

# EMF and GMF Training

**Goals:**

- To know how are designed and how to use Eclipse EMF, GEF, GMF
- To be able to develop applications based on these tools

**Our advantages:**

- Training created by Eclipse committers and real EMF/GMF experts
- Many practical exercises (66%)

**Duration:** 5 days

**Public:** Architects, Developers

**Pre-requisite :** Good knowledge of Java. Basic knowledge of Eclipse plugin programming.

## 1 - Presentation of the Eclipse Modeling Project

- Structuring and overview of the Eclipse projects
- Introduction to MDA concepts and DSM approaches
- Introduction to the EMP components

**Exercises:**

- Installation and customization of environments
- Navigation inside a model and its meta-model

Duration : 1.5 h

## 2 - Modeling with the EMF framework

- Core concepts of Eclipse EMF
- The Ecore meta-model
- The Ecore datatypes
- Detailed explanation of the genmodel
- Links between metamodels

**Exercises:**

- Development of a basic EMF modeler on a specific metamodel
- Creating models conforming to this metamodel
- First customizations of the modeler

Duration : 1.5 h

### 3 - EMF Advanced features

- Detailed explanation of the EMF.Edit and EMF.Codegen frameworks
- Generated and Reflective EMF API
- Event engine mechanism
- Loading XSD
- Tips & Tricks

#### *Exercises:*

- Advanced customization of an EMF modeler
- XML serialization according to a given XML schema
- Model manipulation through code

Duration : 4 h

### 4 - QTV Components

- Model requesting with EMF Query
- Transactional modifications through EMF Transaction
- Validating models with EMF Validation

#### *Exercises:*

- Designing a custom tooling allowing :
  - model requesting
  - validation
  - editing within a transactional context

Duration : 3 h

### 5 - Extending the EMF & EMFT projects

- Initialization to the components (CDO, Teneo, ...)
- Zoom on two EMFT tools : EMF Search and EMF Compare
- Applying M2M and M2T transformation on models

#### *Exercises:*

- Designing a tooling making use of the EMFT components
- Using M2M and M2T components
- Packaging and deployment of the modeler created during this training

Duration : 4 h

## 6 - Introduction to GMF

- Introduction to DSM (Domain Specific Modeler)
- Presentation of the GMF project and its organization
- Project management targeting the creation of a GMF modeler

### *Exercises:*

- Navigation and use of existing GMF modelers
- Comparison with classic GEF tools

Duration : 2.5 h

## 7 - GEF

- GEF goals
- MVC architecture of GEF
- Introduction to the draw2d graphic library
- API and development of GEF components (EditPart and EditPolicy)

### *Exercises:*

- Create a diagram with GEF

Duration : 4.5 h

## 8 - GMF Tooling

- GMF architecture
- The GMFGRAPH model for graphical definition
- The GMFTOOL model for tooling definition
- The GMFMAP model for mapping definition
- The GMFGEN model for generative definition

### *Exercises:*

- Creation of simple modelers
- Using the definition models to generate code
- Explanation of the generated code

Duration : 3.5 h

## 9 - GMF Runtime

- GMF Runtime library
- Creation of new components
- Advanced visual design
- GMF extension points

### *Exercises:*

- Graphical customization
- Using the GMF providers

Duration : 3.5 h

## 10 - Advanced GMF

- Shortcuts between modelers
- Packaging and deployment of EMF and GMF projects
- Tips & Tricks
- Dynamic loading of labels and graphical elements

### *Exercises:*

- Customizing the graphical appearance
- Using the GMF parsers
- Linking two distinct modelers
- Industrialization of this exercises

Duration : 7 h