Vergleich Microsoft DSL Tools vs. Eclipse GMF

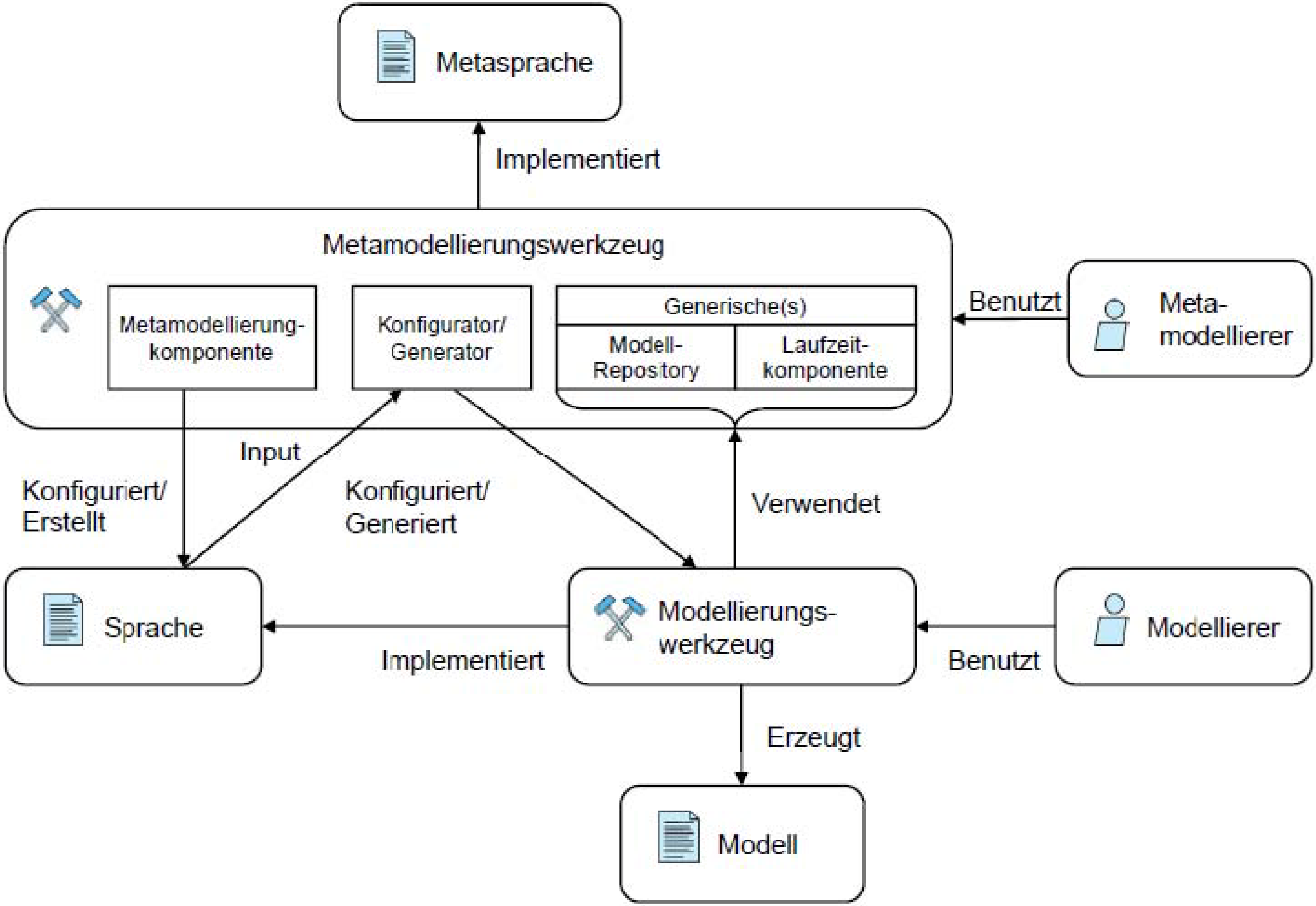
Seminar Modellgetriebene Softwareentwicklung
Abschlusspräsentation

Markus Hütter

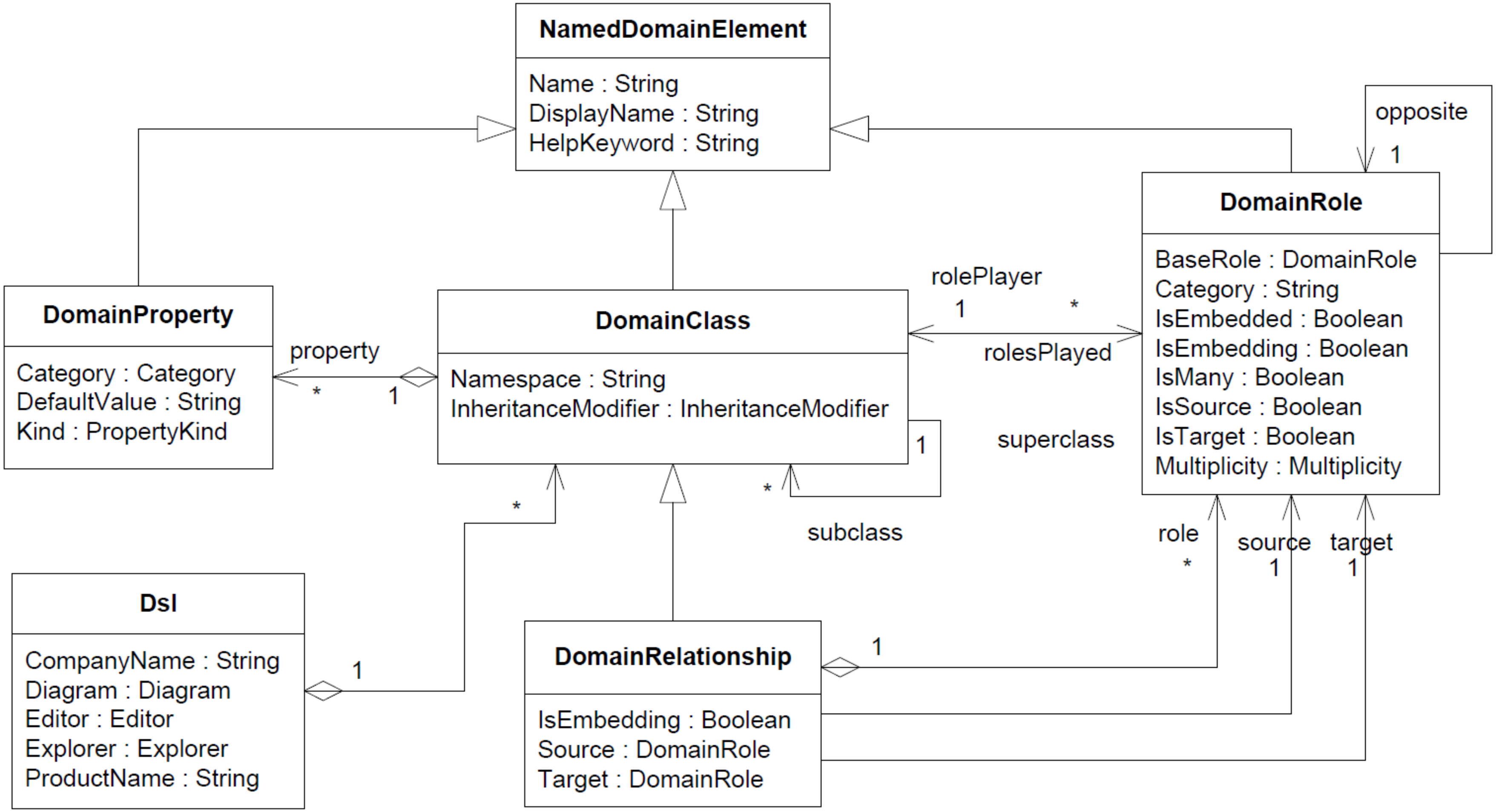
Gliederung

- Einleitung
- Microsoft DSL Tools
- Vergleich zu Eclipse GMF
- Zusammenfassung

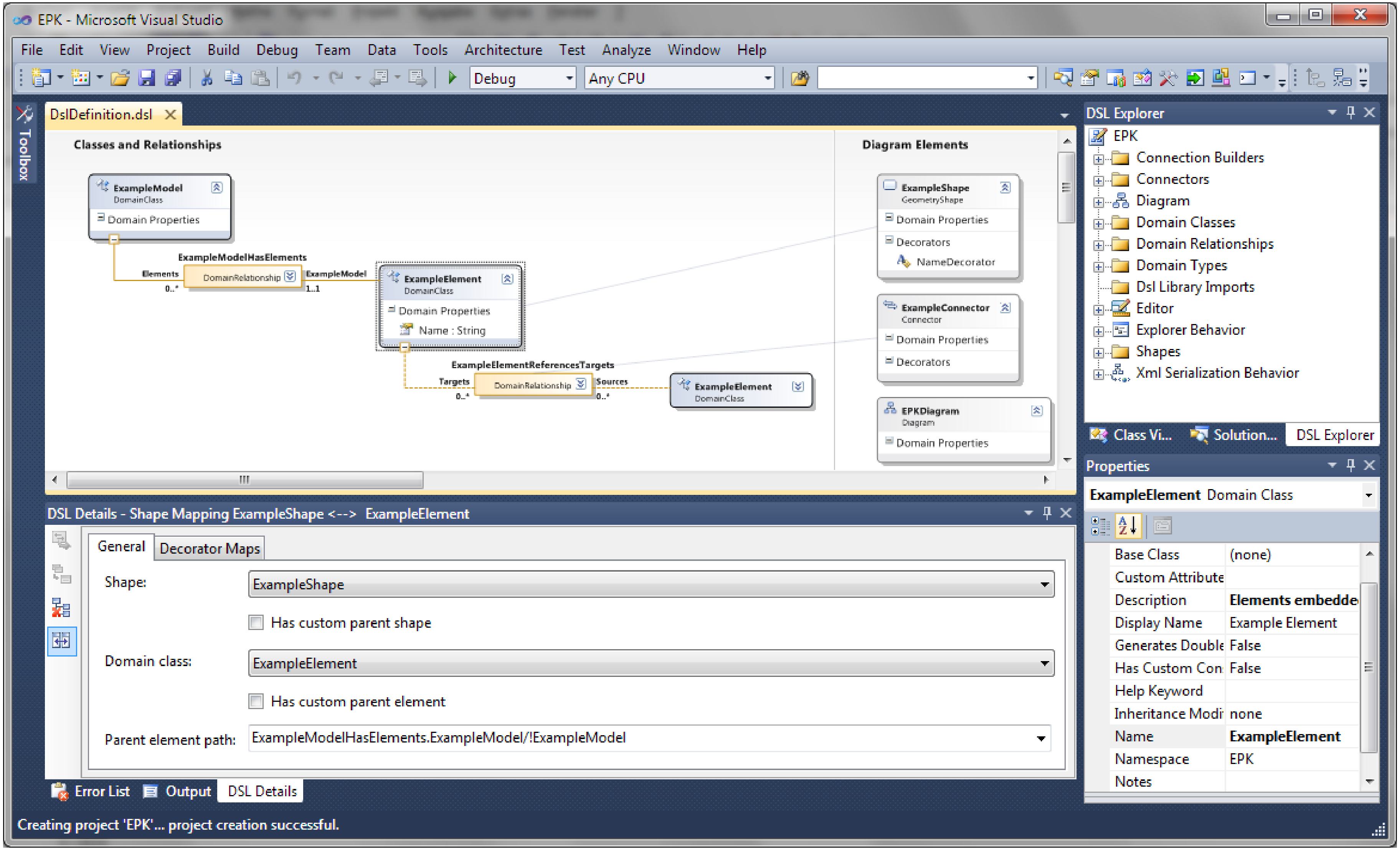
Einleitung


Metasprache
Implementiert
Metamodellierungswerkzeug
Metamodellierung-komponente
Konfigurator/ Generator
Generische(s)
Modell-Repository
Laufzeit-komponente
Benutzt
Meta-modellierer
Input
Konfiguriert/ Erstellt
Konfiguriert/ Generiert
Verwendet
Sprache
Modellierungs-werkzeug
Implementiert
Benutzt
Modellierer
Erzeugt
Modell

Microsoft DSL Tools – Metametamodell



Microsoft DSL Tools



Shape: ExampleShape

☐ Has custom parent shape

Domain class: ExampleElement

☐ Has custom parent element

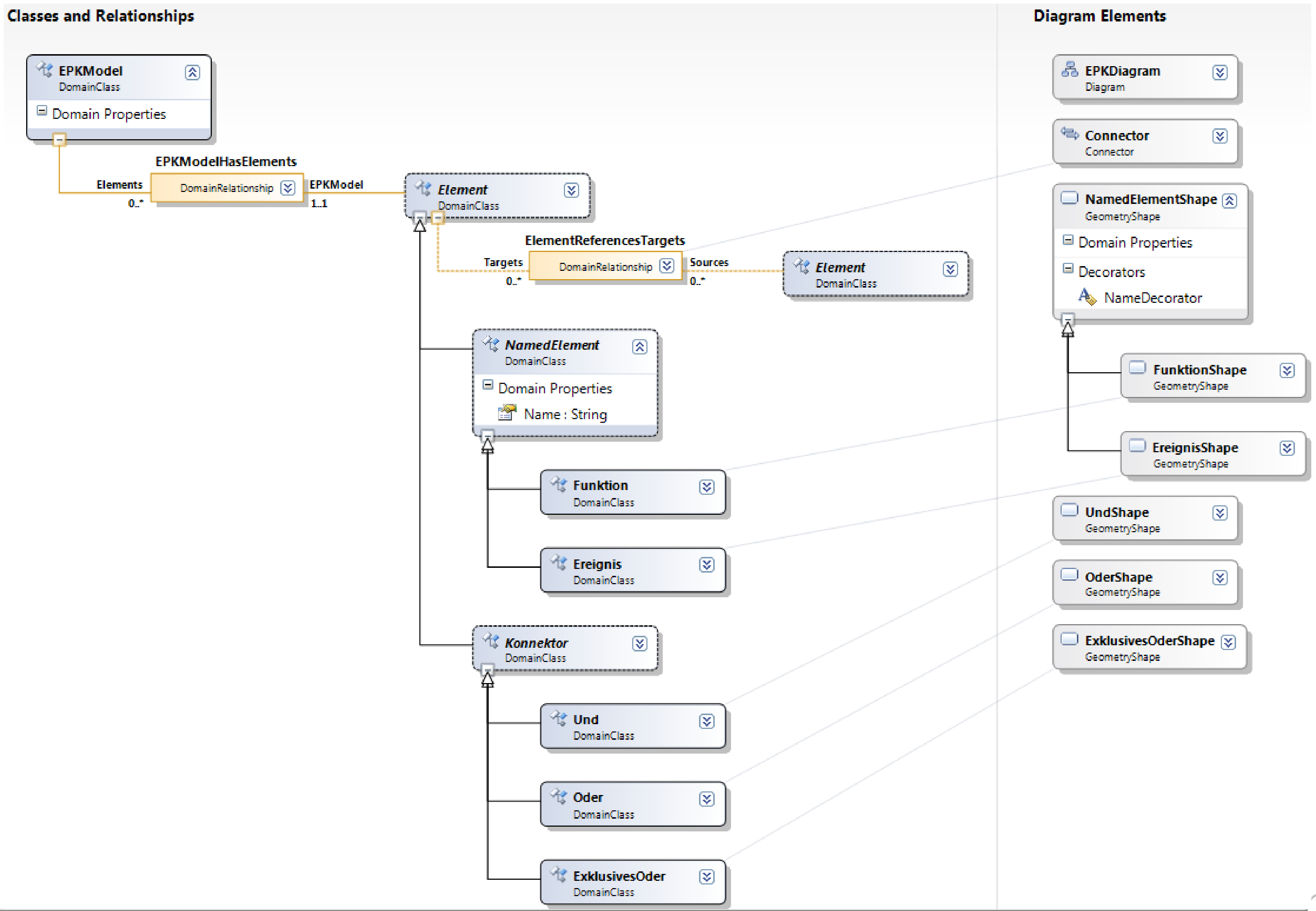
Parent element path: ExampleModelHasElements.ExampleModel/!ExampleModel

ExampleElement Domain Class

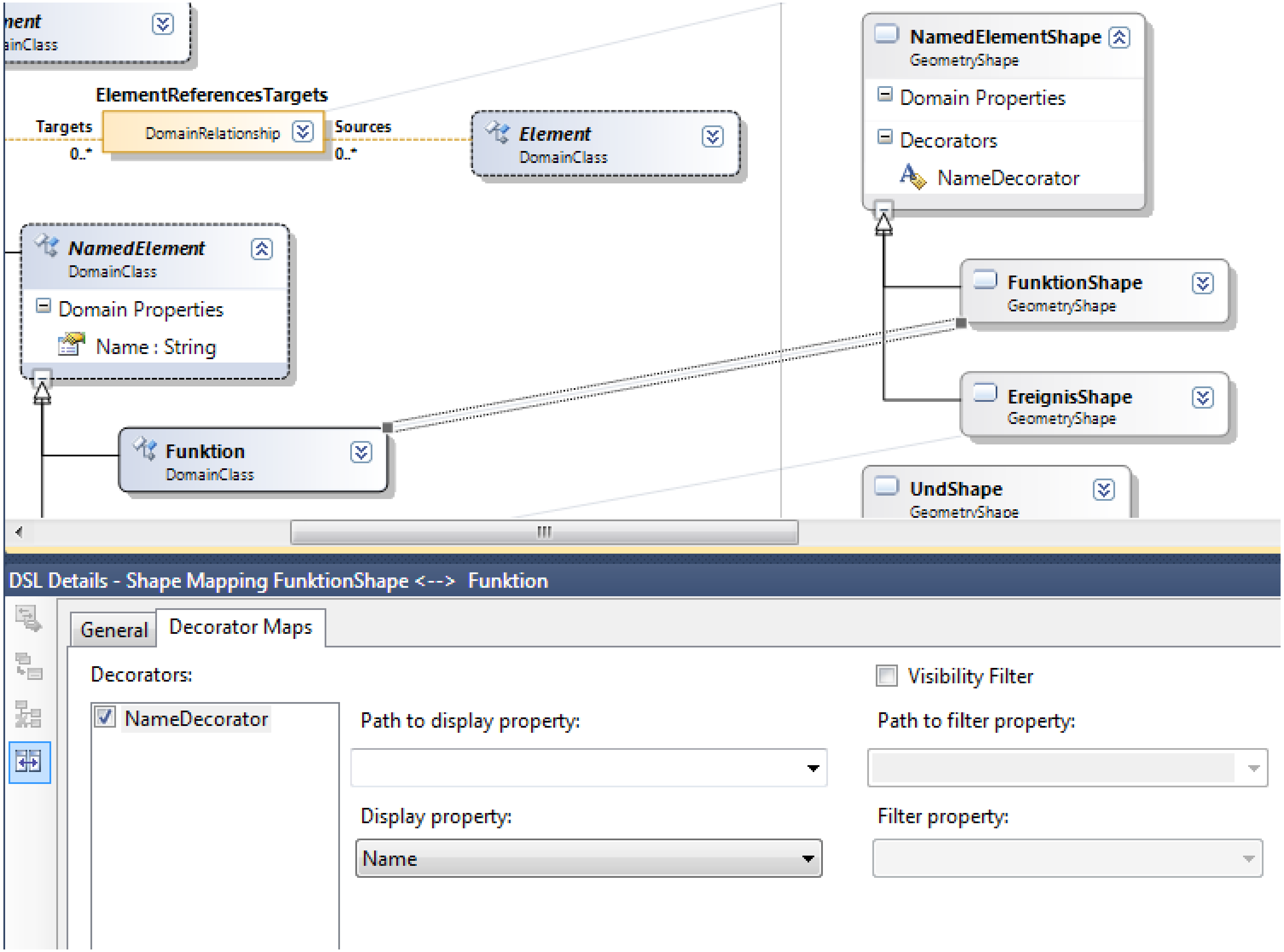
Base Class	(none)
Custom Attribute	
Description	Elements embedde
Display Name	Example Element
Generates Double	False
Has Custom Con	False
Help Keyword	
Inheritance Modi	none
Name	ExampleElement
Namespace	EPK
Notes	

Creating project 'EPK'... project creation successful.

Microsoft DSL Tools



Microsoft DSL Tools



DSL Details - Shape Mapping FunktionShape <--> Funktion

General | Decorator Maps

Decorators:

☑ NameDecorator

□ Visibility Filter

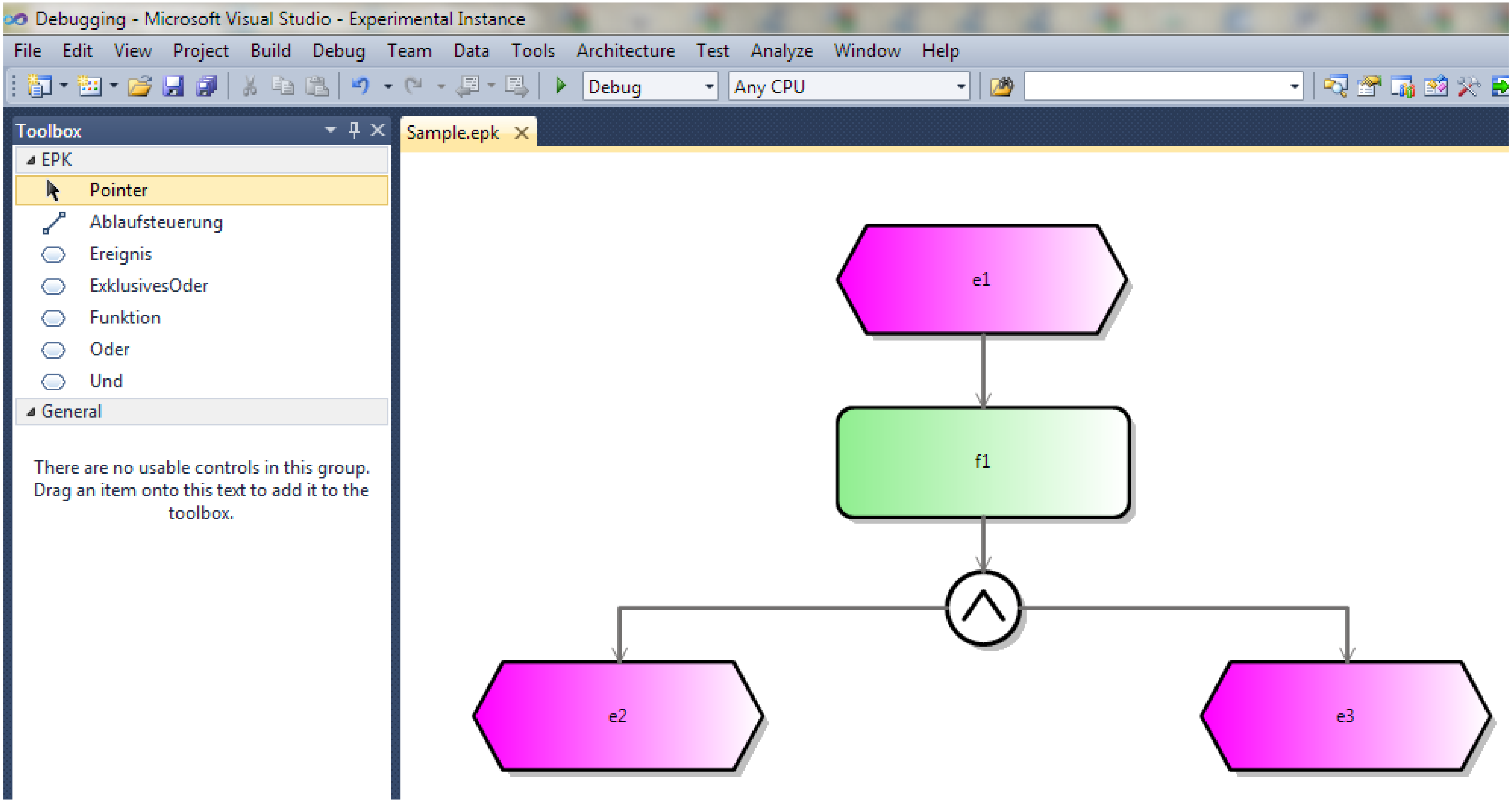
Path to display property:

Path to filter property:

Display property: Name

Filter property:

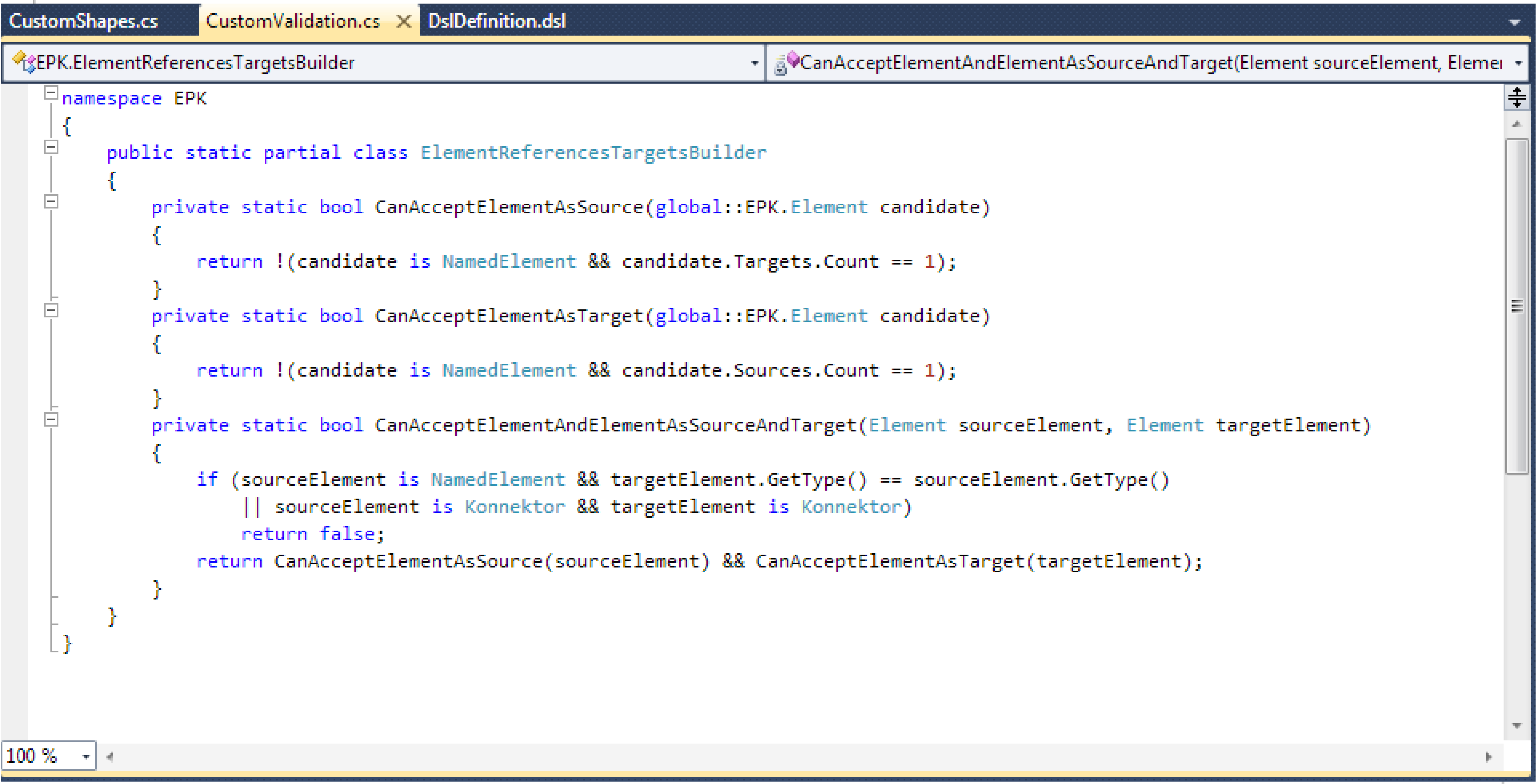
Microsoft DSL Tools



Debugging - Microsoft Visual Studio - Experimental Instance
File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window Help
Debug
Any CPU
Toolbox
Sample.epk
EPK
Pointer
Ablaufsteuerung
Ereignis
ExklusivesOder
Funktion
Oder
Und
General
e1
f1
e2
e3

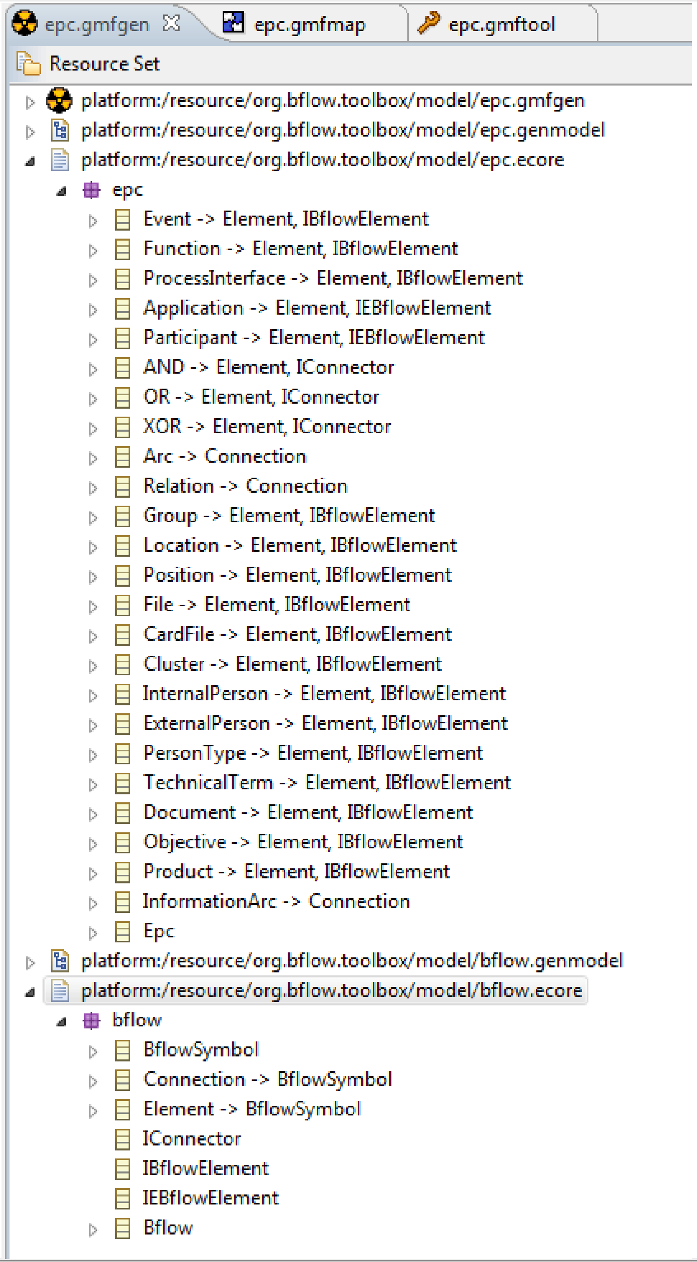
There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Microsoft DSL Tools


CustomShapes.cs
CustomValidation.cs
DslDefinition.dsl
EPK.ElementReferencesTargetsBuilder
CanAcceptElementAndElementAsSourceAndTarget(Element sourceElement, Eleme
100 %

```
namespace EPK
{
    public static partial class ElementReferencesTargetsBuilder
    {
        private static bool CanAcceptElementAsSource(global::EPK.Element candidate)
        {
            return !(candidate is NamedElement && candidate.Targets.Count == 1);
        }
        private static bool CanAcceptElementAsTarget(global::EPK.Element candidate)
        {
            return !(candidate is NamedElement && candidate.Sources.Count == 1);
        }
        private static bool CanAcceptElementAndElementAsSourceAndTarget(Element sourceElement, Element targetElement)
        {
            if (sourceElement is NamedElement && targetElement.GetType() == sourceElement.GetType()
                || sourceElement is Konnektor && targetElement is Konnektor)
                return false;
            return CanAcceptElementAsSource(sourceElement) && CanAcceptElementAsTarget(targetElement);
        }
    }
}
```

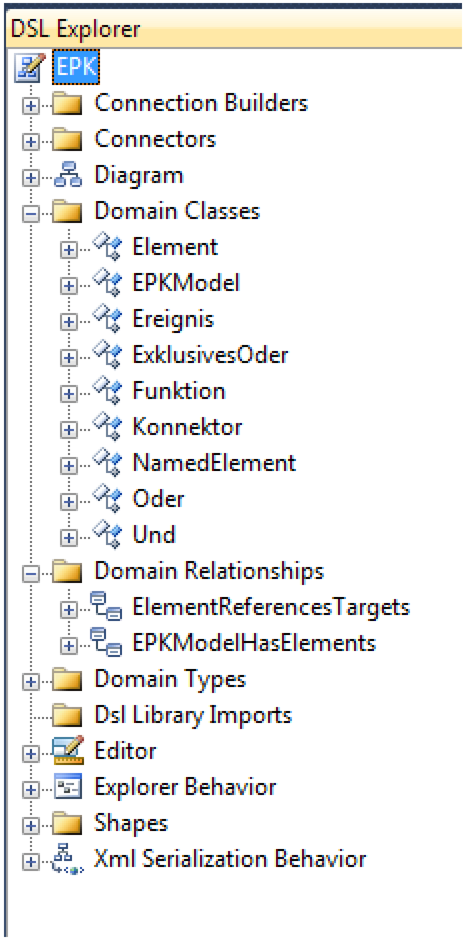
Vergleich zu Eclipse GMF - Klassenhierarchie



epc.gmfgen | epc.gmfmap | epc.gmftool

Resource Set

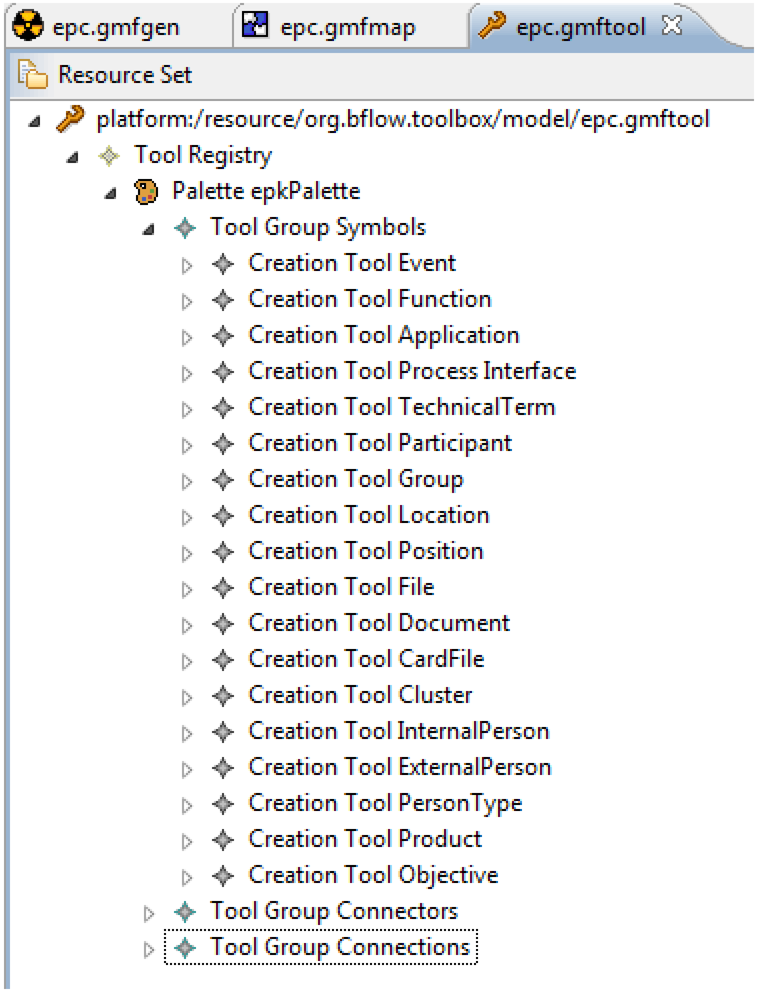
- platform:/resource/org.bflow.toolbox/model/epc.gmfgen
- platform:/resource/org.bflow.toolbox/model/epc.genmodel
- platform:/resource/org.bflow.toolbox/model/epc.ecore
  - epc
    - Event -> Element, IBflowElement
    - Function -> Element, IBflowElement
    - ProcessInterface -> Element, IEBflowElement
    - Application -> Element, IEBflowElement
    - Participant -> Element, IEBflowElement
    - AND -> Element, IConnector
    - OR -> Element, IConnector
    - XOR -> Element, IConnector
    - Arc -> Connection
    - Relation -> Connection
    - Group -> Element, IBflowElement
    - Location -> Element, IBflowElement
    - Position -> Element, IBflowElement
    - File -> Element, IBflowElement
    - CardFile -> Element, IBflowElement
    - Cluster -> Element, IBflowElement
    - InternalPerson -> Element, IBflowElement
    - ExternalPerson -> Element, IBflowElement
    - PersonType -> Element, IBflowElement
    - TechnicalTerm -> Element, IBflowElement
    - Document -> Element, IBflowElement
    - Objective -> Element, IBflowElement
    - Product -> Element, IBflowElement
    - InformationArc -> Connection
    - Epc
- platform:/resource/org.bflow.toolbox/model/bflow.genmodel
- platform:/resource/org.bflow.toolbox/model/bflow.ecore
  - bflow
    - BflowSymbol
    - Connection -> BflowSymbol
    - Element -> BflowSymbol
    - IConnector
    - IBflowElement
    - IEBflowElement
    - Bflow



DSL Explorer

- EPK
  - Connection Builders
  - Connectors
  - Diagram
  - Domain Classes
    - Element
    - EPKModel
    - Ereignis
    - ExklusivesOder
    - Funktion
    - Konnektor
    - NamedElement
    - Oder
    - Und
  - Domain Relationships
    - ElementReferencesTargets
    - EPKModelHasElements
  - Domain Types
  - Dsl Library Imports
  - Editor
  - Explorer Behavior
  - Shapes
  - Xml Serialization Behavior

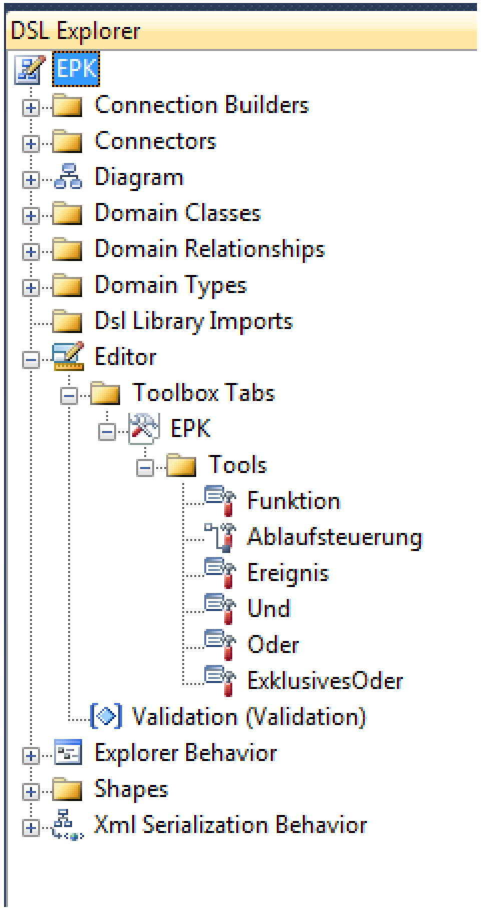
Vergleich zu Eclipse GMF - Tools



epc.gmfgen | epc.gmfmap | epc.gmftool

Resource Set

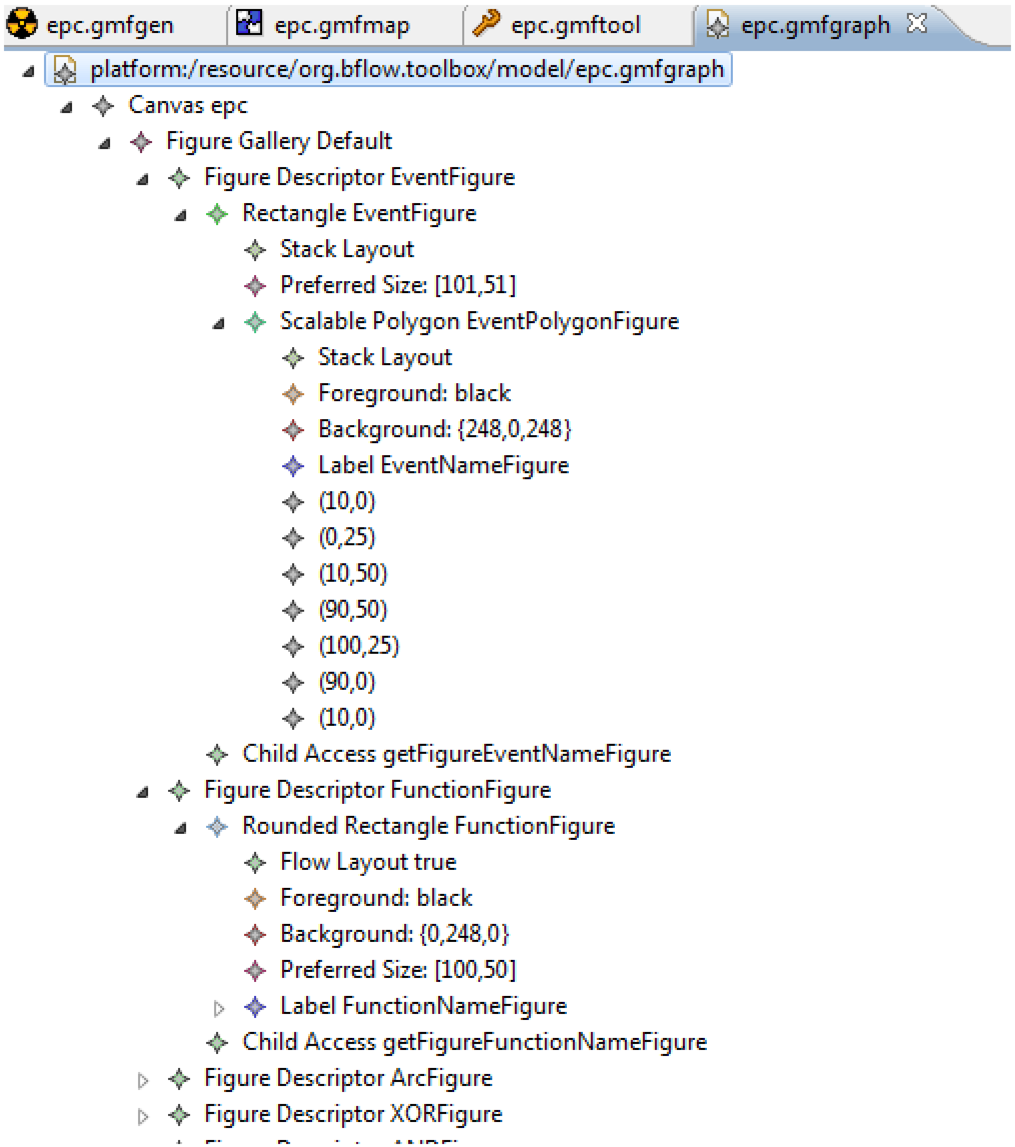
- platform:/resource/org.bflow.toolbox/model/epc.gmftool
  - Tool Registry
    - Palette epkPalette
      - Tool Group Symbols
        - Creation Tool Event
        - Creation Tool Function
        - Creation Tool Application
        - Creation Tool Process Interface
        - Creation Tool TechnicalTerm
        - Creation Tool Participant
        - Creation Tool Group
        - Creation Tool Location
        - Creation Tool Position
        - Creation Tool File
        - Creation Tool Document
        - Creation Tool CardFile
        - Creation Tool Cluster
        - Creation Tool InternalPerson
        - Creation Tool ExternalPerson
        - Creation Tool PersonType
        - Creation Tool Product
        - Creation Tool Objective
      - Tool Group Connectors
      - Tool Group Connections



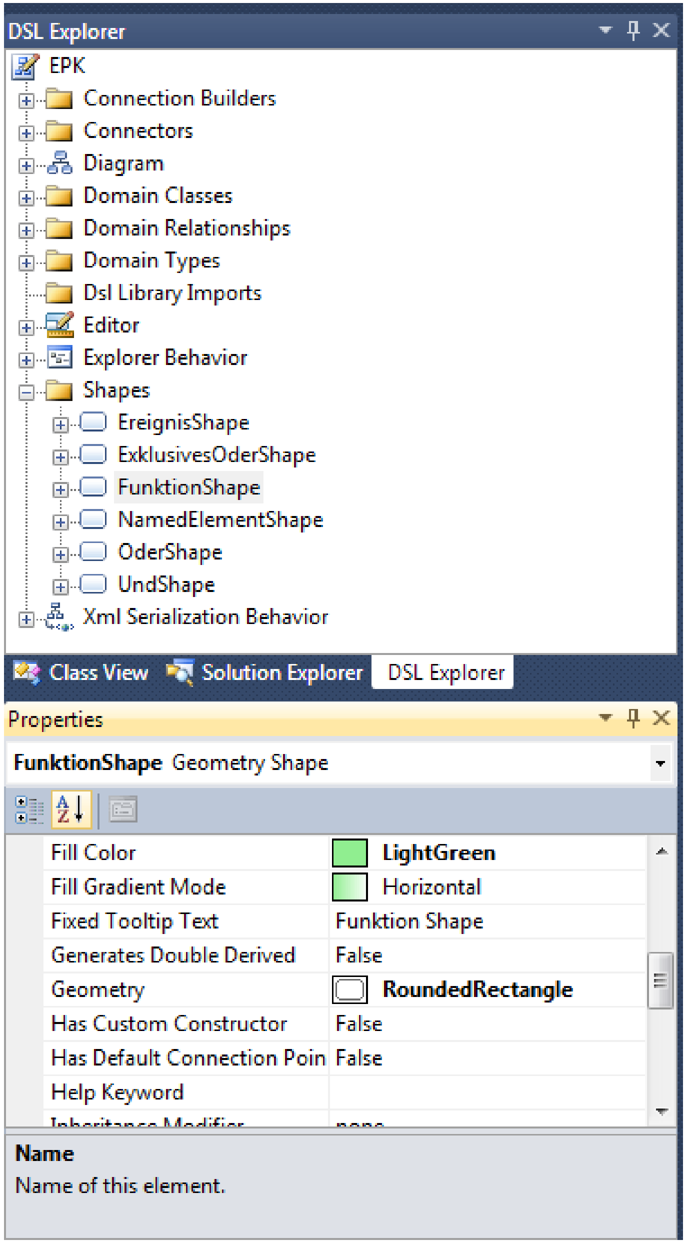
DSL Explorer

- EPK
  - Connection Builders
  - Connectors
  - Diagram
  - Domain Classes
  - Domain Relationships
  - Domain Types
  - Dsl Library Imports
  - Editor
    - Toolbox Tabs
      - EPK
        - Tools
          - Funktion
          - Ablaufsteuerung
          - Ereignis
          - Und
          - Oder
          - ExklusivesOder
    - Validation (Validation)
  - Explorer Behavior
  - Shapes
  - Xml Serialization Behavior

Vergleich zu Eclipse GMF - Shapes



```
platform:/resource/org.bflow.toolbox/model/epc.gmfgraph
  Canvas epc
    Figure Gallery Default
      Figure Descriptor EventFigure
        Rectangle EventFigure
          Stack Layout
          Preferred Size: [101,51]
          Scalable Polygon EventPolygonFigure
            Stack Layout
            Foreground: black
            Background: {248,0,248}
            Label EventNameFigure
            (10,0)
            (0,25)
            (10,50)
            (90,50)
            (100,25)
            (90,0)
            (10,0)
        Child Access getFigureEventNameFigure
      Figure Descriptor FunctionFigure
        Rounded Rectangle FunctionFigure
          Flow Layout true
          Foreground: black
          Background: {0,248,0}
          Preferred Size: [100,50]
          Label FunctionNameFigure
        Child Access getFigureFunctionNameFigure
      Figure Descriptor ArcFigure
      Figure Descriptor XORFigure
      Figure Descriptor ANDFi
```



```
EPK
  Connection Builders
  Connectors
  Diagram
  Domain Classes
  Domain Relationships
  Domain Types
  Dsl Library Imports
  Editor
  Explorer Behavior
  Shapes
    EreignisShape
    ExklusivesOderShape
    FunktionShape
    NamedElementShape
    OderShape
    UndShape
  Xml Serialization Behavior
```

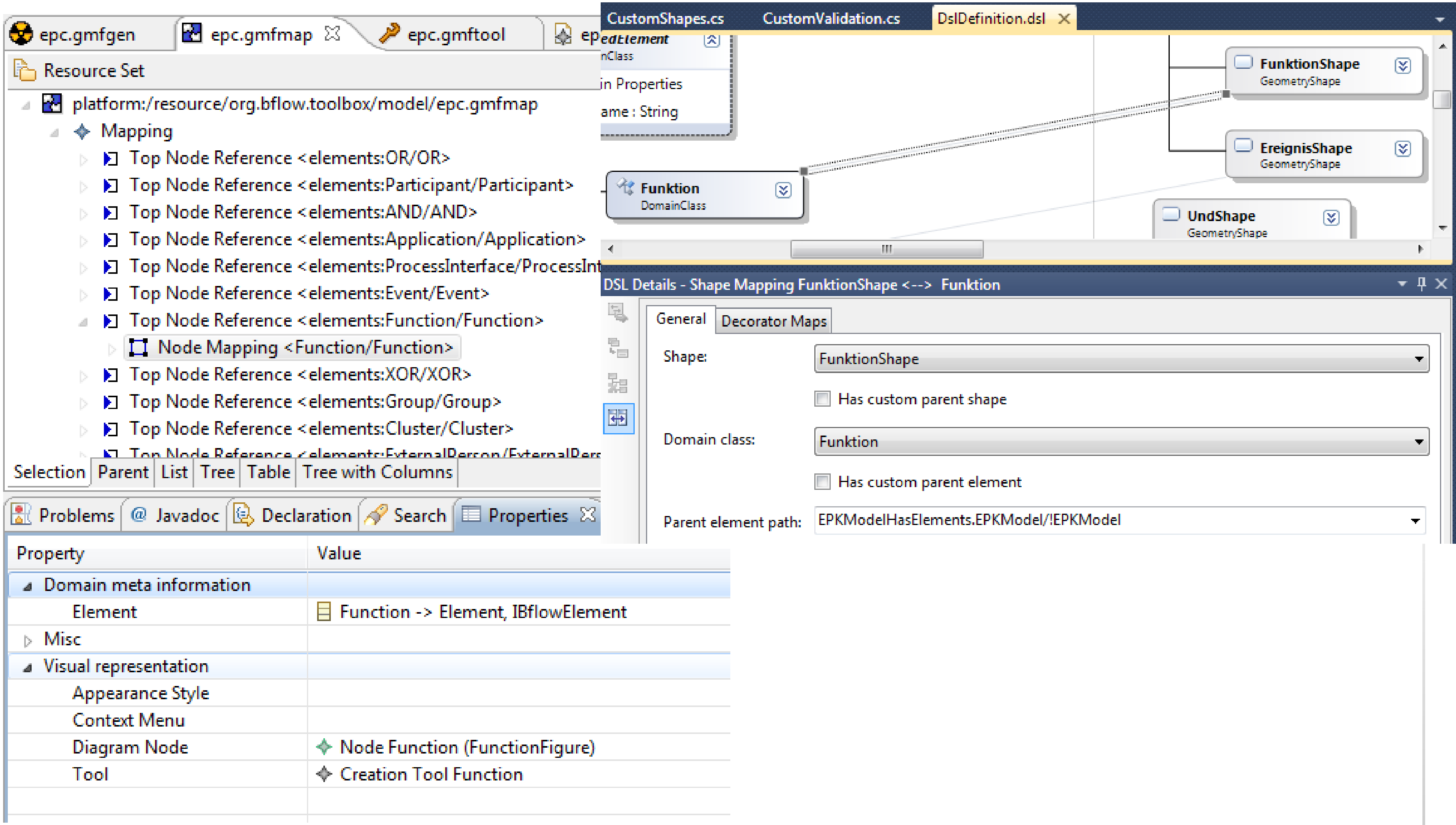
FunktionShape Geometry Shape

Fill Color	🟩 **LightGreen**
Fill Gradient Mode	🟩 Horizontal
Fixed Tooltip Text	Funktion Shape
Generates Double Derived	False
Geometry	▢ **RoundedRectangle**
Has Custom Constructor	False
Has Default Connection Poin	False
Help Keyword	
Inheritance Modifier	none

Name

Name of this element.

Vergleich zu Eclipse GMF - Mapping



Resource Set

- platform:/resource/org.bflow.toolbox/model/epc.gmfmap
  - Mapping
    - Top Node Reference <elements:OR/OR>
    - Top Node Reference <elements:Participant/Participant>
    - Top Node Reference <elements:AND/AND>
    - Top Node Reference <elements:Application/Application>
    - Top Node Reference <elements:ProcessInterface/ProcessInt
    - Top Node Reference <elements:Event/Event>
    - Top Node Reference <elements:Function/Function>
      - Node Mapping <Function/Function>
    - Top Node Reference <elements:XOR/XOR>
    - Top Node Reference <elements:Group/Group>
    - Top Node Reference <elements:Cluster/Cluster>
    - Top Node Reference <elements:ExternalPerson/ExternalPers

Property	Value
Domain meta information	
Element	Function -> Element, IBflowElement
Misc	
Visual representation	
Appearance Style	
Context Menu	
Diagram Node	Node Function (FunctionFigure)
Tool	Creation Tool Function

DSL Details - Shape Mapping FunktionShape <--> Funktion

Shape: FunktionShape

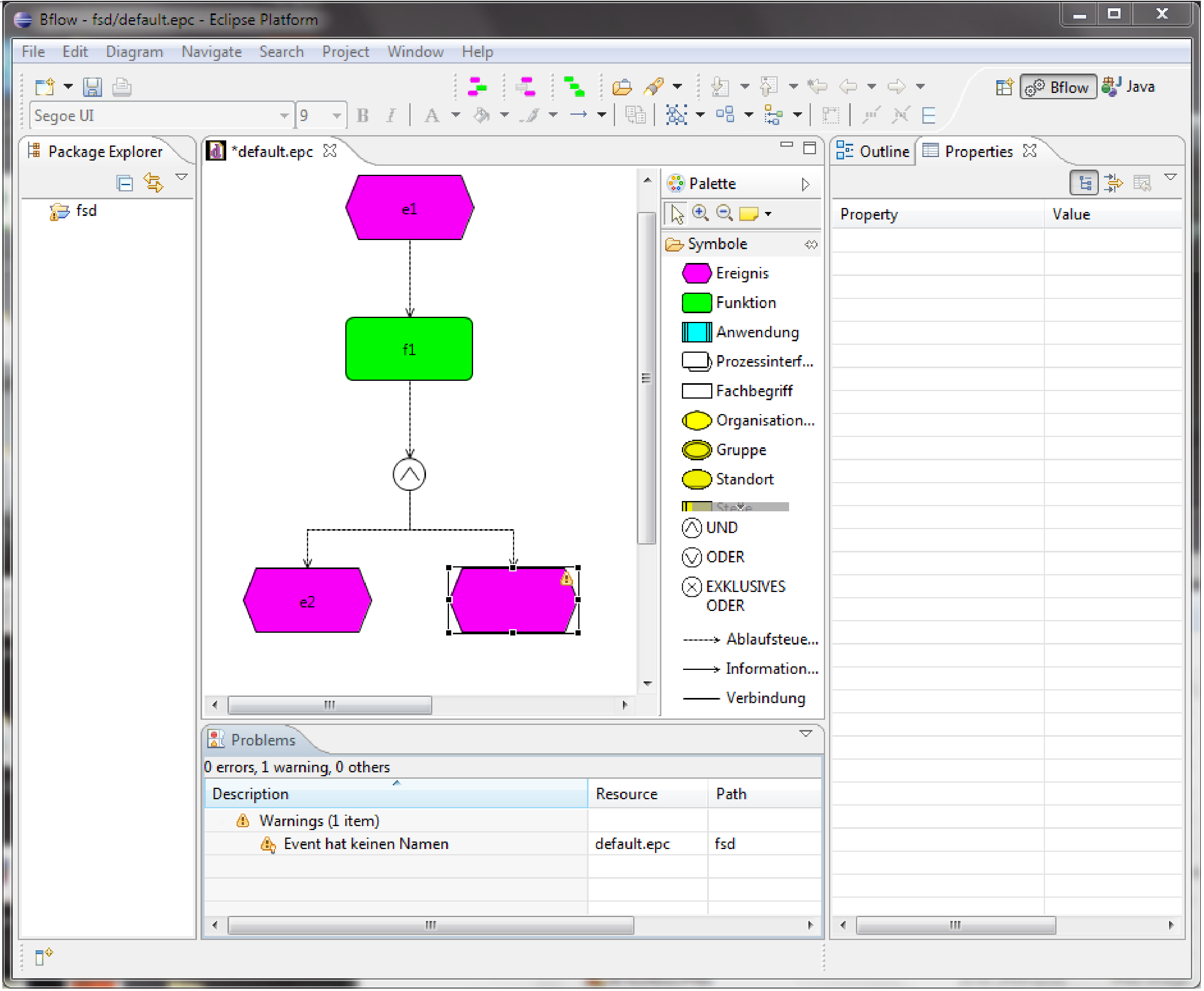
□ Has custom parent shape

Domain class: Funktion

□ Has custom parent element

Parent element path: EPKModelHasElements.EPKModel/!EPKModel

Vergleich zu Eclipse GMF – Designer (bflow* Toolbox)



0 errors, 1 warning, 0 others

Description	Resource	Path
Warnings (1 item)		
Event hat keinen Namen	default.epc	fsd

Zusammenfassung

- **gleich mächtig: Metamodellierung, Validierung, Serialisierung**

- **Eclipse GMF**
  - Basis EMF
    - **seit 2002**
    - **Große Community**
    - **zentraler Punkt für Bridges**
    - **EMF Compare**
    - **...**
  - alles über Baumstruktur zu editieren

- **Microsoft DSL Tools**
  - sehr graphisch: Klassen, Shapes und Mapping in einem Diagramm
  - sehr umständlich bei frei definierten Shapes

Ende

Vielen Dank für Ihre Aufmerksamkeit!