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Metamodel Extensibility

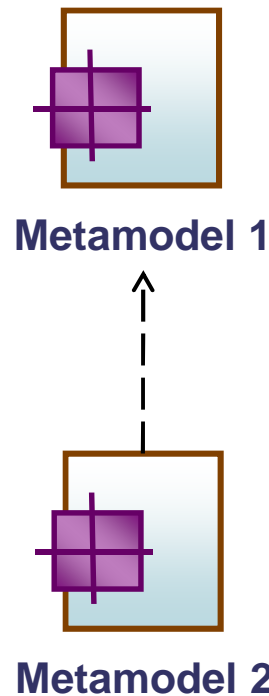
 **Kitalpha**



OPEN
Version 1.0.0

THALES

Declarations

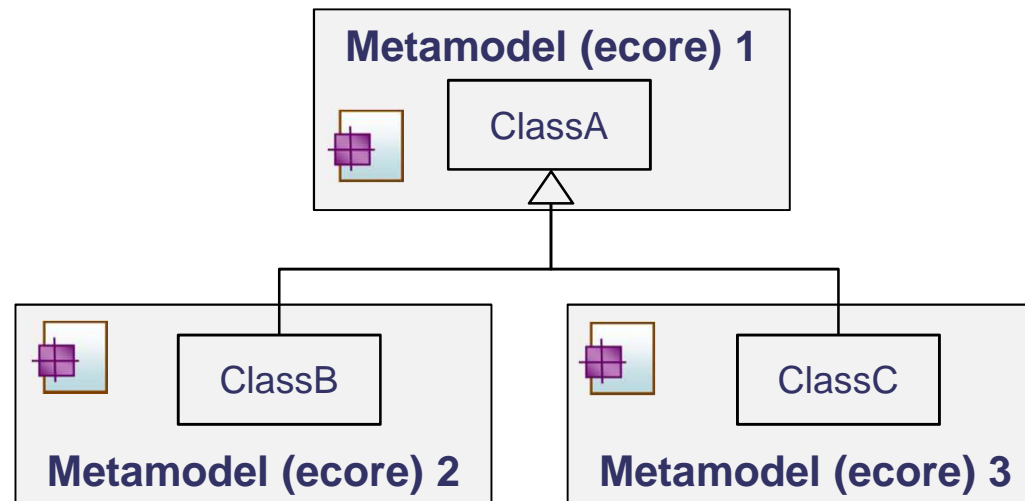


◀ Extensible metamodel

◀ Ability to extend metamodels

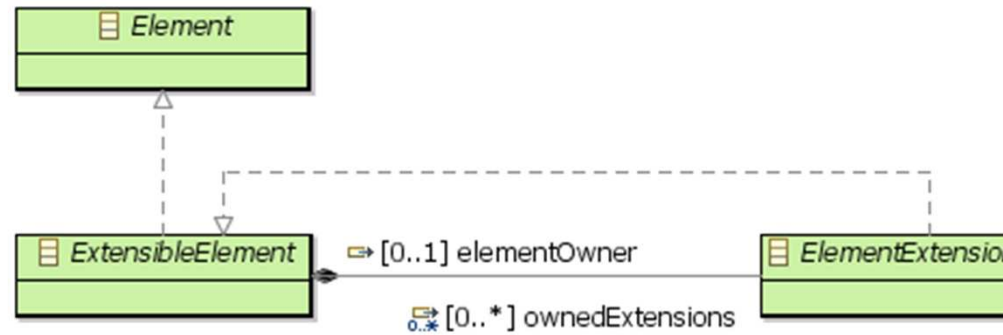
Those abilities are expressed by properties in EMF (genmodel: Extensible Provider Factory, Child Creation Extenders)

EMF enables extensibility only by subclass



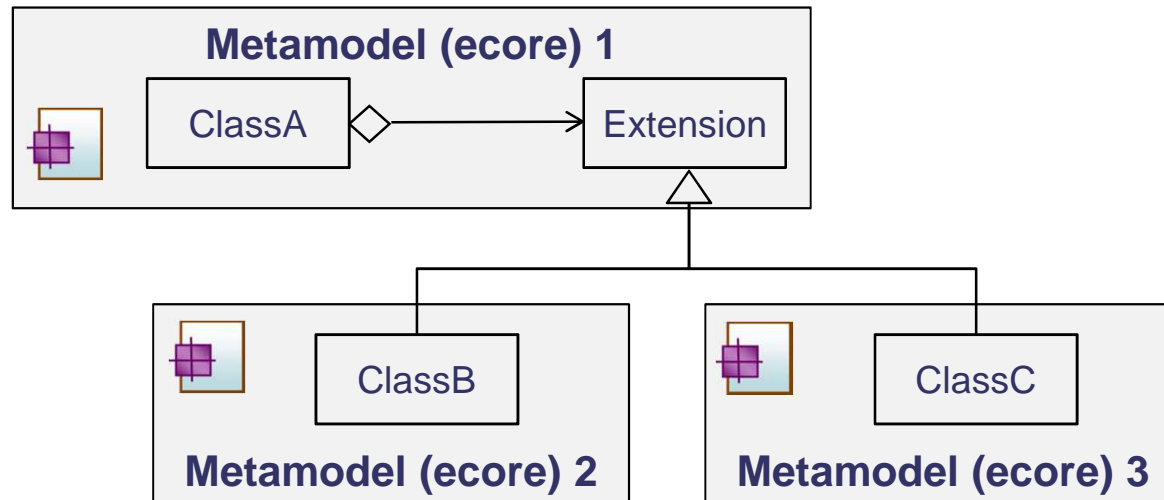
Kitalpha introduces the mechanism of extension by aggregation

New: **eMDE** (essential MDE metamodel), a top-level metamodel



There is an "ExtendedElement" annotation on ElementExtension in order to know which element an ElementExtension is applied to

Element	Top metaclass
ExtensibleElement	Metaclass providing the ability to dynamically aggregate new properties, named ElementExtension
ExtensionElement	New property from a viewpoint metamodel which can also be extended



Conceptually, ClassA aggregates ClassB and ClassC

```

Data ComponentSample.data {
  Class ComponentElement {
    superClass external emde.ExtensibleElement
    abstract: true
    ...
  }
  Class AbstractComponent {
    ...
  }
  Class SoftwareComponent {
    superClass AbstractComponent
  }
  Class HardwareComponent {
    superClass AbstractComponent
    ...
  }
  ...
}

```

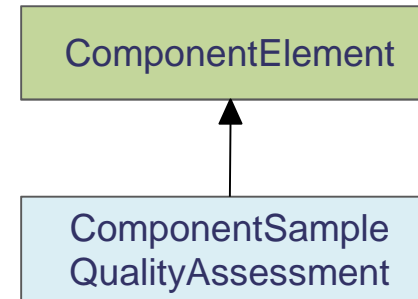
- Declaration of the extension by aggregation with inheritance of ExtensibleElement
- In this case, all the subclasses of ComponentElement become extensible

```

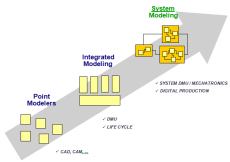
Data ComponentSampleQualityAssessment.data {
  Class QualityAssessment {
    extends ComponentSample.AbstractComponent
  Attributes:
    ...
  Associations:
    ...
    measures contains [0,*] QualityMeasure
  }
  Class QualityMeasure {
    ...
  }
}

```

- Declaration of the extension
- QualityAssessment extends the abstract class AbstractComponent



- | | | |
|--------------------|---|--|
| Inheritance | ☺ | This mechanism enables inheritance of all properties, constraints, and representations (e.g., user interfaces, diagrams) |
| | ☹ | The type of a model element cannot be changed during its lifecycle |
| Aggregation | ☺ | The same model element can be decorated by data from different concerns (i.e. viewpoints) |



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Th_αnk You!

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

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