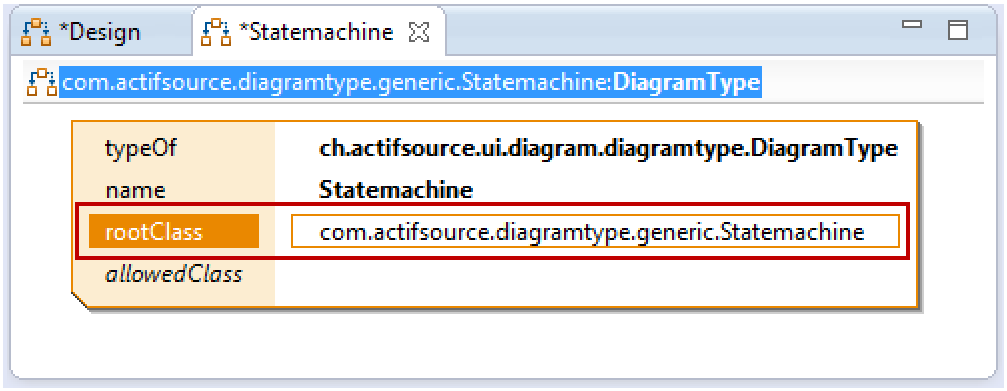
Part II: Create a Diagram Type

- Create a user defined diagram type to display and edit domain specific diagrams

Create a Diagram Type



ⓘ Create a new **<u>DiagramType</u>** named <u>Statemachine</u> in the **Package** *generic*

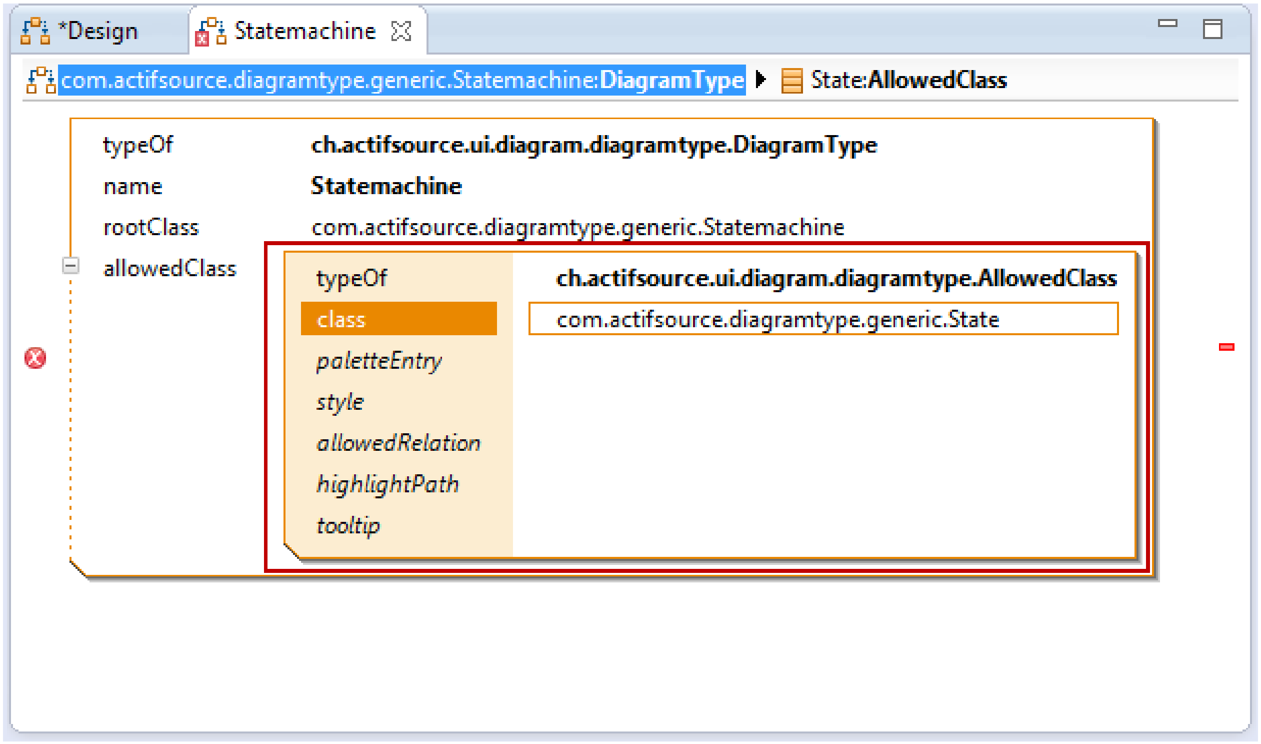


com.actifsource.diagramtype.generic.Statemachine:DiagramType

typeOf	**ch.actifsource.ui.diagram.diagramtype.DiagramType**
name	**Statemachine**
rootClass	com.actifsource.diagramtype.generic.Statemachine
allowedClass	

- The **Root Class** defines the **Resource** which contains the elements that shall be managed on your domain diagram

↳ Select Statemachine as **Root Class**

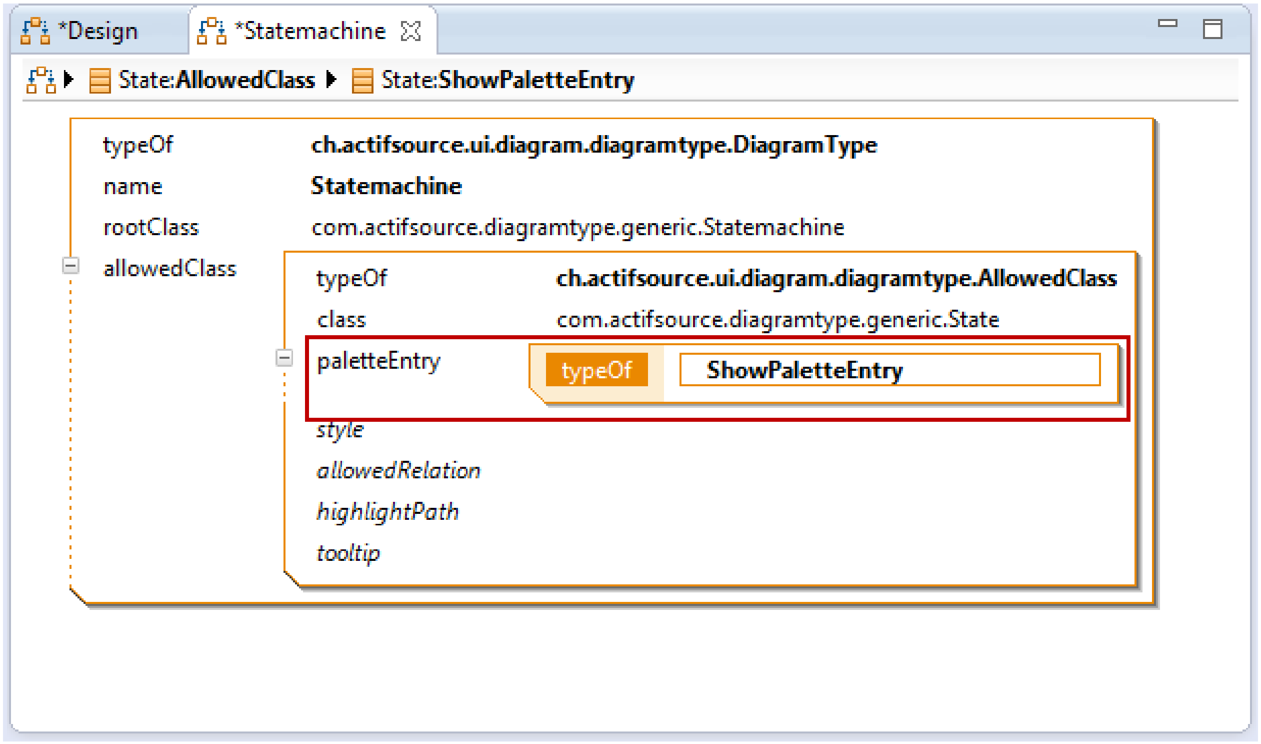

*Design | Statemachine

com.actifsource.diagramtype.generic.Statemachine:DiagramType ▸ State:AllowedClass

typeOf	**ch.actifsource.ui.diagram.diagramtype.DiagramType**
name	**Statemachine**
rootClass	com.actifsource.diagramtype.generic.Statemachine
allowedClass	

typeOf	**ch.actifsource.ui.diagram.diagramtype.AllowedClass**
class	com.actifsource.diagramtype.generic.State
paletteEntry	
style	
allowedRelation	
highlightPath	
tooltip	

- The **Allowed Class** defines all the **Resources** which shall be managed on your domain diagram
- Select State as **Allowed Class** since we want to design a state machine



*Design | *Statemachine

State:AllowedClass ▸ State:ShowPaletteEntry

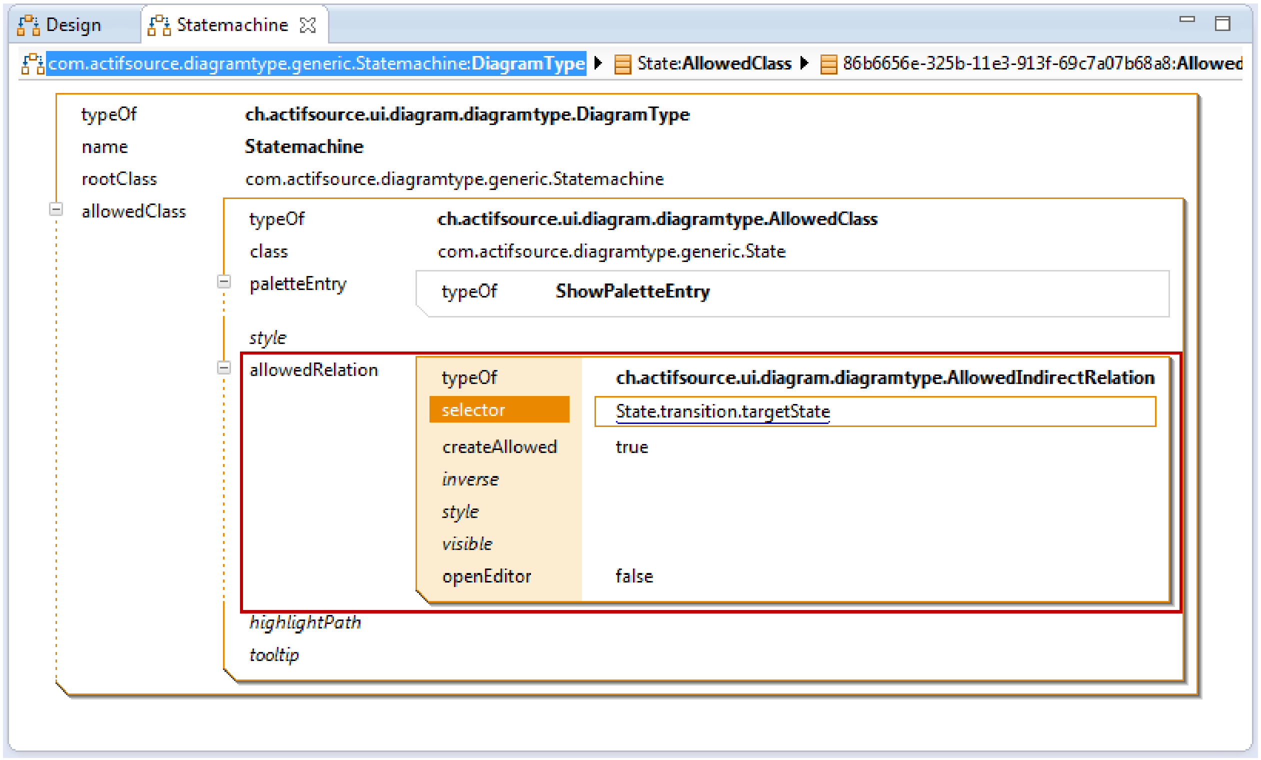
typeOf	**ch.actifsource.ui.diagram.diagramtype.DiagramType**
name	**Statemachine**
rootClass	com.actifsource.diagramtype.generic.Statemachine
allowedClass	

typeOf	**ch.actifsource.ui.diagram.diagramtype.AllowedClass**
class	com.actifsource.diagramtype.generic.State
paletteEntry	typeOf **ShowPaletteEntry**
style	
allowedRelation	
highlightPath	
tooltip	

- Allowed Classes might be created using the domain diagram editor via a Palette Tool
  - HidePaletteEntry: No Palette Entry to create this Allowed Class
  - ShowPaletteEntry: Palette Entry named as the Allowed Class
  - ShowRenamedPaletteEntry: Palette Entry named as defined

↳ Select the **PaletteEntry** **ShowPaletteEntry** or **ShowRenamedPaletteEntry**

Create a Diagram Type



com.actifsource.diagramtype.generic.Statemachine:DiagramType ▸ State:AllowedClass ▸ 86b6656e-325b-11e3-913f-69c7a07b68a8:Allowed

typeOf	ch.actifsource.ui.diagram.diagramtype.DiagramType
name	Statemachine
rootClass	com.actifsource.diagramtype.generic.Statemachine
allowedClass	

typeOf	ch.actifsource.ui.diagram.diagramtype.AllowedClass
class	com.actifsource.diagramtype.generic.State
paletteEntry	typeOf ShowPaletteEntry
style	
allowedRelation	
highlightPath	
tooltip	

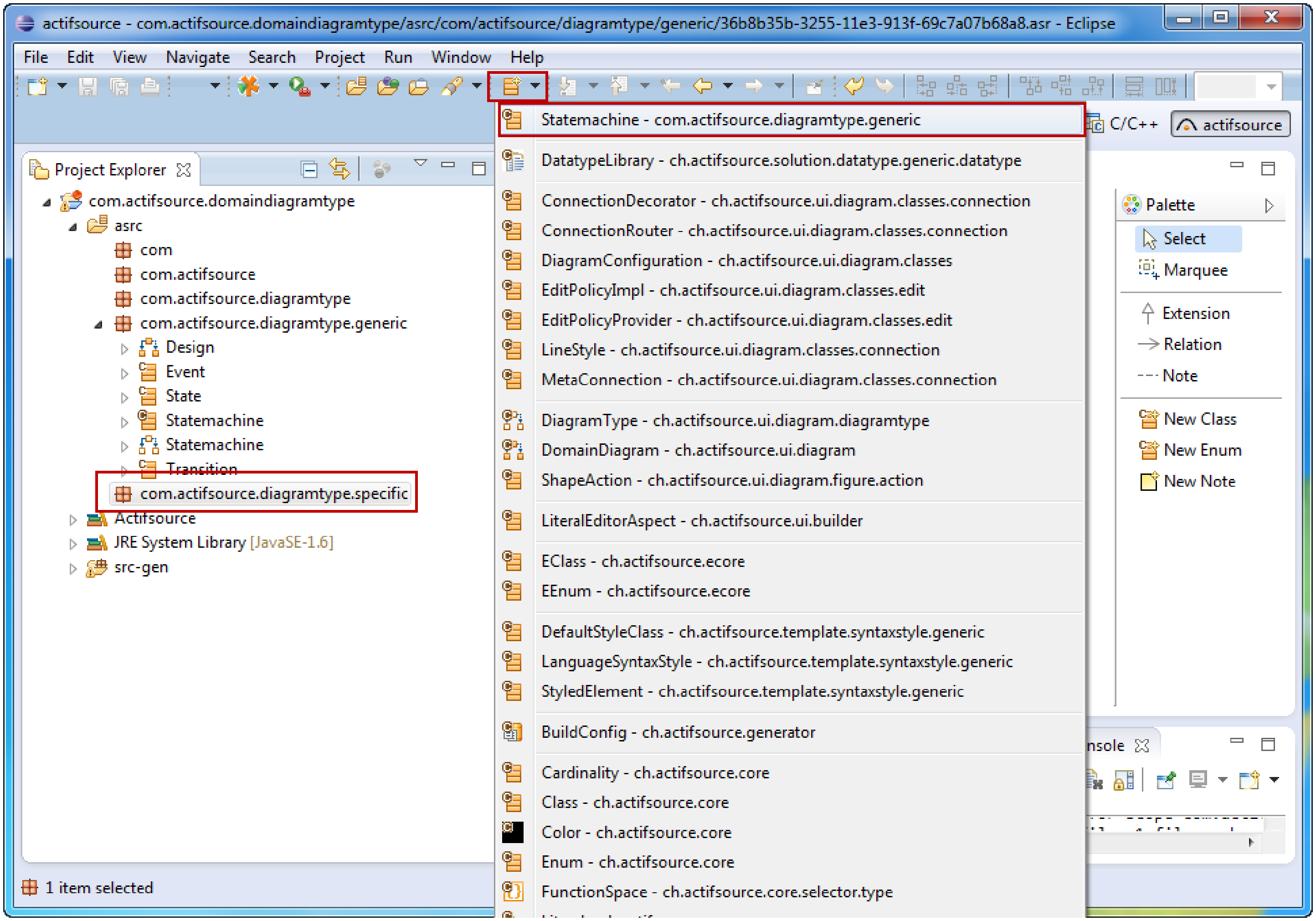
typeOf	ch.actifsource.ui.diagram.diagramtype.AllowedIndirectRelation
selector	State.transition.targetState
createAllowed	true
inverse	
style	
visible	
openEditor	false

- Allowed Relations are relations that shall be displayed on the domain diagram
  - AllowedDependencyRelation: Dotted Line that shows dependencies between components
  - AllowedDirectRelation: Direct relation between resources A and B
  - AllowedIndirectRelation: Indirect relation between resources A and B via X
- We like to see a transition from state to state just as a simple arrow
- Note that the resource Transition is displayed as an arrow
- Define the **Selector** `State.transition.targetState` for the **Indirect Relation**
- Define **openEditor** as false if you do not want to open the **Resource Editor** automatically after creating the transition via domain diagram editor.

Part III: Create a Domain Diagram

- Create a domain diagram based on the diagram type to edit the underlying root resource

Create a Domain Diagram



actifsource - com.actifsource.domaindiagramtype/asrc/com/actifsource/diagramtype/generic/36b8b35b-3255-11e3-913f-69c7a07b68a8.asr - Eclipse

File Edit View Navigate Search Project Run Window Help

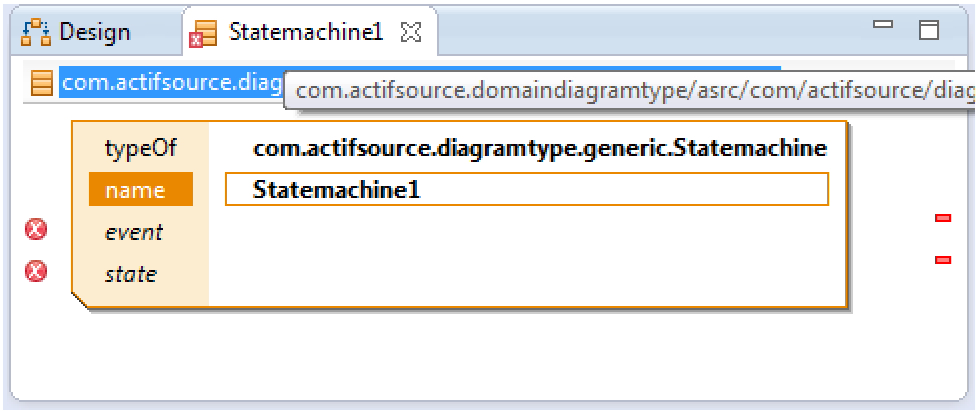
Project Explorer

- com.actifsource.domaindiagramtype
  - asrc
    - com
    - com.actifsource
    - com.actifsource.diagramtype
    - com.actifsource.diagramtype.generic
      - Design
      - Event
      - State
      - Statemachine
      - Statemachine
      - Transition
    - com.actifsource.diagramtype.specific
  - Actifsource
  - JRE System Library [JavaSE-1.6]
  - src-gen

1 item selected

- Statemachine - com.actifsource.diagramtype.generic
- DatatypeLibrary - ch.actifsource.solution.datatype.generic.datatype
- ConnectionDecorator - ch.actifsource.ui.diagram.classes.connection
- ConnectionRouter - ch.actifsource.ui.diagram.classes.connection
- DiagramConfiguration - ch.actifsource.ui.diagram.classes
- EditPolicyImpl - ch.actifsource.ui.diagram.classes.edit
- EditPolicyProvider - ch.actifsource.ui.diagram.classes.edit
- LineStyle - ch.actifsource.ui.diagram.classes.connection
- MetaConnection - ch.actifsource.ui.diagram.classes.connection
- DiagramType - ch.actifsource.ui.diagram.diagramtype
- DomainDiagram - ch.actifsource.ui.diagram
- ShapeAction - ch.actifsource.ui.diagram.figure.action
- LiteralEditorAspect - ch.actifsource.ui.builder
- EClass - ch.actifsource.ecore
- EEnum - ch.actifsource.ecore
- DefaultStyleClass - ch.actifsource.template.syntaxstyle.generic
- LanguageSyntaxStyle - ch.actifsource.template.syntaxstyle.generic
- StyledElement - ch.actifsource.template.syntaxstyle.generic
- BuildConfig - ch.actifsource.generator
- Cardinality - ch.actifsource.core
- Class - ch.actifsource.core
- Color - ch.actifsource.core
- Enum - ch.actifsource.core
- FunctionSpace - ch.actifsource.core.selector.type

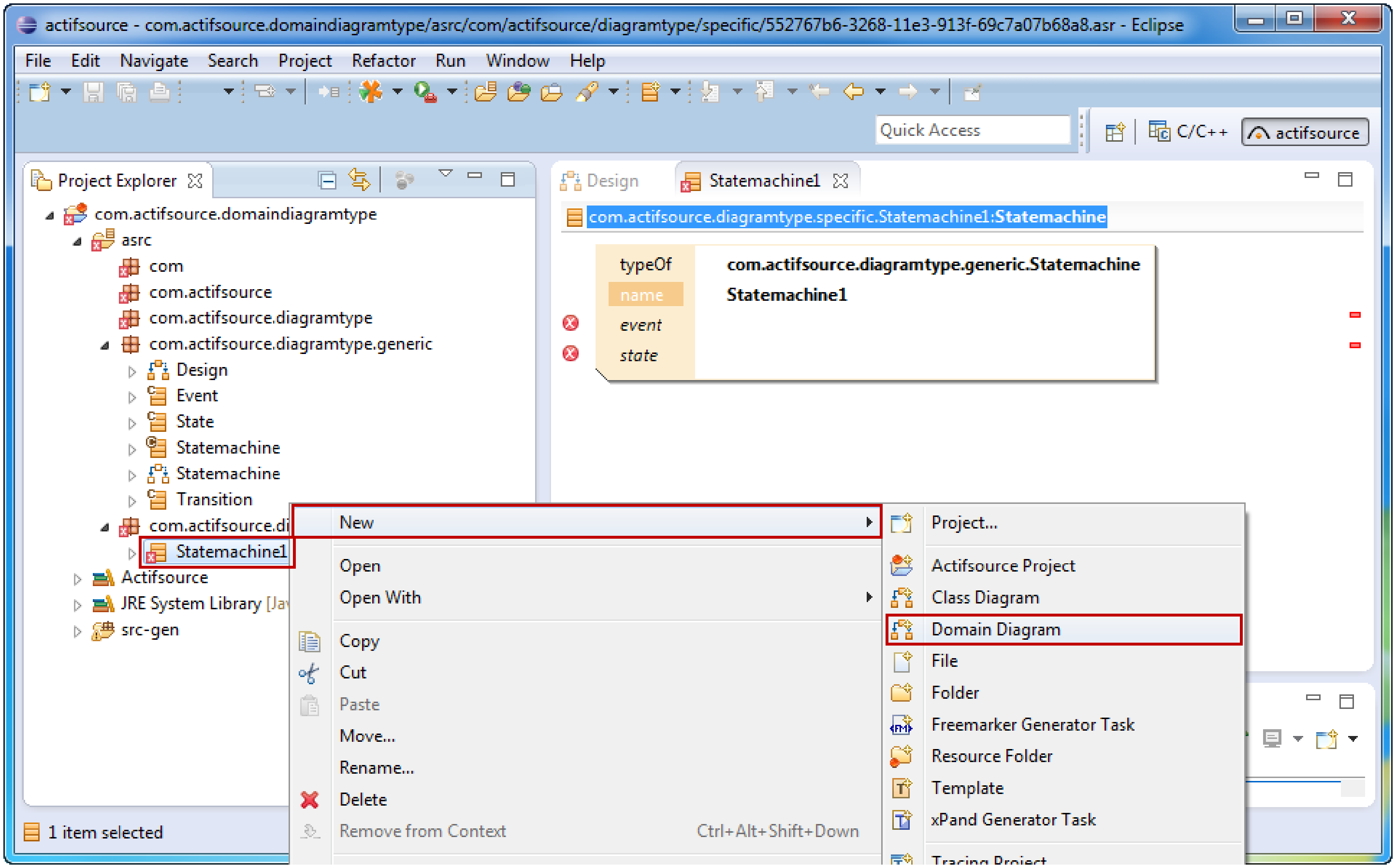
ⓘ Create a new <u>Statemachine</u> named <u>Statemachine1</u> in the **Package** *specific*



com.actifsource.diag
com.actifsource.domaindiagramtype/asrc/com/actifsource/diag

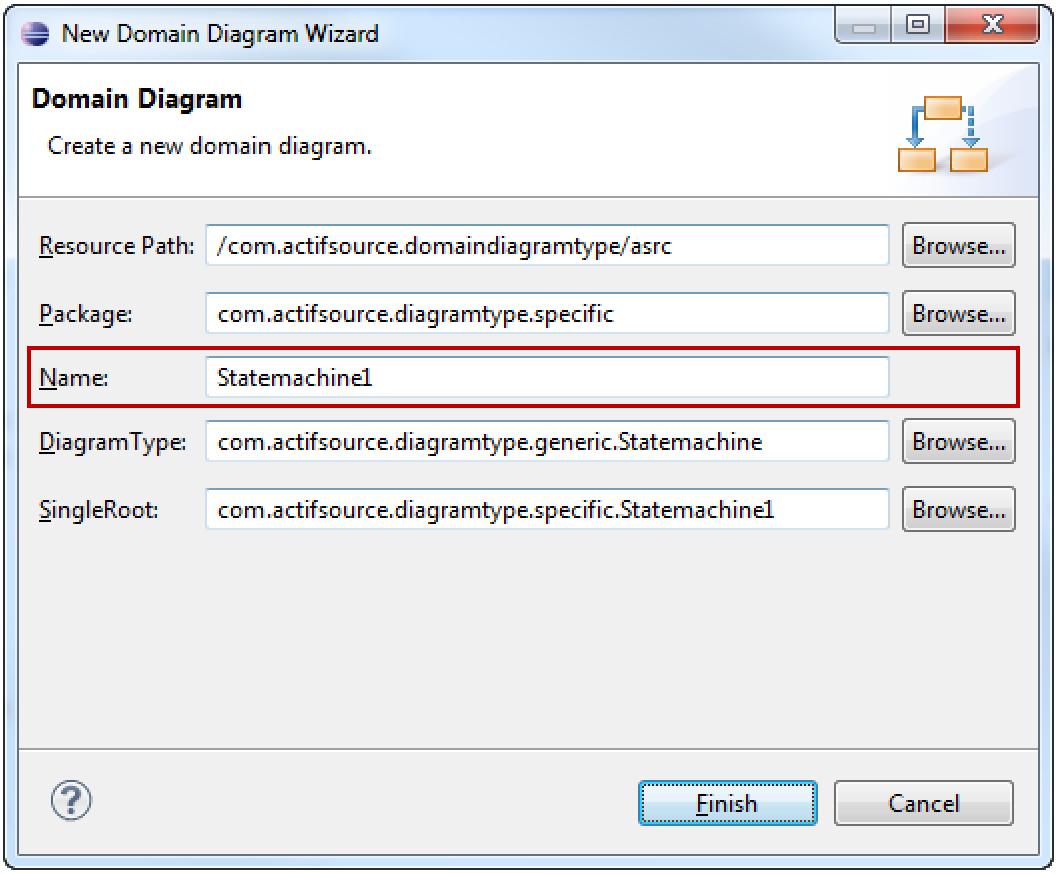
typeOf	com.actifsource.diagramtype.generic.Statemachine
name	Statemachine1
event	
state	

- ⓘ We could now define Event, State and Transition using the Resource Editor
- ⓘ Let’s now try the Domain Diagram Editor


actifsource - com.actifsource.domaindiagramtype/asrc/com/actifsource/diagramtype/specific/552767b6-3268-11e3-913f-69c7a07b68a8.asr - Eclipse
File Edit Navigate Search Project Refactor Run Window Help
Quick Access
C/C++
actifsource
Project Explorer
com.actifsource.domaindiagramtype
asrc
com
com.actifsource
com.actifsource.diagramtype
com.actifsource.diagramtype.generic
Design
Event
State
Statemachine
Statemachine
Transition
com.actifsource.di
Statemachine1
Actifsource
JRE System Library [Ja
src-gen
1 item selected
Design
Statemachine1
com.actifsource.diagramtype.specific.Statemachine1:Statemachine
typeOf
com.actifsource.diagramtype.generic.Statemachine
name
Statemachine1
event
state
New
Open
Open With
Copy
Cut
Paste
Move...
Rename...
Delete
Remove from Context Ctrl+Alt+Shift+Down
Project...
Actifsource Project
Class Diagram
Domain Diagram
File
Folder
Freemarker Generator Task
Resource Folder
Template
xPand Generator Task
Tracing Project

- ⓘ Create a new **Domain Diagram** named Statemachine1 for the Statemachine Statemachine1 in the **Package** *specific*
- ⓘ Use the context menu directly on the Statemachine Statemachine1

Create a Domain Diagram



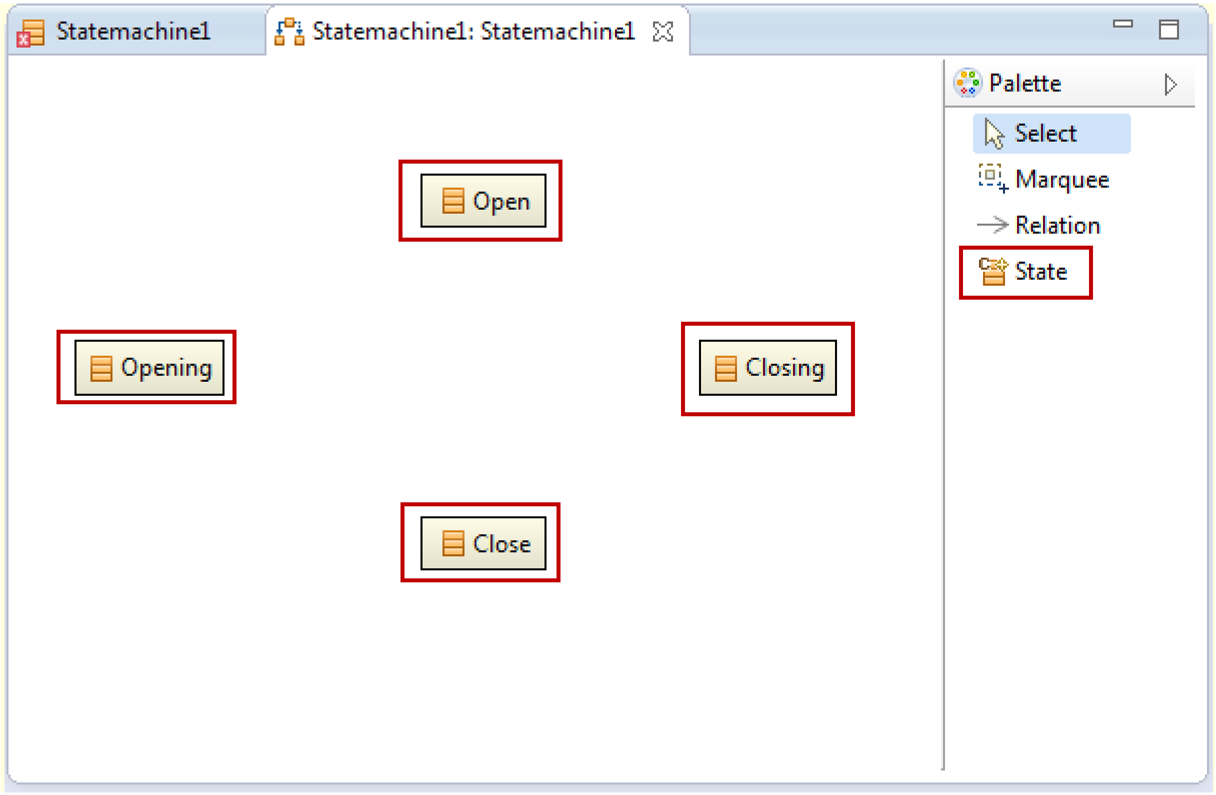
New Domain Diagram Wizard

Domain Diagram

Create a new domain diagram.

Resource Path:	/com.actifsource.domaindiagramtype/asrc
Package:	com.actifsource.diagramtype.specific
Name:	Statemachine1
DiagramType:	com.actifsource.diagramtype.generic.Statemachine
SingleRoot:	com.actifsource.diagramtype.specific.Statemachine1

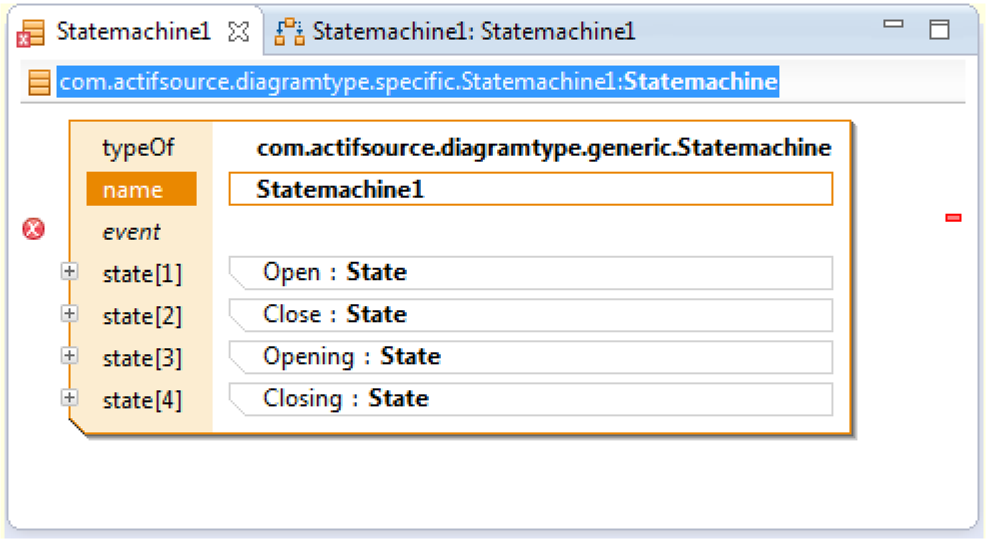
- ⓘ The domain diagram shall be named `Statemachine1`
- ⓘ **DiagramType** is detected automatically based on the **Root Resource**
- ⓘ **Single Root** is filled in automatically based on the context of *new Domain Diagram*



ⓘ Create new States named Open, Close, Opening and Closing using the **State Tool** from the **Palette**

ⓘ Note that the palette entry is influenced by *DiagramType.allowedClass.paletteEntry*

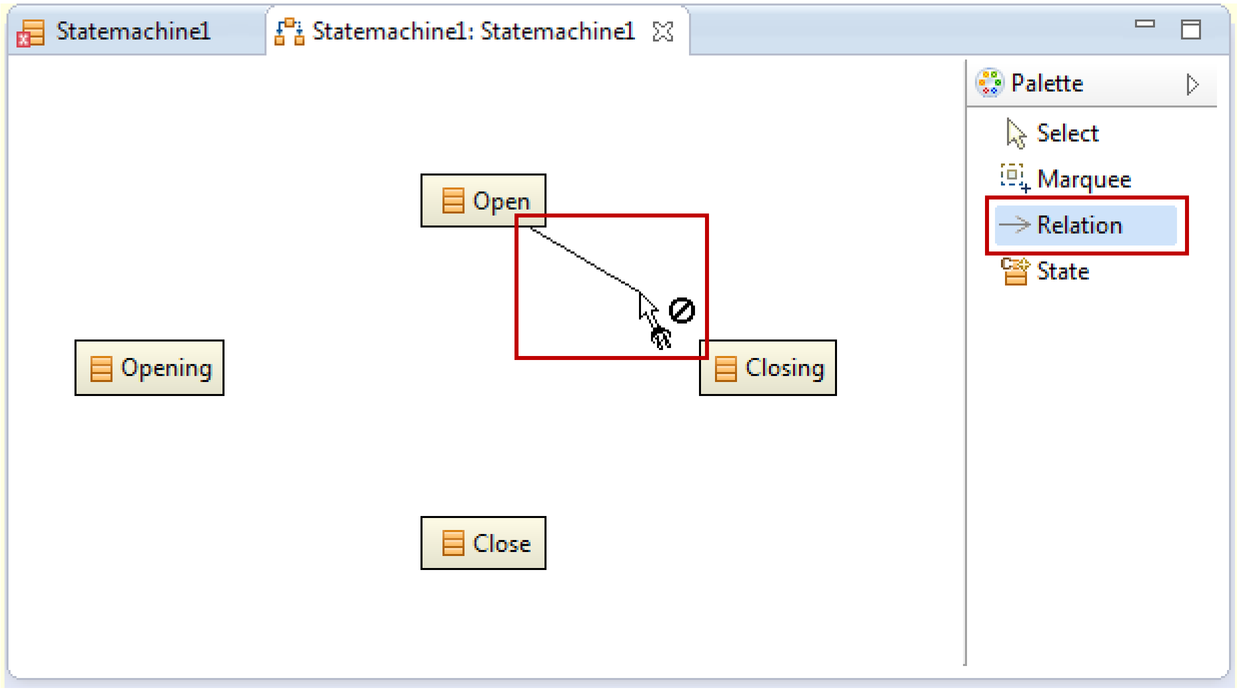
Create a Domain Diagram


Statemachine1 | Statemachine1: Statemachine1

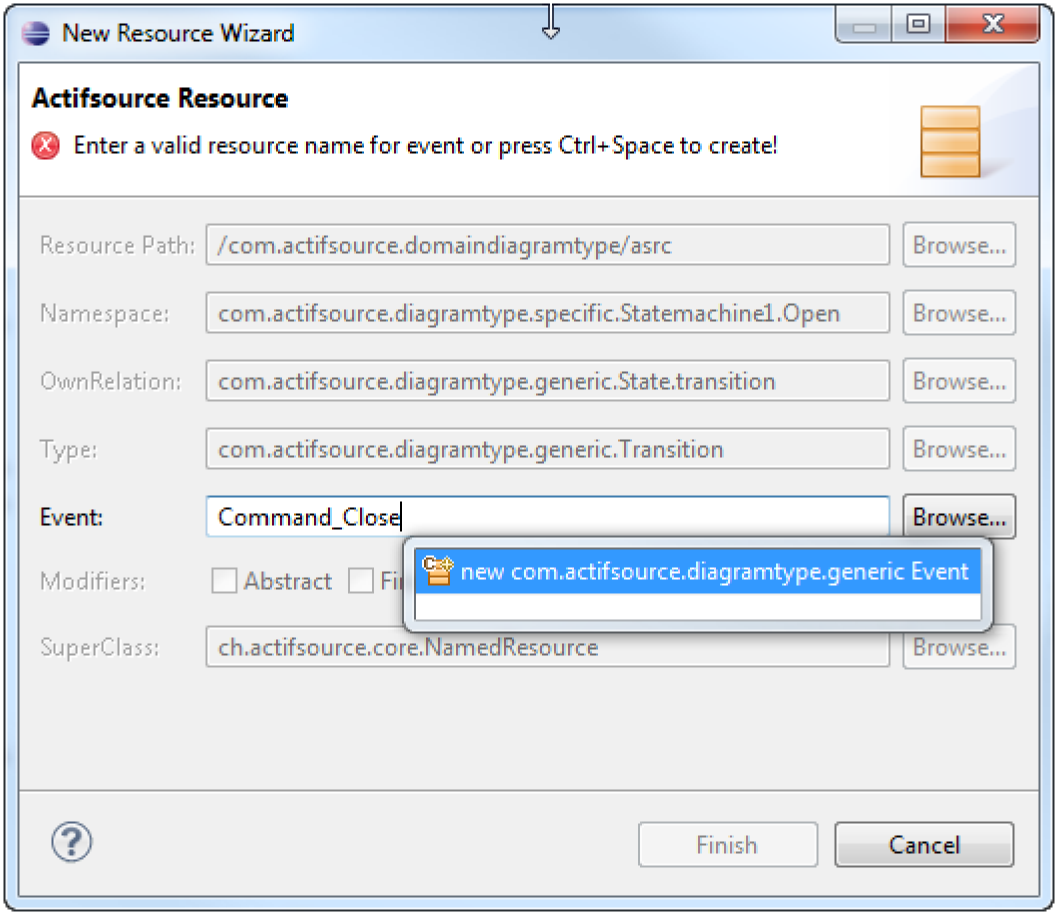
com.actifsource.diagramtype.specific.Statemachine1:Statemachine

typeOf	com.actifsource.diagramtype.generic.Statemachine
name	Statemachine1
event	
state[1]	Open : State
state[2]	Close : State
state[3]	Opening : State
state[4]	Closing : State

ⓘ Note that the dependent Statemachine Statemachine1 is modified accordingly



ⓘ Start adding Transitions using the **Relation Tool** from the **Palette**



Enter a valid resource name for event or press Ctrl+Space to create!

Resource Path: /com.actifsource.domaindiagramtype/asrc

Namespace: com.actifsource.diagramtype.specific.Statemachine1.Open

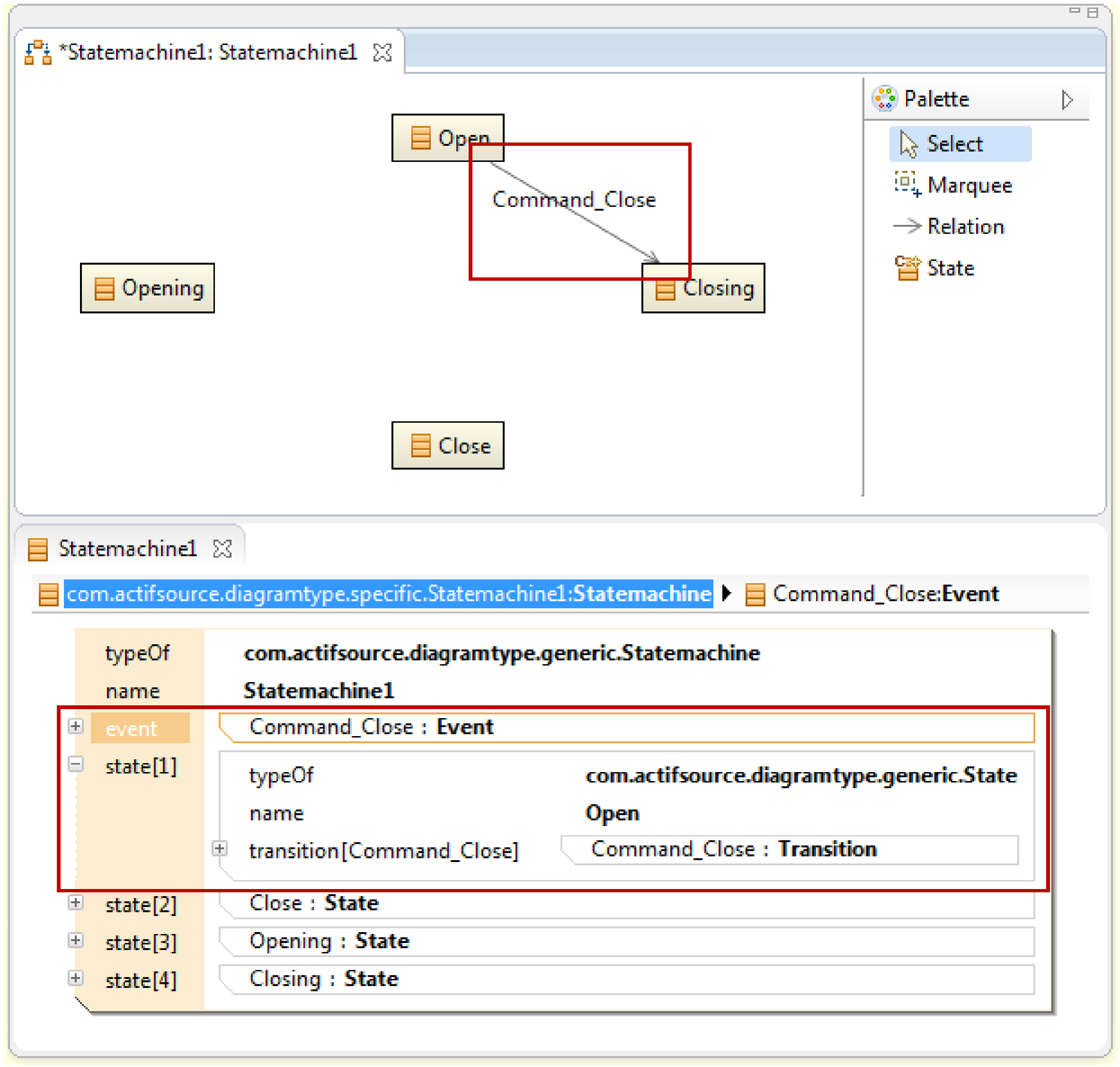
OwnRelation: com.actifsource.diagramtype.generic.State.transition

Type: com.actifsource.diagramtype.generic.Transition

Event: Command_Close

SuperClass: ch.actifsource.core.NamedResource

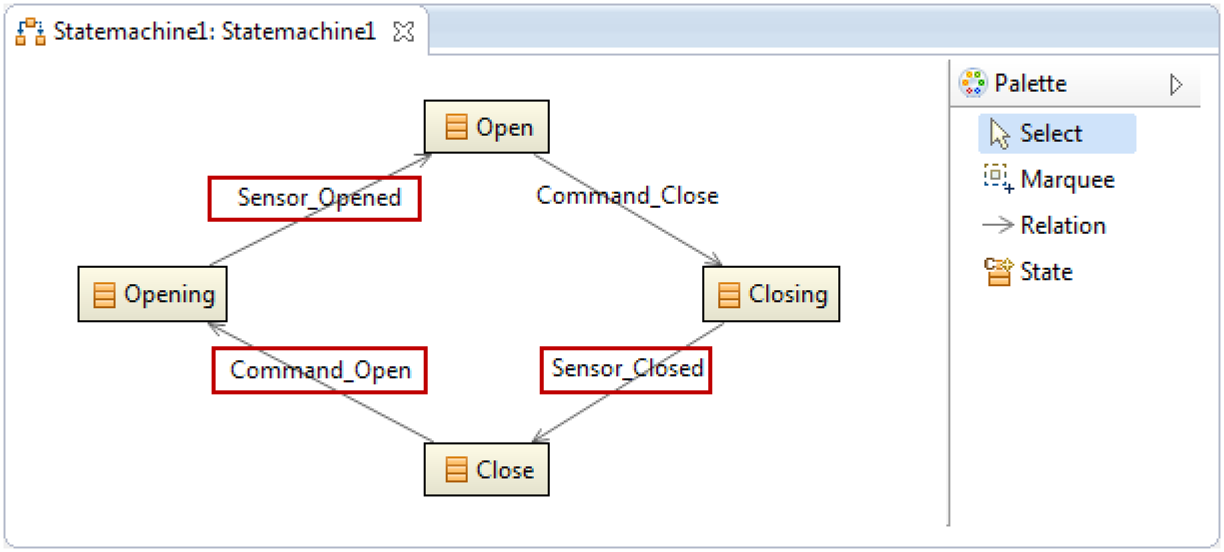
- ⓘ Note that Transitions are based on Events by using the **Decorating Relation**
- ⓘ Therefore you are asked for an Event when creating a new Transition
- ↳ Create a new Event called Command_Close using **Content Assist** (or choose an existing Event)



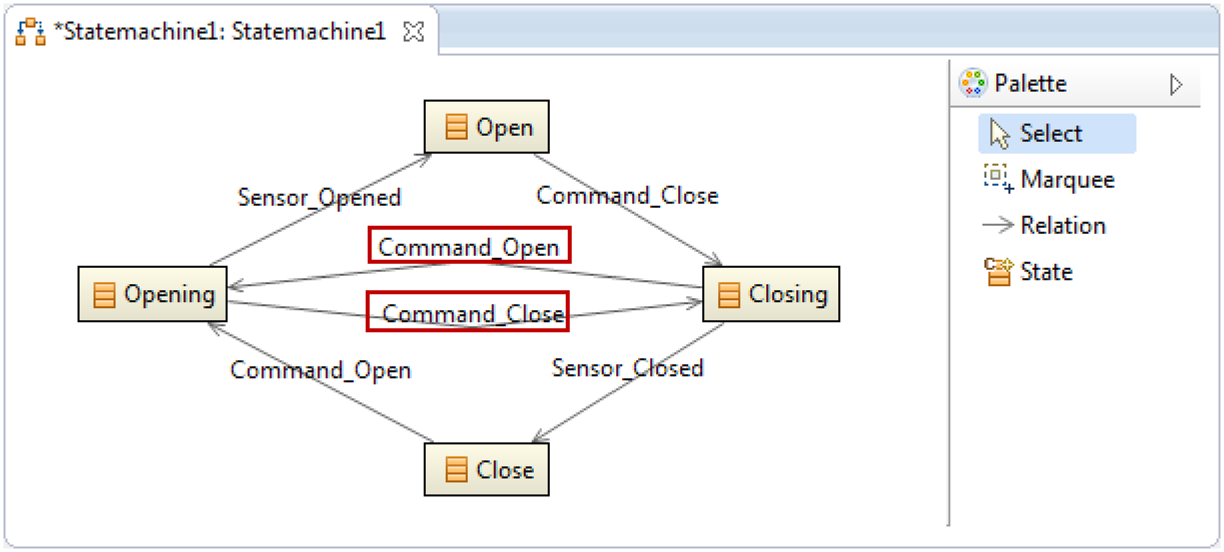
com.actifsource.diagramtype.specific.Statemachine1:Statemachine ▸ Command_Close:Event

typeOf	**com.actifsource.diagramtype.generic.Statemachine**
name	**Statemachine1**
event	Command_Close : **Event**
state[1]	typeOf **com.actifsource.diagramtype.generic.State**; name **Open**; transition[Command_Close] Command_Close : **Transition**
state[2]	Close : **State**
state[3]	Opening : **State**
state[4]	Closing : **State**

- ⓘ The Event Command_Close has been created
- ⓘ The Transition based on the Event Command_Close with targetState Closing has been created



↳ Add some more Transitions based on the *new* Events Command_Open, Sensor_Closed, Sensor_Opened



↳ Add two more Transitions based on the *existing* Events Command_Close and Command_Open

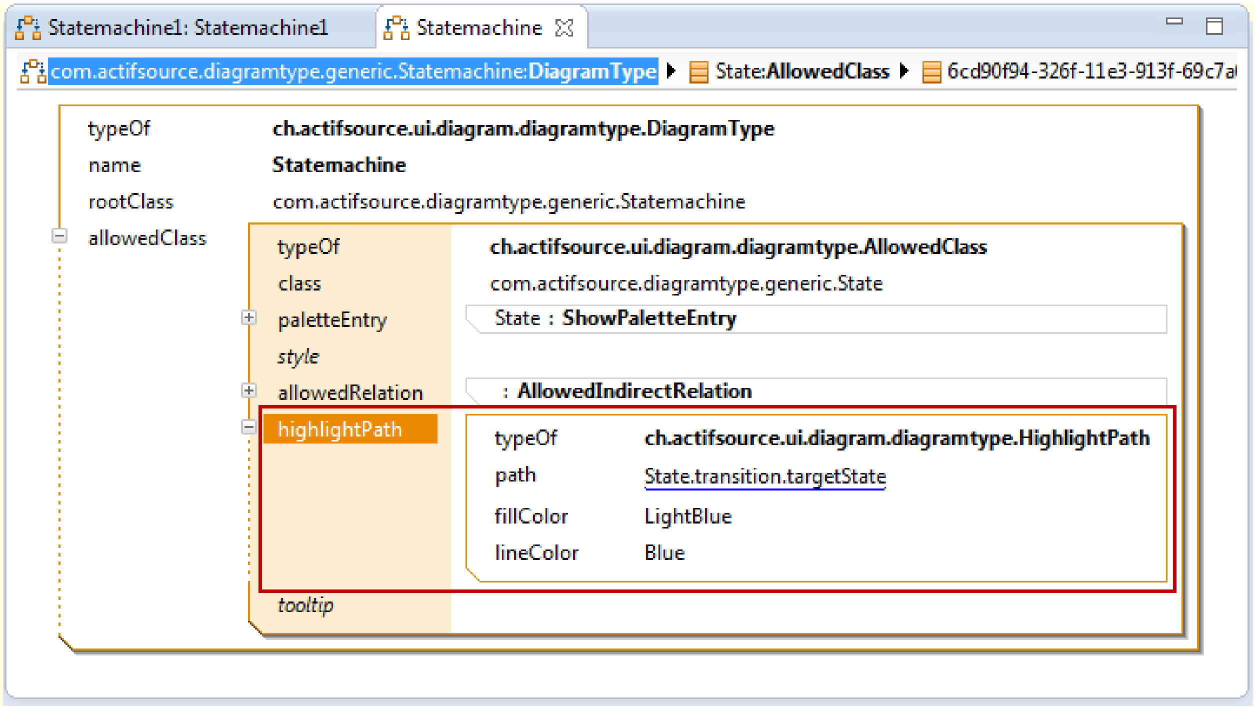
ⓘ Use **Context Assist** to choose the existing Events

Part IV:

Define a Highlight Path

ⓘ Define a highlight path from node to node over any edge

Defining a Highlight Path


Statemachine1: Statemachine1 | Statemachine

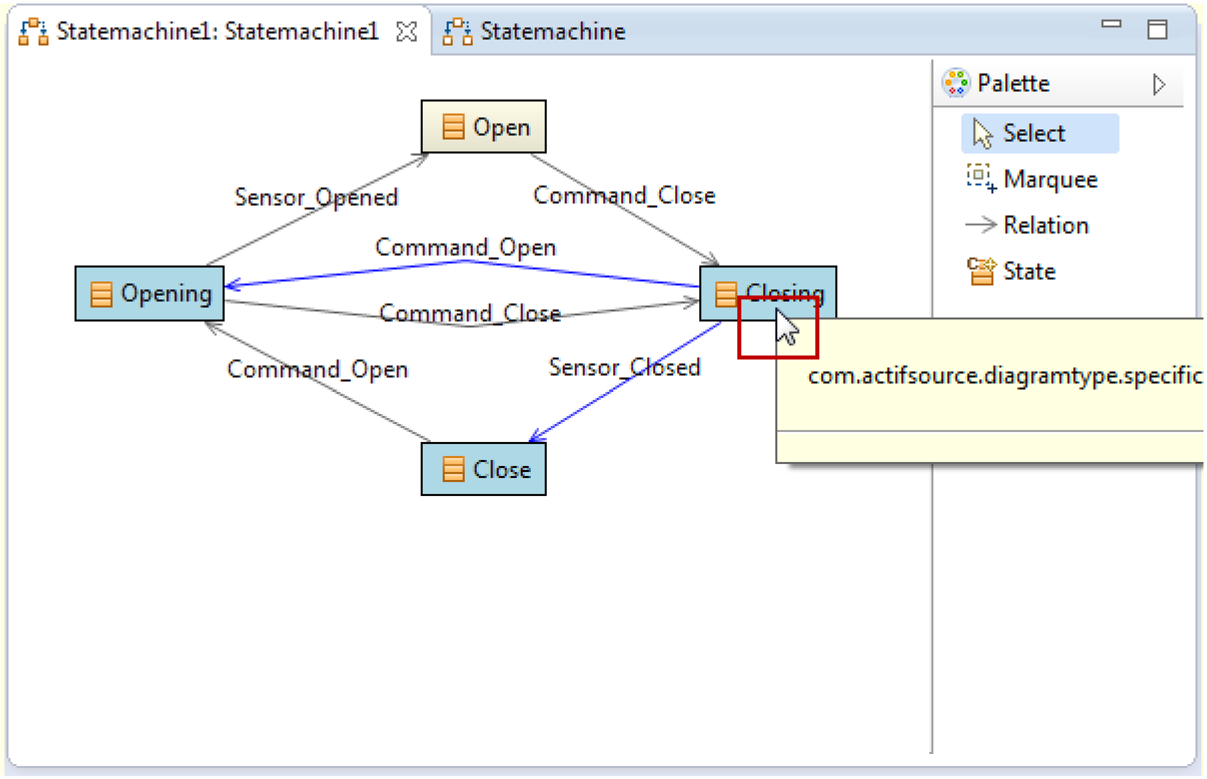
com.actifsource.diagramtype.generic.Statemachine:DiagramType ▸ State:AllowedClass ▸ 6cd90f94-326f-11e3-913f-69c7a

typeOf	**ch.actifsource.ui.diagram.diagramtype.DiagramType**	
name	**Statemachine**	
rootClass	com.actifsource.diagramtype.generic.Statemachine	
allowedClass	typeOf	**ch.actifsource.ui.diagram.diagramtype.AllowedClass**
	class	com.actifsource.diagramtype.generic.State
	paletteEntry	State : **ShowPaletteEntry**
	style	
	allowedRelation	: **AllowedIndirectRelation**
	highlightPath	typeOf **ch.actifsource.ui.diagram.diagramtype.HighlightPath**; path State.transition.targetState; fillColor LightBlue; lineColor Blue
	tooltip	

ⓘ Let’s see where transitions are leading to from source to target state

↳ Define a **HighlightPath** for the **Allowed Class** State as shown in the example above

Defining a Highlight Path



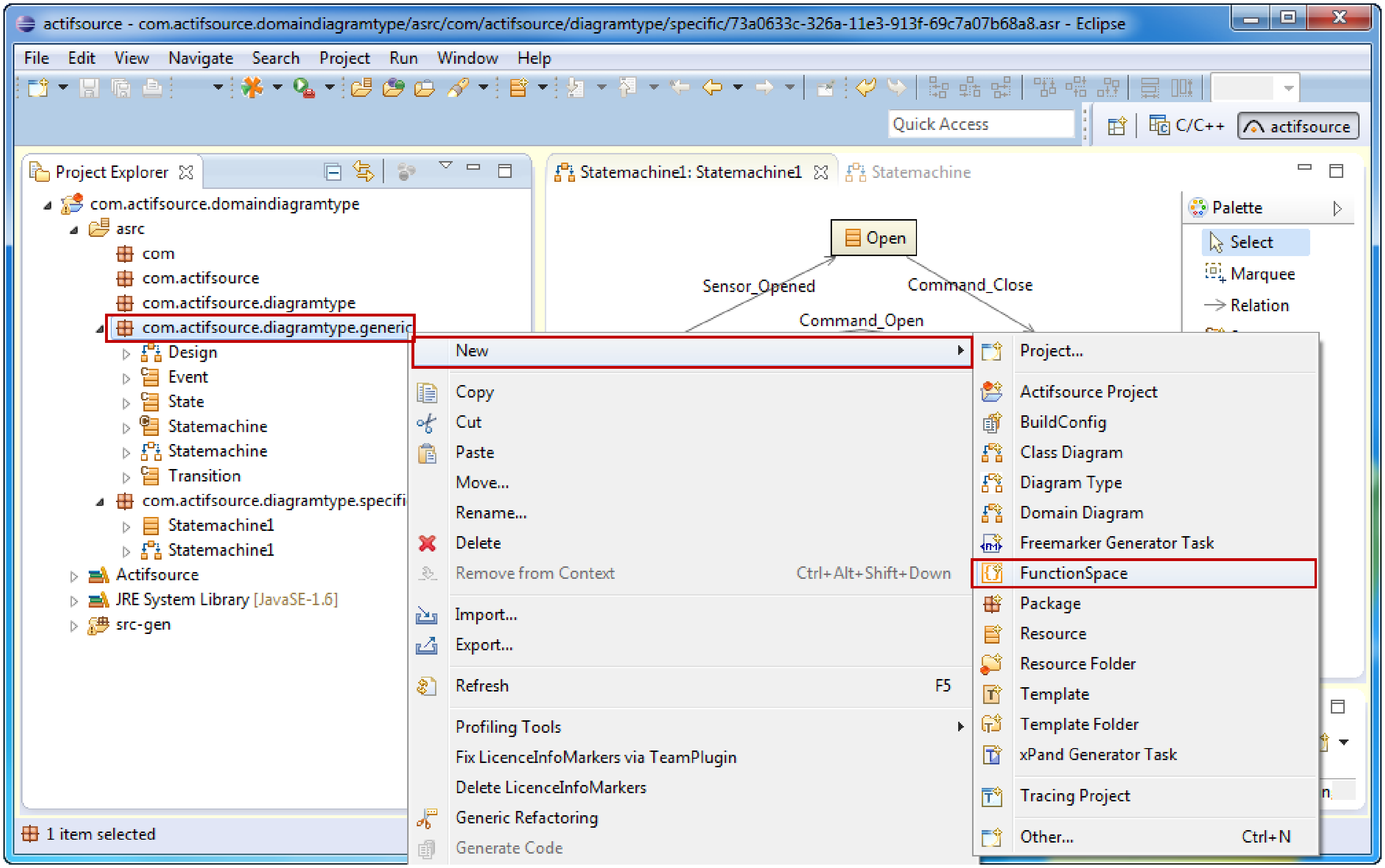
com.actifsource.diagramtype.specific

- Hoover your cursor on any State to activate the **HighlightPath** from State via Transition to TargetState

Part V: Define a Tooltip

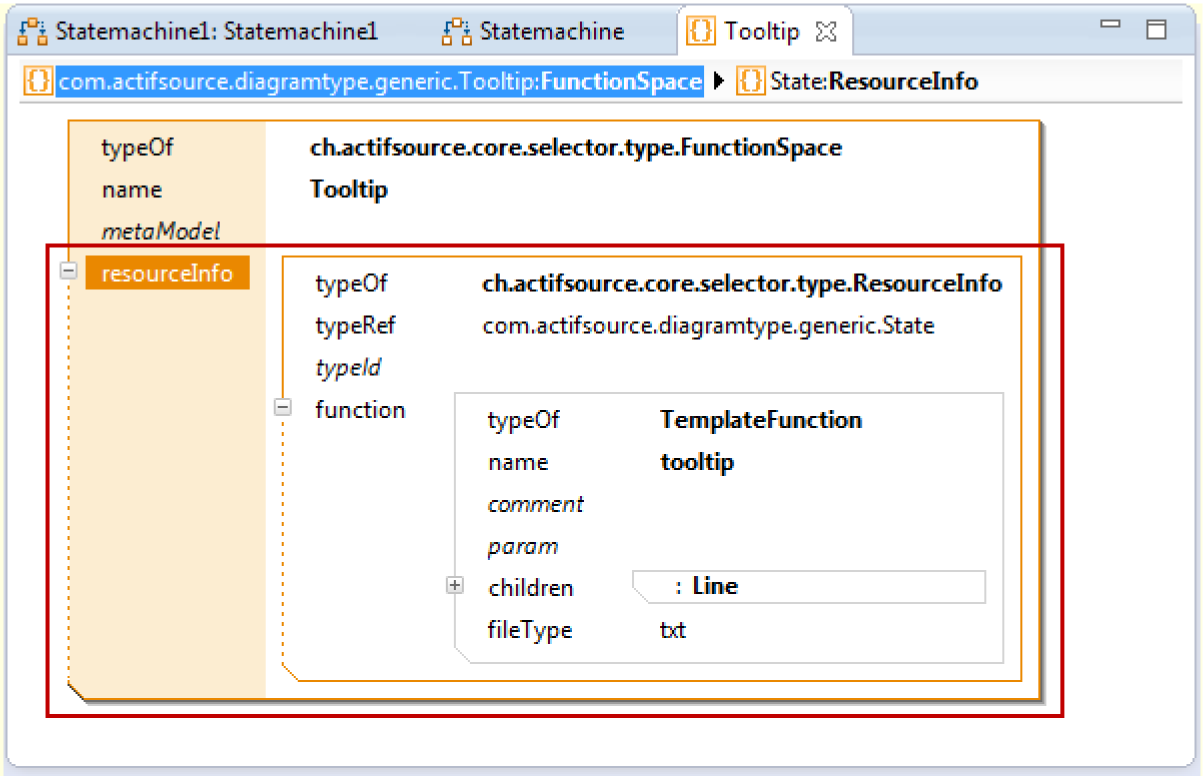
ⓘ Define a tooltip for elements on the domain diagram

Defining a Tooltip



ⓘ Create a new **FunctionSpace** named Tooltip in the **Package** *generic*

Defining a Tooltip



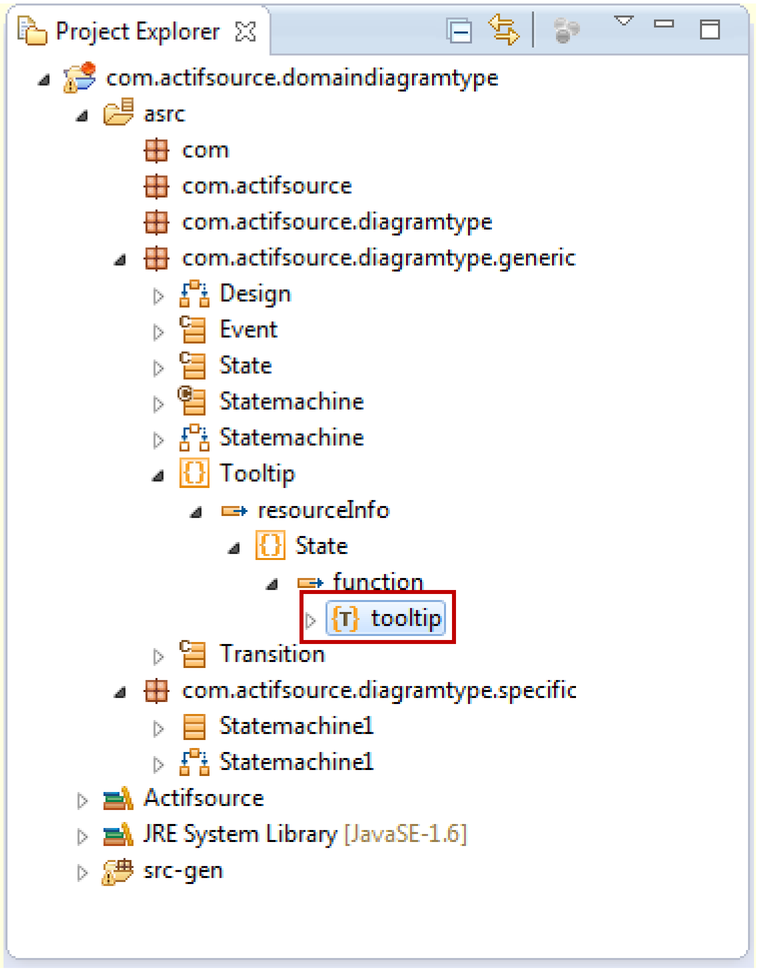
com.actifsource.diagramtype.generic.Tooltip:FunctionSpace ▸ State:ResourceInfo

typeOf	ch.actifsource.core.selector.type.FunctionSpace
name	Tooltip
metaModel	
resourceInfo	

typeOf	ch.actifsource.core.selector.type.ResourceInfo
typeRef	com.actifsource.diagramtype.generic.State
typeId	
function	

typeOf	TemplateFunction
name	tooltip
comment	
param	
children	: Line
fileType	txt

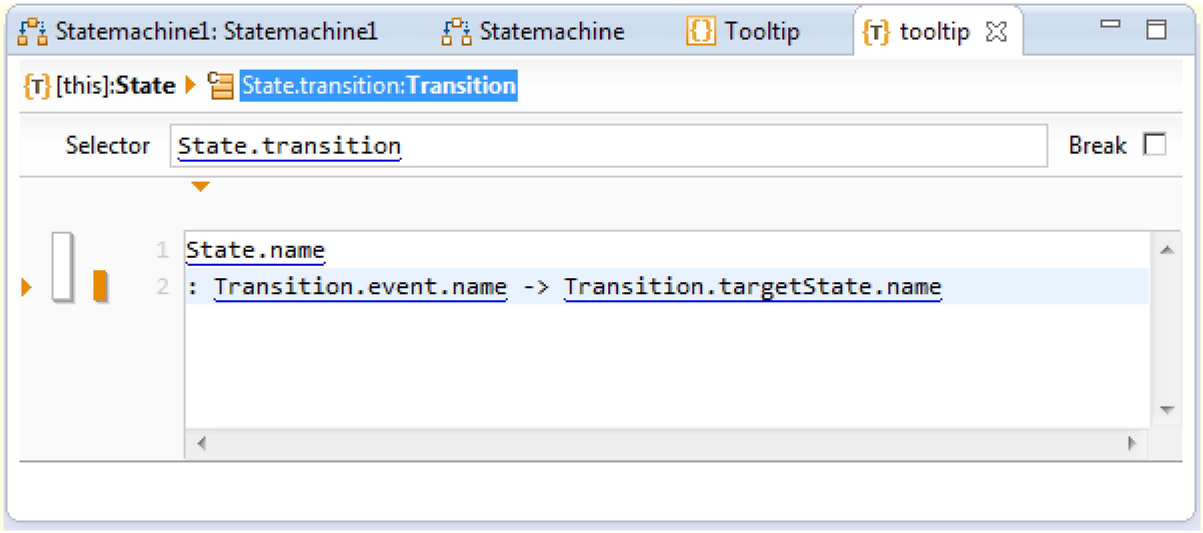
- Create a new **ResourceInfo** with **typeRef** State
- Create a new **TemplateFunction** named `tooltip`


Project Explorer

com.actifsource.domaindiagramtype
- asrc
  - com
  - com.actifsource
  - com.actifsource.diagramtype
  - com.actifsource.diagramtype.generic
    - Design
    - Event
    - State
    - Statemachine
    - Statemachine
    - Tooltip
      - resourceInfo
        - State
          - function
            - tooltip
    - Transition
  - com.actifsource.diagramtype.specific
    - Statemachine1
    - Statemachine1
- Actifsource
- JRE System Library [JavaSE-1.6]
- src-gen

↳ Open the **Template Editor** by double clicking Tooltip.State.tooltip in the **Project Explorer**

Defining a Tooltip

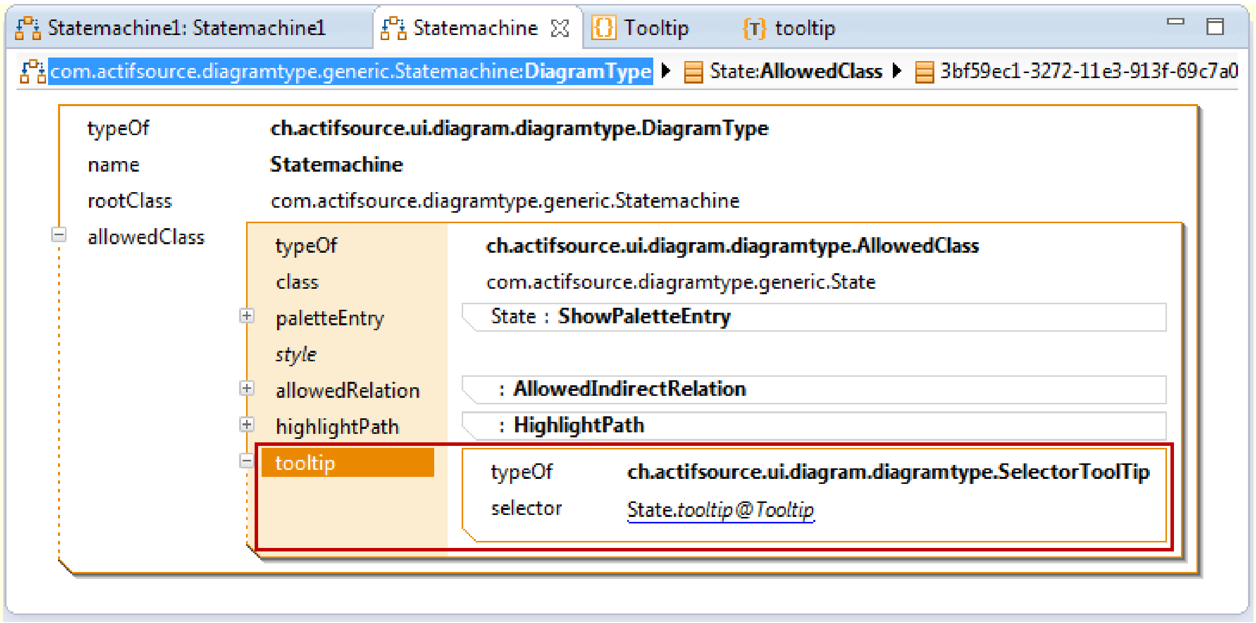


Selector: State.transition

```
State.name
: Transition.event.name -> Transition.targetState.name
```

- Print the State.name
- For every Transition in State: Print Transition.event.name
- For every Transition in State: Print Transition.targetState.name

Defining a Tooltip



com.actifsource.diagramtype.generic.Statemachine:DiagramType ▸ State:AllowedClass ▸ 3bf59ec1-3272-11e3-913f-69c7a0

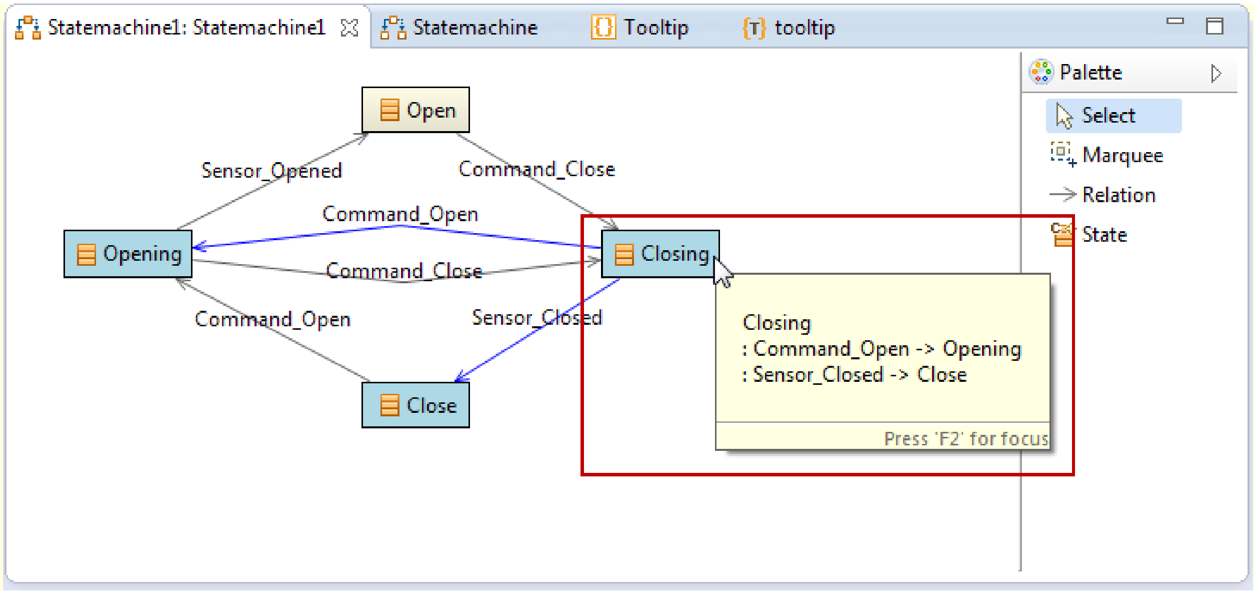
typeOf	ch.actifsource.ui.diagram.diagramtype.DiagramType
name	Statemachine
rootClass	com.actifsource.diagramtype.generic.Statemachine
allowedClass	

typeOf	ch.actifsource.ui.diagram.diagramtype.AllowedClass
class	com.actifsource.diagramtype.generic.State
paletteEntry	State : ShowPaletteEntry
style	
allowedRelation	: AllowedIndirectRelation
highlightPath	: HighlightPath
tooltip	

typeOf	ch.actifsource.ui.diagram.diagramtype.SelectorToolTip
selector	State.*tooltip@Tooltip*

↳ Use the **TemplateFunction** tooltip@Tooltip by using a **SelectorTooltip** in the **Diagram Type**

Defining a Tooltip



Closing
: Command_Open -> Opening
: Sensor_Closed -> Close

↳ Hoover your cursor on any State to activate the **Tooltip**