



TRIP Planner Model

Eclipse Modelling Project Report

- **Supervised by**

Prof. Frederic Mallet

ABSTRACT

To understand the modelling operation of a Trip Management based on Eclipse Modelling Framework and able to create a multiservice trip with ability to calculate cost, as well as validate keeping up the consistency.

Submitted by:

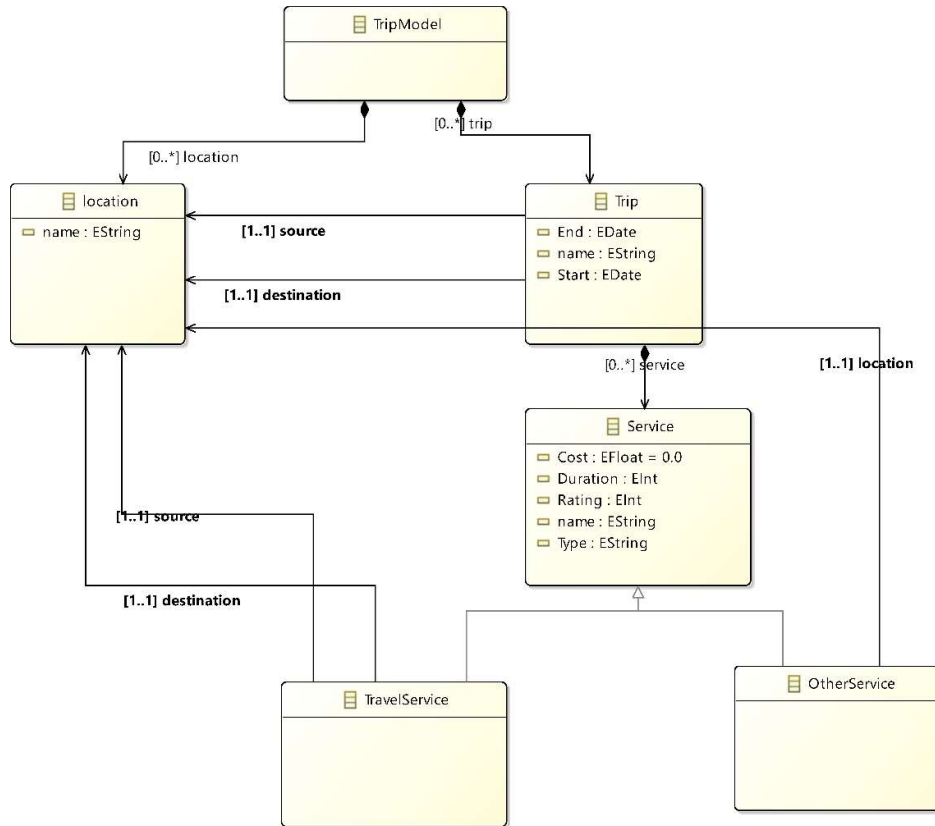
Cyril Naves

&

Simbarashe Kanengoni

Modelling Syntaxes Overview:

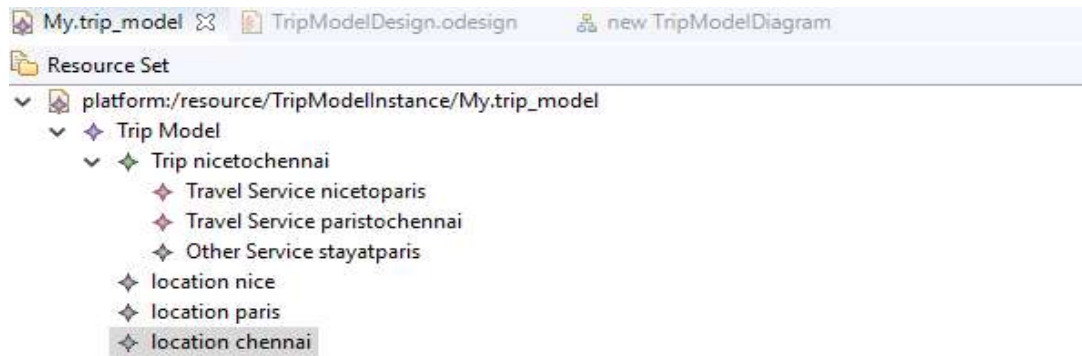
Meta Model of Trip:



Overview:

- 1) **TripModel** is our main root reference from which we are able to create multiple trips with each trip containing a list of services as superclass extended by **TravelService** Class and **OtherService** Class.
- 2) Here a constraint is placed on the validity of locations which is associated with a trip referenced by a trip as well as each of the services
- 3) Also reusability of **Service** class is achieved by placing it as a superclass extended by **Travel Service** Class for travel operations and **Other Service** Class for other operations such as hotel, sightseeing which do not depend on source and destination but just location.

Concrete Representation:



Overview:

- 1) A concrete model of the above model was created after generating the required artifacts in the runtime instance of the eclipse application emf trip model created earlier.
- 2) This was a combination of a travel as well as other service, multiplicity trip and which was validated.

XML Text of Gen Model:

```
trip_model  trip_model.genmodel  trip_model.ui  TripModelHandler.java  trip_model.genmodel
1 <?xml version="1.0" encoding="UTF-8"?>
2 <genmodel:GenModel xmi:version="2.0" xmlns:xmi="http://www.omg.org/XMI" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
3   xmlns:ecore="http://www.eclipse.org/emf/2002/.ecore" xmlns:genmodel="http://www.eclipse.org/emf/2002/GenModel"
4   modelDirectory="/trip_model/src-gen" creationIcons="false" editDirectory="/trip_model.edit/src-gen"
5   editorDirectory="/trip_model.editor/src-gen" modelPluginId="trip_model" modelName="Trip_model"
6   rootExtendsClass="org.eclipse.emf.ecore.impl.MinimalEObjectImpl$Container" codeFormatting="true"
7   importerId="org.eclipse.emf.importer.ecore" complianceLevel="8.0" copyrightFields="false"
8   operationReflection="true" importOrganizing="true">
9   <foreignModel>trip_model.ecore</foreignModel>
10  <testsDirectory xsi:nil="true"/>
11  <genPackages prefix="Trip_model" disposableProviderFactory="true".ecorePackage="trip_model.ecore#/">
12    <genClasses.ecoreClass="trip_model.ecore#//Service">
13      <genFeatures createChild="false".ecoreFeature="ecore:EAttribute trip_model.ecore#//Service/Cost"/>
14      <genFeatures createChild="false".ecoreFeature="ecore:EAttribute trip_model.ecore#//Service/Duration"/>
15      <genFeatures createChild="false".ecoreFeature="ecore:EAttribute trip_model.ecore#//Service/Rating"/>
16      <genFeatures createChild="false".ecoreFeature="ecore:EAttribute trip_model.ecore#//Service/Name"/>
17      <genFeatures createChild="false".ecoreFeature="ecore:EAttribute trip_model.ecore#//Service/Type"/>
18    </genClasses>
19    <genClasses.ecoreClass="trip_model.ecore#//OtherService">
20      <genFeatures notify="false" createChild="false" propertySortChoices="true".ecoreFeature="ecore:EReference trip_model.ecore#//OtherService"/>
21    </genClasses>
22    <genClasses.ecoreClass="trip_model.ecore#//TravelService">
23      <genFeatures notify="false" createChild="false" propertySortChoices="true".ecoreFeature="ecore:EReference trip_model.ecore#//TravelService"/>
24      <genFeatures notify="false" createChild="false" propertySortChoices="true".ecoreFeature="ecore:EReference trip_model.ecore#//TravelService"/>
25    </genClasses>
26    <genClasses.ecoreClass="trip_model.ecore#//Trip">
27      <genFeatures property="None" children="true" createChild="true".ecoreFeature="ecore:EReference trip_model.ecore#//Trip/service"/>
28      <genFeatures createChild="false".ecoreFeature="ecore:EAttribute trip_model.ecore#//Trip/End"/>
29      <genFeatures notify="false" createChild="false" propertySortChoices="true".ecoreFeature="ecore:EReference trip_model.ecore#//Trip/Name"/>
30      <genFeatures notify="false" createChild="false" propertySortChoices="true".ecoreFeature="ecore:EReference trip_model.ecore#//Trip/Name"/>
31      <genFeatures createChild="false".ecoreFeature="ecore:EAttribute trip_model.ecore#//Trip/Start"/>
32    </genClasses>
33  </genPackages>
34  <genClasses.ecoreClass="trip_model.ecore#//location">
```

Overview:

- 1) Gen Model file representation in XML format for the Trip Planner.
- 2) It contains the xml representation of various ecore classes generated as a result of the meta model also as well as the attributes representation

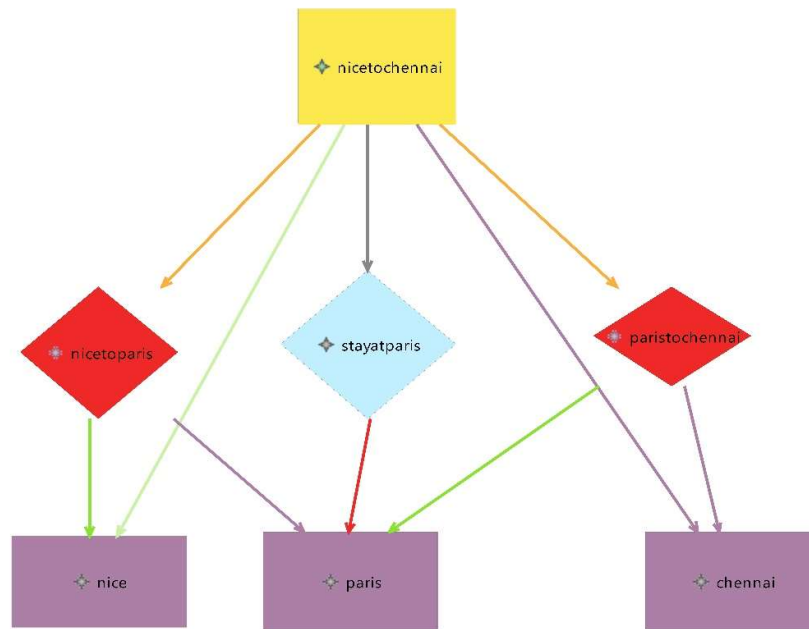
Textual Syntax: Xtext

```
TripModel{
  trip{
    Trip "nicetochennai"
    {
      End 25-05-2018 Start 23-05-2018 source "nice" destination "chennai"
      service
      {
        TravelService "nicetoparis" {Cost 800.0 Duration 1 Rating 1 source "nice" destination "paris"},
        TravelService "paristochennai" {Cost 540.0 Duration 1 Rating 1 source "paris" destination "chennai"},
        OtherService "stayatparis" {Cost 800.0 Duration 1 Rating 2 location "paris"}
      }
    }
    location{
      location "nice",location "paris",location "chennai"
    }
  }
}
```

Overview:

- 1) Xtext was generated to give a textual syntax orientation for the model which is represented above with allowing a consistent trip.
- 2) Xtext had some modifications done to parse Edate which was a custom implementation done as part of this project
- 3) The textual syntax was allowed only for valid location because of the model created
- 4) Xtext format extension was created to be **.tripxt**

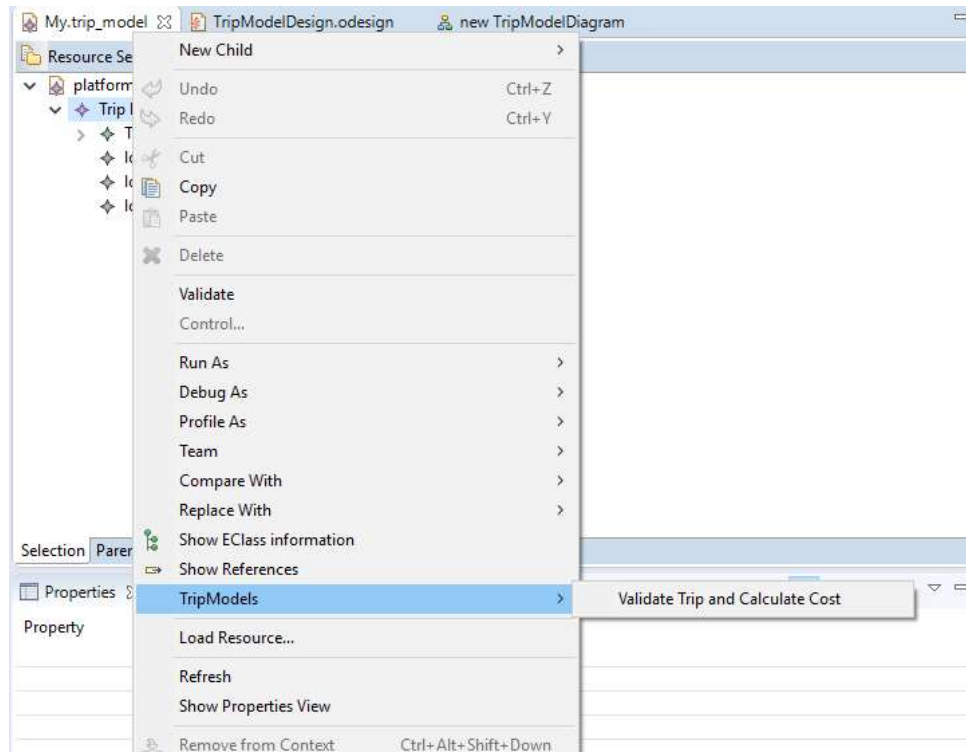
Graphical Model: Sirius



Overview:

- 1) Sirius representation was a more graphical representation containing the view point specification based on the model instance created earlier.
- 2) Here green edges represent the source and the purple ones represent the destination.
- 3) Also Services pointing to a trip are referenced with orange edges
- 4) Other Services are referenced by a blue diamond box and travel services are referenced by a red diamond box.

Plugin Creation:



Overview:

- 1) Here a plugin is created for validating a trip and calculating cost both simultaneously and then presented to the user, with appropriate validation through the use of a popup widget.

Validation:

- 1) Validation of a trip is done by the plugin part where the selected structure instance is retrieved of trip and services and further validated.
- 2) Consistency validation with respect to dates and source destination check are maintained.
- 3) Implementations are contained in the TripModelHandler.java which validates whether a trip is valid or not.
- 4) A trip is checked for its validity and simultaneously its associated services which is a more generic check like in the android implementation.
- 5) A sample validation screenshot is presented for both validation and non-valid cases where a more specific validity error is presented to the user of the p

Cost Calculation:

