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# Case Study

# Kitalpha



OPEN  
Version 1.0.0

THALES

**Topic:** Description of a system with components

**Interest:** This description is enriched by non-functional information, such as performance, quality assessment or safety



## Specific Viewpoints

Performance

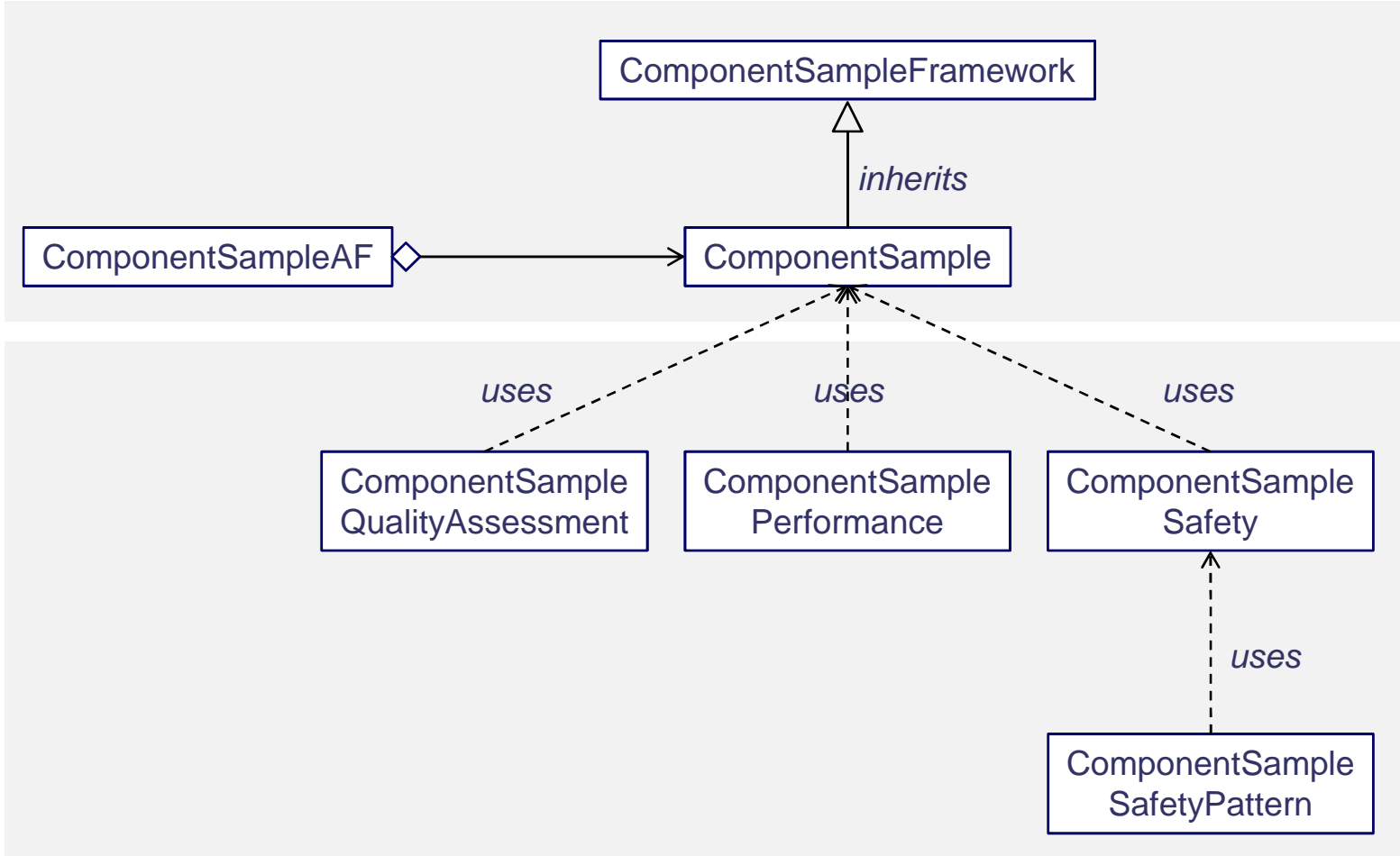
Quality Assessment

Safety

OPEN

Architecture Description

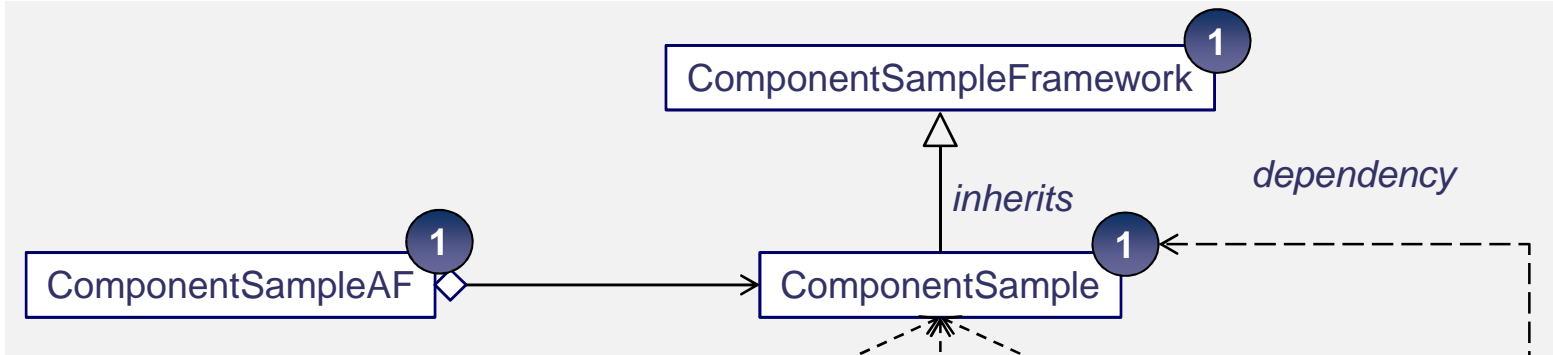
Extensions



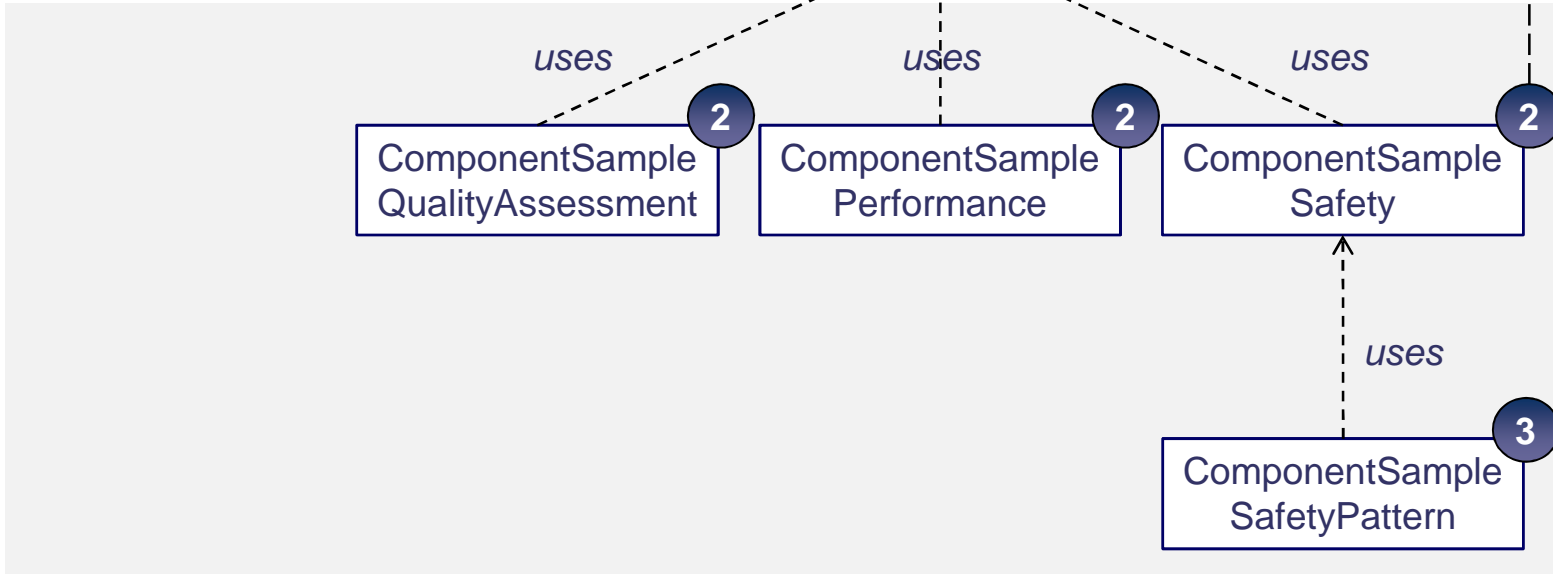
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Construction Phases

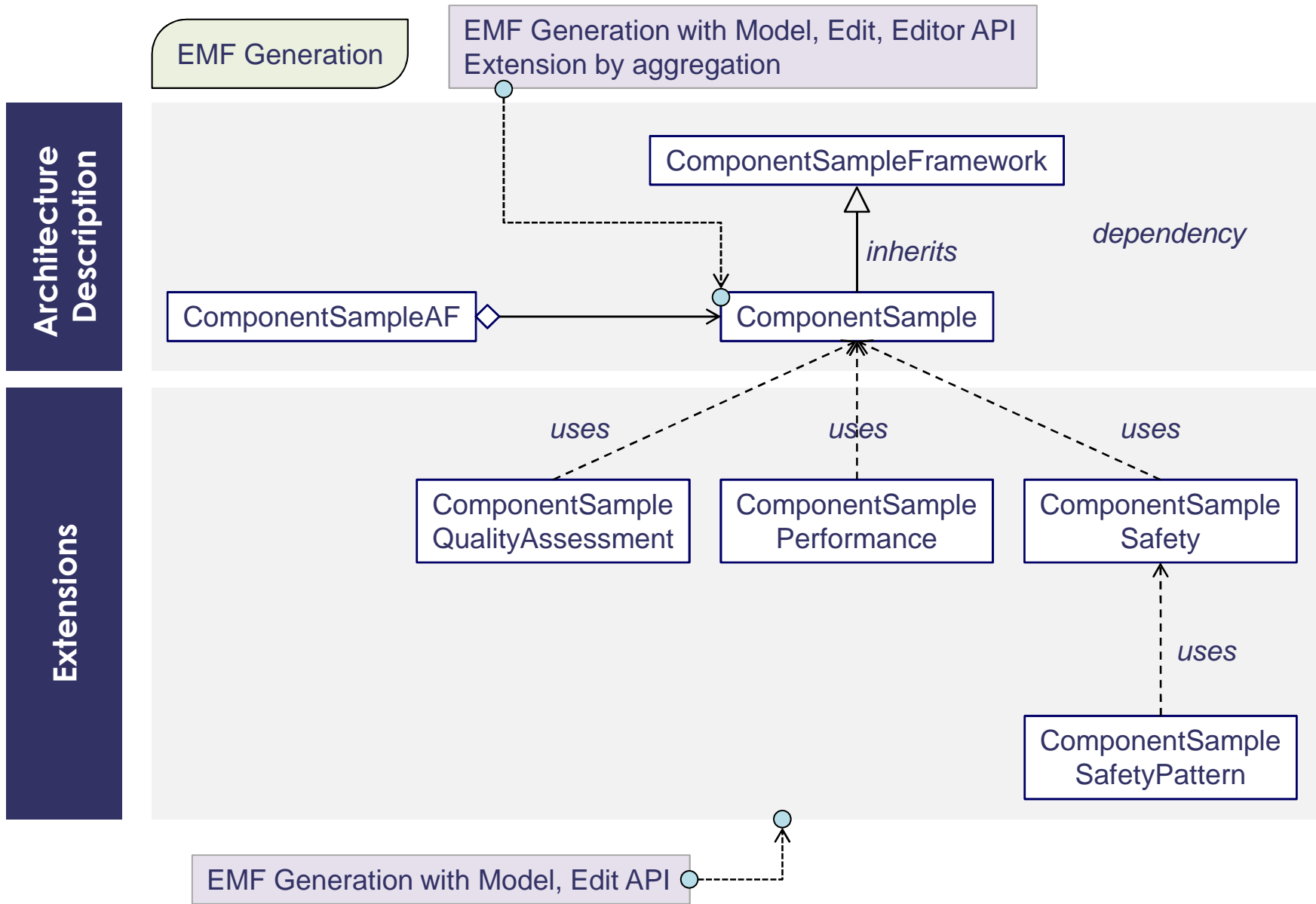
Architecture Description



Extensions



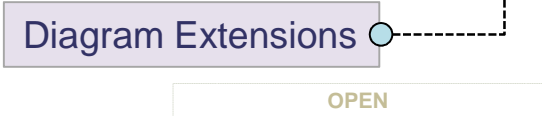
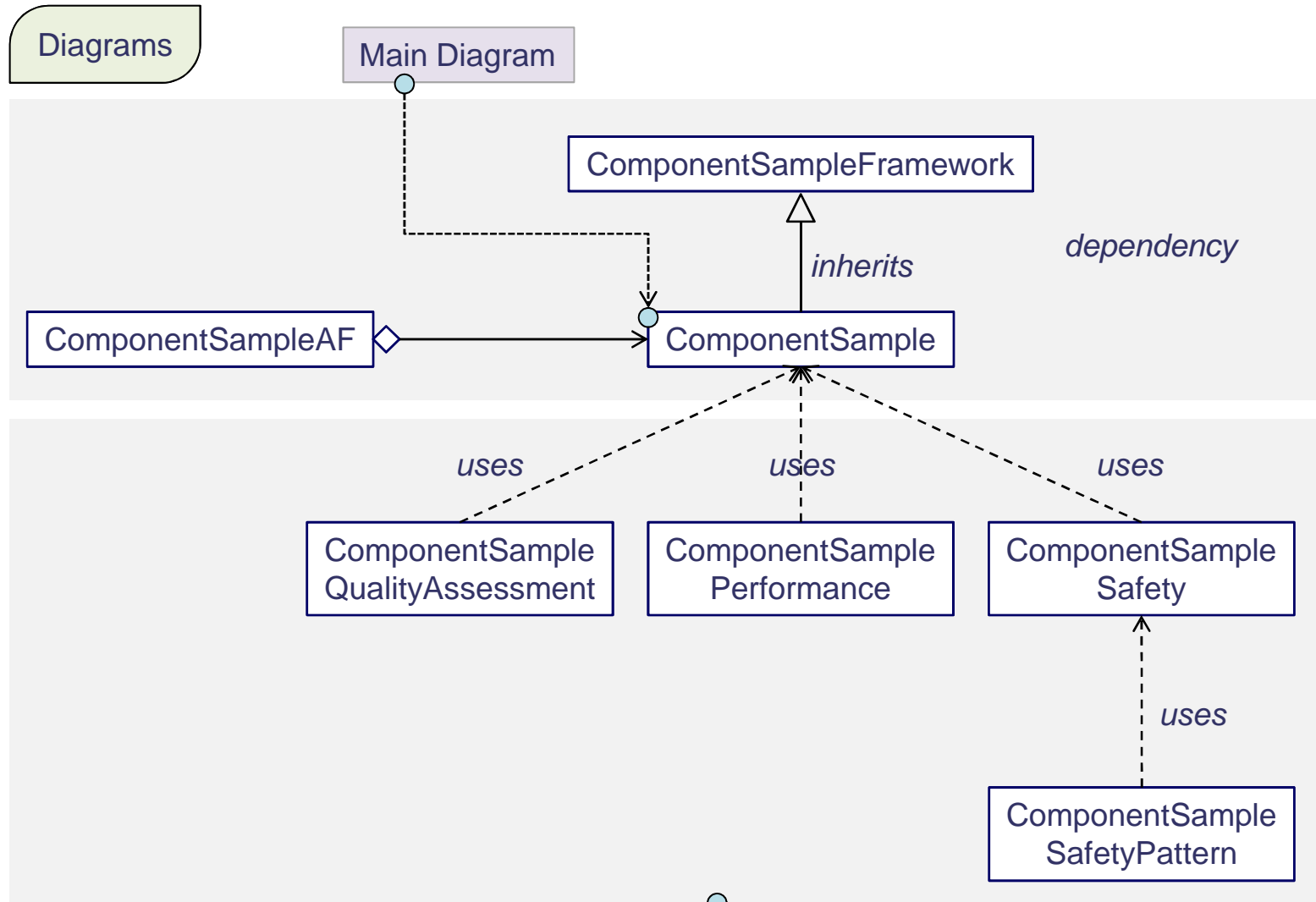
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Architecture Description

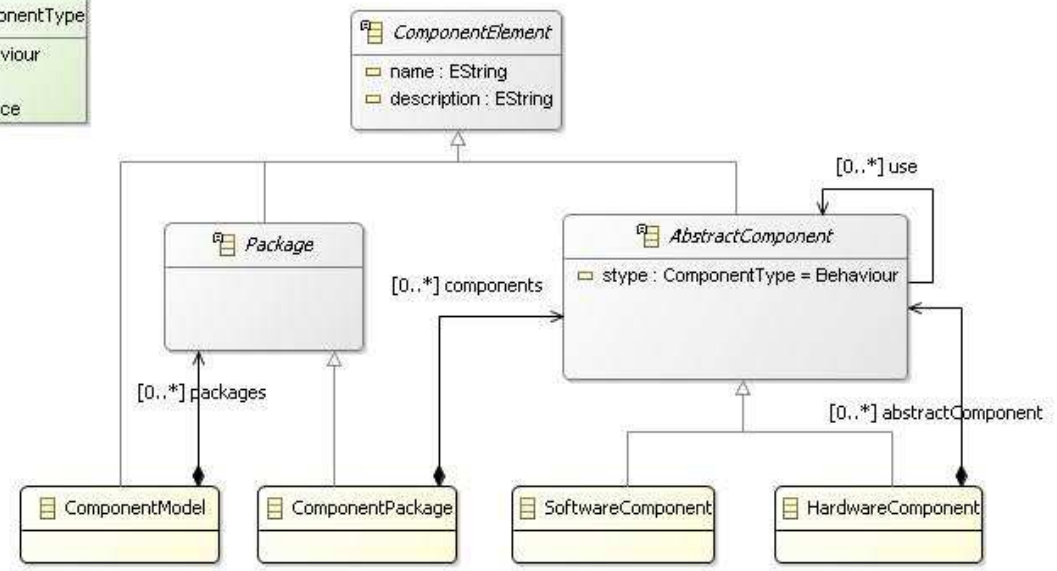
Extensions



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```

Data ComponentSample.data {
  // Root super-class
  Class ComponentElement {
    superClass external emde.ExtensibleElement
    abstract: true
    Attributes:
      name type ecore.EString
      ^description type ecore.EStrir
  }
  // Common Organization
  Class ComponentModel {
    superClass ComponentElement
    Associations:
      packages contains [0,*) Packag
  }
  Class Package {
    superClass ComponentElement
    abstract: true
  }
  // Component elements
  Class ComponentPackage {
    superClass Package
    Associations:
      components contains[0,*) Abstr
  }
  Class AbstractComponent {
    superClass ComponentElement
    abstract: true
    Attributes:
      stype enum ComponentType
    Associations:
      use refers [0,*) AbstractComponent
  }
  Class SoftwareComponent {
    icon: "Software.png"
    superClass AbstractComponent
  }
  Class HardwareComponent {
    icon: "Hardware.png"
    superClass AbstractComponent
    Annotation "http://org.polarsys.kitalpha/documentation" {
      key: ^description value: "Hardware Component"
    }
    Associations:
      abstractComponent contains [0,*) AbstractComponent
  }
  Enumeration ComponentType {
    Behaviour , ^Data , Service
  }
}
    
```



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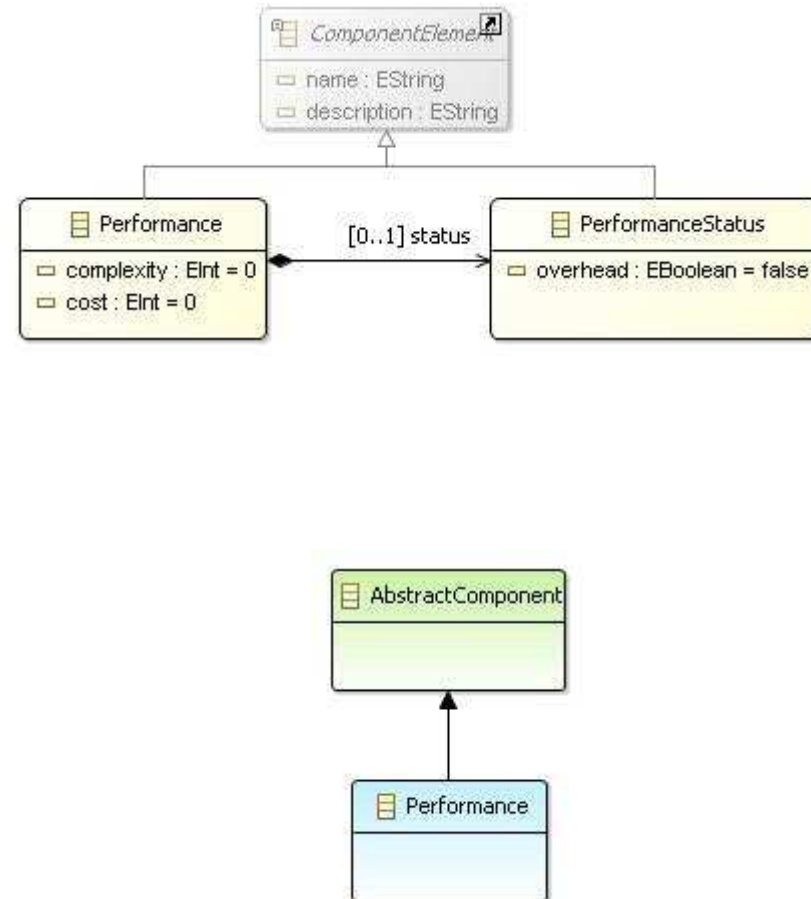
```

import external
"http://www.polarsys.org/kitalpha/ComponentSample"

Data ComponentSamplePerformance.data {
  Class Performance {
    icon: "Performance.png"
    extends ComponentSample.AbstractComponent
    superClass external ComponentSample.ComponentElement
  Attributes:
    complexity type ecore.EInt
    cost type ecore.EInt
  Associations:
    status contains [0,1] PerformanceStatus
  }

  Class PerformanceStatus {
    icon: "PerformanceStatus.png"
    superClass external ComponentSample.ComponentElement
  Attributes:
    overhead type ecore.EBoolean
  }
}

```



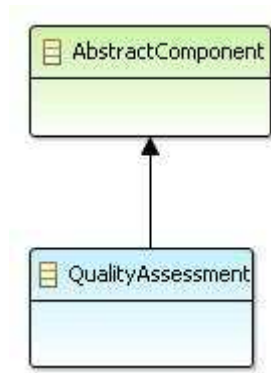
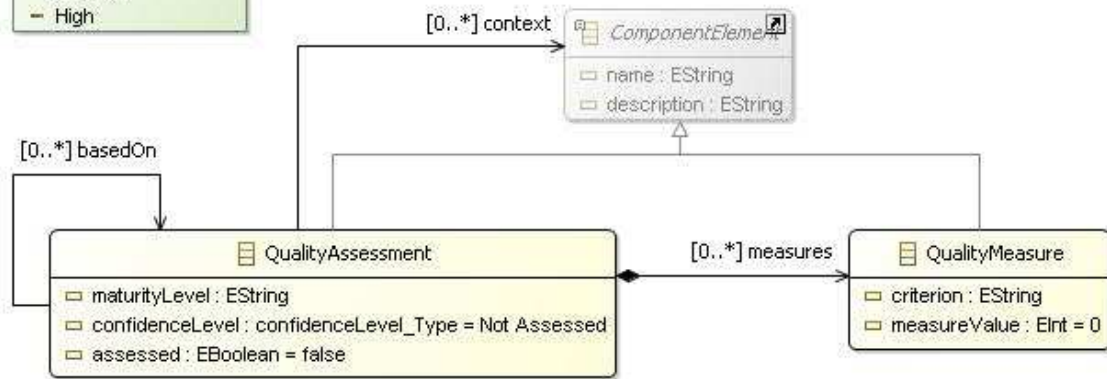
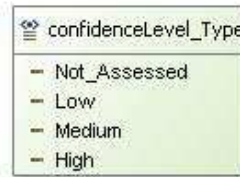
Extension



```

import external "http://www.polarsys.org/kitalpha/ComponentSample"

Data ComponentSampleQualityAssessment.data {
  Class QualityAssessment {
    description: "Quality Assessment"
    icon: "QualityAssessment.png"
    extends ComponentSample.AbstractComponent
    superClass external ComponentSample.ComponentElement
    Attributes:
      maturityLevel type ecore.EString
      confidenceLevel type ecore.Eenumerator
        values ( "Not Assessed" , Low , Medium , High )
      assessed type ecore.EBoolean
    Associations:
      basedOn refers [0,*) QualityAssessment
      context refers [0,*) external ComponentSample.ComponentElement
      measures contains [0,*) QualityMeasure
  }
  Class QualityMeasure {
    icon: "QualityMeasure.png"
    superClass external ComponentSample.ComponentElement
    Attributes:
      criterion type ecore.EString
      measureValue type ecore.EInt
  }
}
    
```



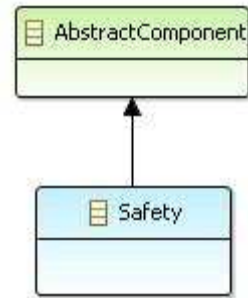
Extension

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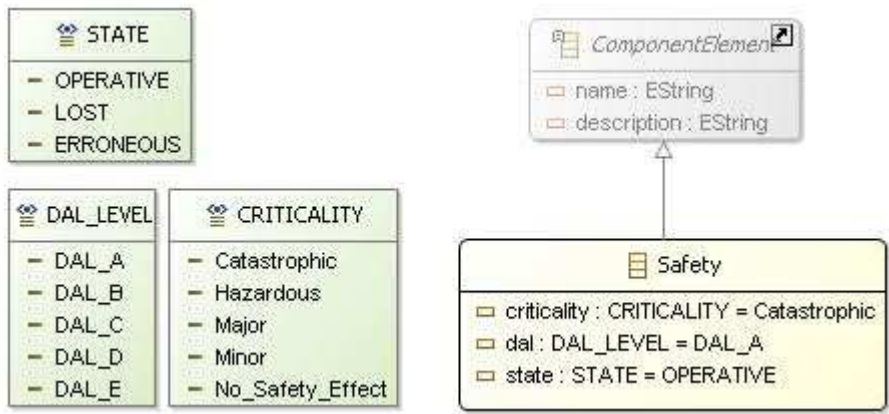
```

import external "http://www.polarsys.org/kitalpha/ComponentSample"

Data ComponentSampleSafety.data {
  Class Safety {
    icon: "Safety.png"
    extends ComponentSample.AbstractComponent
    superClass external ComponentSample.ComponentElement
    Attributes:
      criticality enum CRITICALITY
      dal enum DAL_LEVEL
      state enum STATE
  }
  Enumeration STATE {
    OPERATIVE literal OPERATIVE , LOST literal LOST , ERRONEOUS literal ERRONEOUS
  }
  Enumeration DAL_LEVEL {
    DAL_A literal DAL_A , DAL_B literal DAL_B , DAL_C literal DAL_C , DAL_D literal DAL_D ,
    DAL_E literal DAL_E
  }
  Enumeration CRITICALITY {
    Catastrophic literal Catastrophic , Hazardous literal Hazardous , Major literal Major ,
    Minor literal Minor , No_Safety_Effect literal No_Safety_Effect
  }
}
    
```



Extension



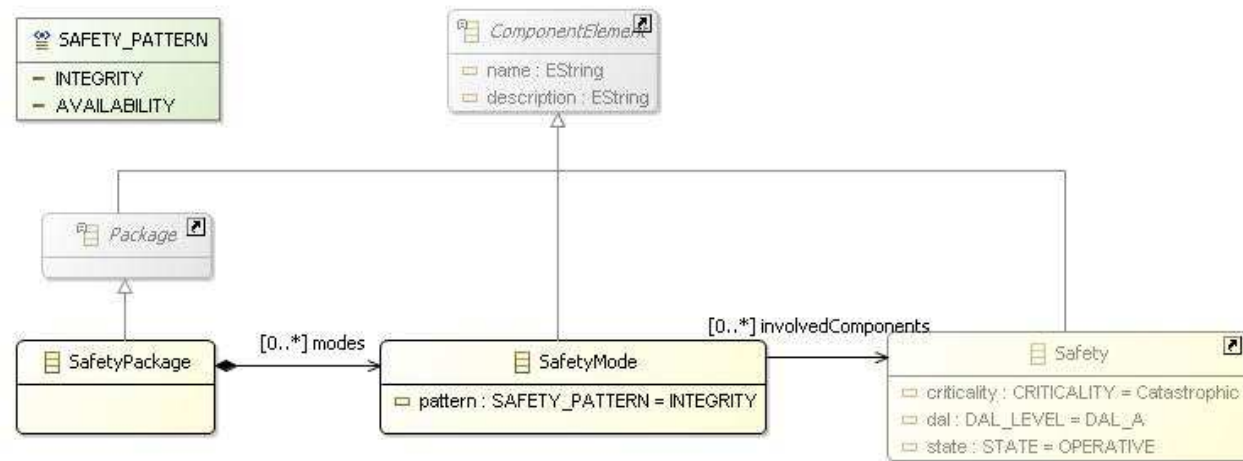
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```

import external "http://www.polarsys.org/kitalpha/ComponentSample"
import external "http://www.polarsys.org/kitalpha/ComponentSampleSafety"

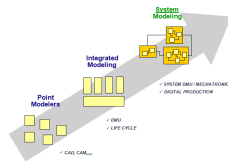
Data ComponentSampleSafetyPattern.data {
  Class SafetyPackage {
    icon: "SafetyPackage.png"
    superClass external ComponentSample.Package
    Associations:
      modes contains [0,*] SafetyMode
  }
  Class SafetyMode {
    icon: "SafetyMode.png"
    superClass external ComponentSample.ComponentElement
    Attributes:
      pattern enum SAFETY_PATTERN
    Associations:
      involvedComponents refers [0,*] external ComponentSampleSafety.Safety
  }
  Enumeration SAFETY_PATTERN {
    INTEGRITY literal INTEGRITY , AVAILABILITY literal AVAILABILITY
  }
}

```



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# Th $\alpha$ nk You!

<https://www.polarsys.org/projects/polarsys.kitalpha>

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