Run-Configuration of Tulsa

Step 1: Prerequisites

Install the JDK 8, Epsilon Framework, DICE Profile and EMF to the Eclipse.

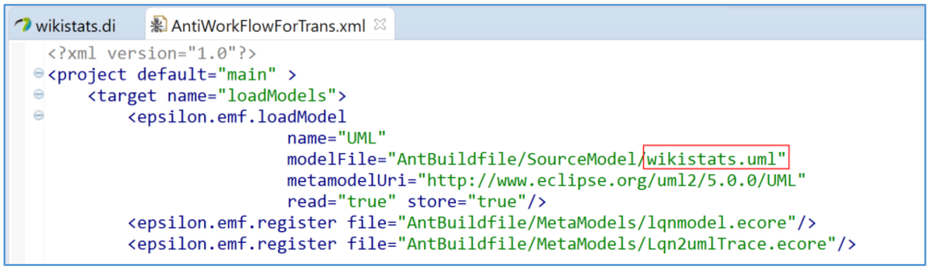
- JDK 8: http://www.oracle.com/technetwork/cn/java/javase/downloads/jdk8-downloads-2133151-zhs.html
- Epsilon: http://www.eclipse.org/epsilon/download/
- DICE Profile: https://github.com/dice-project/DICE-Profiles
- EMF: http://www.eclipse.org/modeling/emf/updates/

Step 2: Import the UML file

Copy the UML file to the folder "AntBuildfile/SourceModel/".

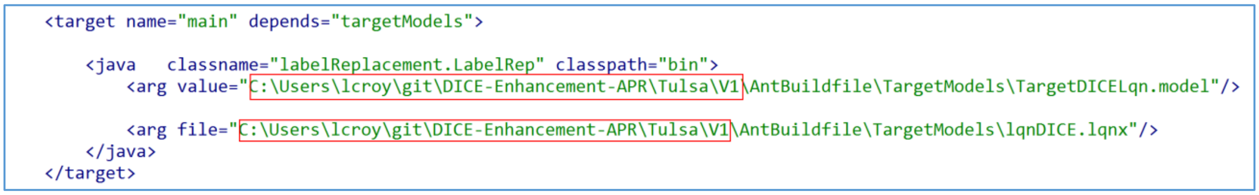
Step 3: Configure the Ant build file - AntiWorkFlowForTrans.xml

1) Enter the UML file location



```
<?xml version="1.0"?>
<project default="main" >
    <target name="loadModels">
        <epsilon.emf.loadModel
                        name="UML"
                        modelFile="AntBuildfile/SourceModel/wikistats.uml"
                        metamodelUri="http://www.eclipse.org/uml2/5.0.0/UML"
                        read="true" store="true"/>
        <epsilon.emf.register file="AntBuildfile/MetaModels/lqnmodel.ecore"/>
        <epsilon.emf.register file="AntBuildfile/MetaModels/Lqn2umlTrace.ecore"/>
```

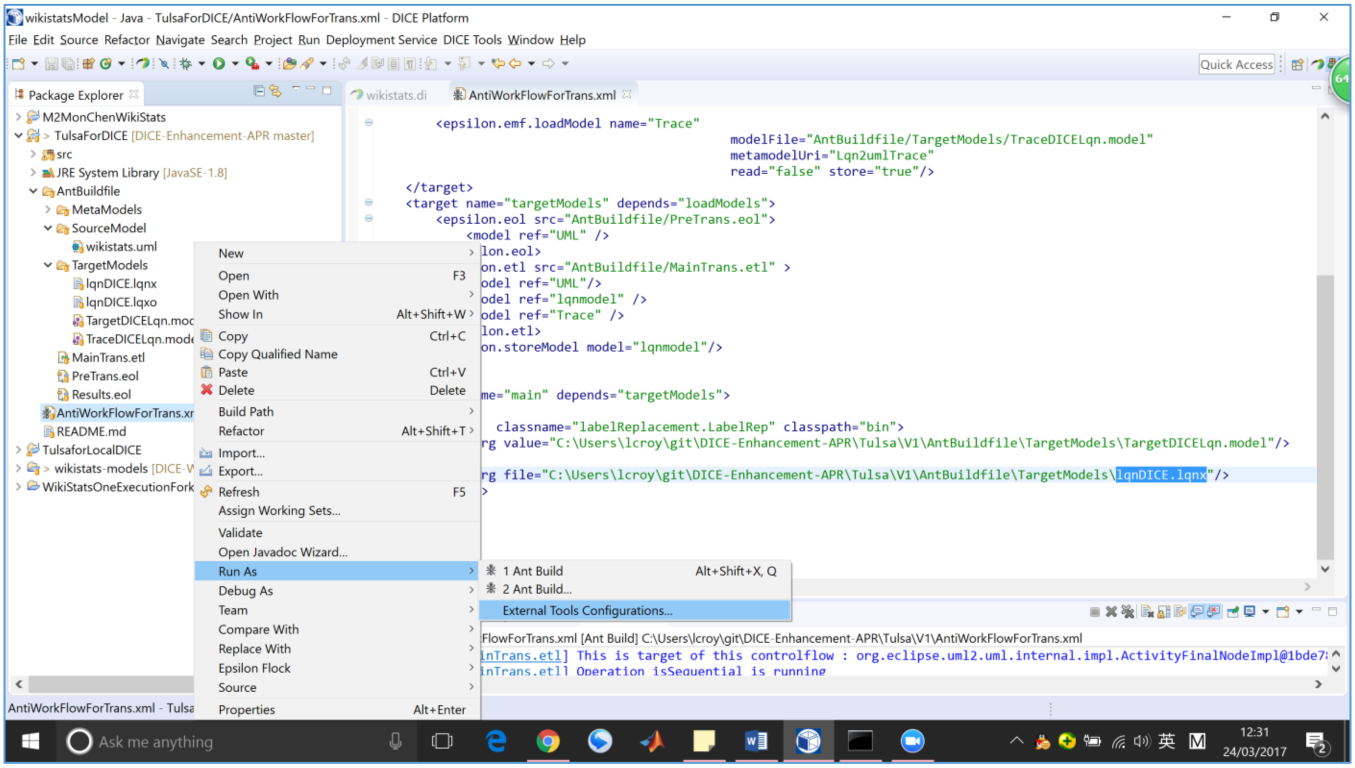
2) Enter the location where LQN model ("TargetDICELqn.model" and "lqnDICE.lqnx") will be saved



```
<target name="main" depends="targetModels">

    <java   classname="labelReplacement.LabelRep" classpath="bin">
        <arg value="C:\Users\lcroy\git\DICE-Enhancement-APR\Tulsa\V1\AntBuildfile\TargetModels\TargetDICELqn.model"/>

        <arg file="C:\Users\lcroy\git\DICE-Enhancement-APR\Tulsa\V1\AntBuildfile\TargetModels\lqnDICE.lqnx"/>
    </java>
</target>
```

Step 4: Running the Transformation Process

1) Right click the AntiWorkFlowForTrans.xml file: Run AS -> External Tools Configurations

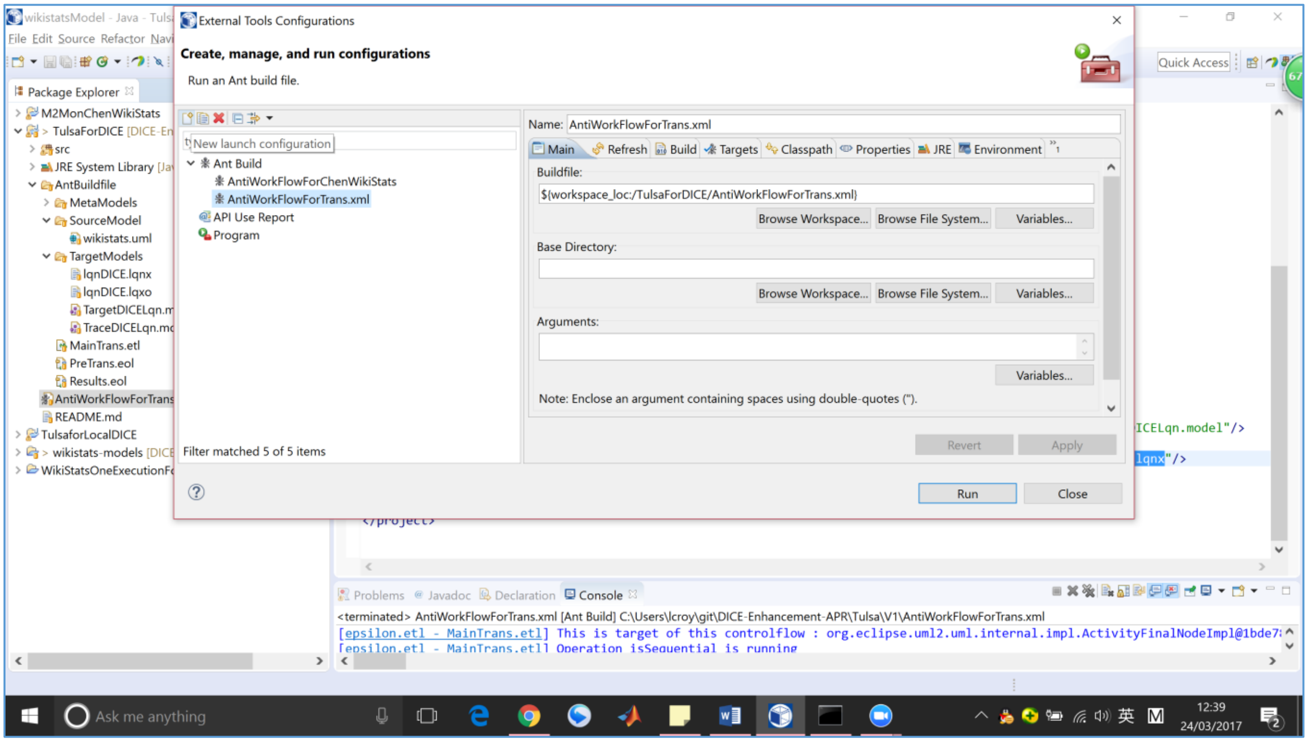


wikistatsModel - Java - TulsaForDICE/AntiWorkFlowForTrans.xml - DICE Platform

```
        <epsilon.emf.loadModel name="Trace"
                                          modelFile="AntBuildfile/TargetModels/TraceDICELqn.model"
                                          metamodelUri="Lqn2umlTrace"
                                          read="false" store="true"/>
    </target>
    <target name="targetModels" depends="loadModels">
        <epsilon.eol src="AntBuildfile/PreTrans.eol">
            <model ref="UML" />
lon.eol>
on.etl src="AntBuildfile/MainTrans.etl" >
odel ref="UML"/>
odel ref="lqnmodel" />
odel ref="Trace" />
lon.etl>
on.storeModel model="lqnmodel"/>

me="main" depends="targetModels">

 classname="labelReplacement.LabelRep" classpath="bin">
rg value="C:\Users\lcroy\git\DICE-Enhancement-APR\Tulsa\V1\AntBuildfile\TargetModels\TargetDICELqn.model"/>

rg file="C:\Users\lcroy\git\DICE-Enhancement-APR\Tulsa\V1\AntBuildfile\TargetModels\lqnDICE.lqnx"/>
>
```

```
FlowForTrans.xml [Ant Build] C:\Users\lcroy\git\DICE-Enhancement-APR\Tulsa\V1\AntiWorkFlowForTrans.xml
inTrans.etl] This is target of this controlflow : org.eclipse.uml2.uml.internal.impl.ActivityFinalNodeImpl@1bde7
inTrans.etl] Operation isSequential is running
```

2) Click "New launch configuration" button, and then click "Browse Workspace…" to select the AntiWorkFlowForTrans.xml.



External Tools Configurations

Create, manage, and run configurations

Run an Ant build file.

Name: AntiWorkFlowForTrans.xml

Buildfile:

${workspace_loc:/TulsaForDICE/AntiWorkFlowForTrans.xml}

Base Directory:

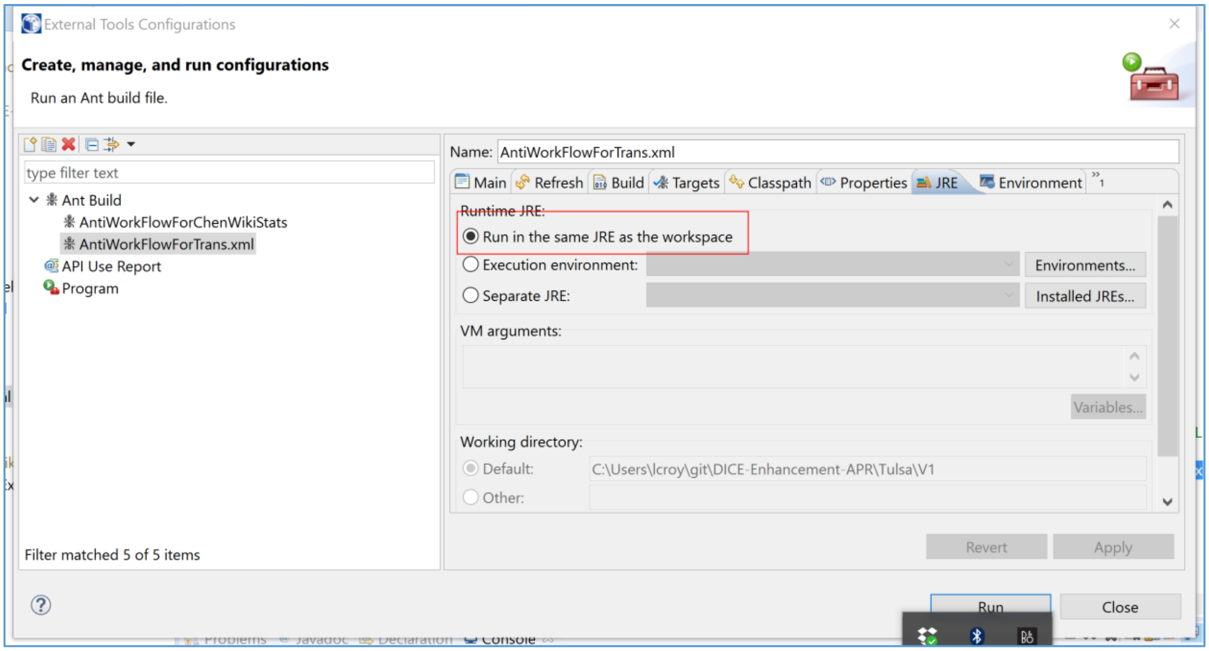
Arguments:

Note: Enclose an argument containing spaces using double-quotes (").

Filter matched 5 of 5 items

```
<terminated> AntiWorkFlowForTrans.xml [Ant Build] C:\Users\lcroy\git\DICE-Enhancement-APR\Tulsa\V1\AntiWorkFlowForTrans.xml
[epsilon.etl - MainTrans.etl] This is target of this controlflow : org.eclipse.uml2.uml.internal.impl.ActivityFinalNodeImpl@1bde7
[epsilon.etl - MainTrans.etl] Operation isSequential is running
```

3) When running an ANT workflow that involves Epsilon tasks, please make sure you select the **Run in the same JRE as the workspace** option under the **JRE** tab of your launch configuration, then click the “Run”.


External Tools Configurations

Create, manage, and run configurations

Run an Ant build file.

type filter text

- Ant Build
  - AntiWorkFlowForChenWikiStats
  - AntiWorkFlowForTrans.xml
- API Use Report
- Program

Filter matched 5 of 5 items

Name: AntiWorkFlowForTrans.xml

Main | Refresh | Build | Targets | Classpath | Properties | JRE | Environment

Runtime JRE:

● Run in the same JRE as the workspace

○ Execution environment: Environments...

○ Separate JRE: Installed JREs...

VM arguments:

Variables...

Working directory:

○ Default: C:\Users\lcroy\git\DICE-Enhancement-APR\Tulsa\V1

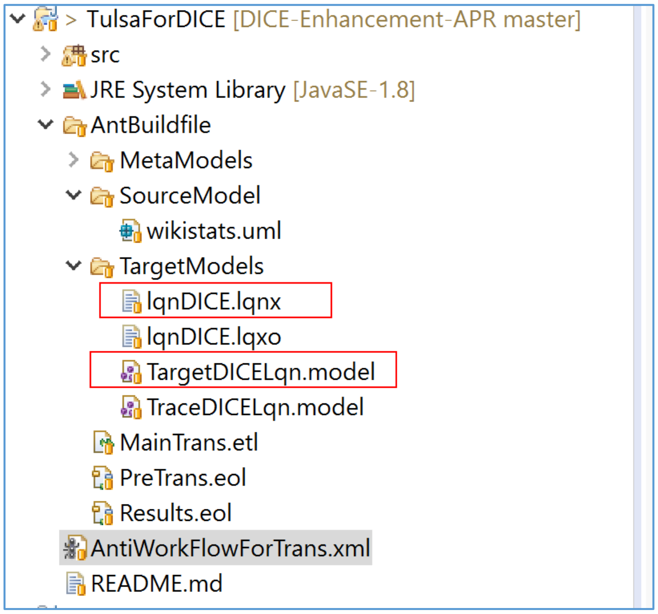
○ Other:

Revert Apply

Run Close

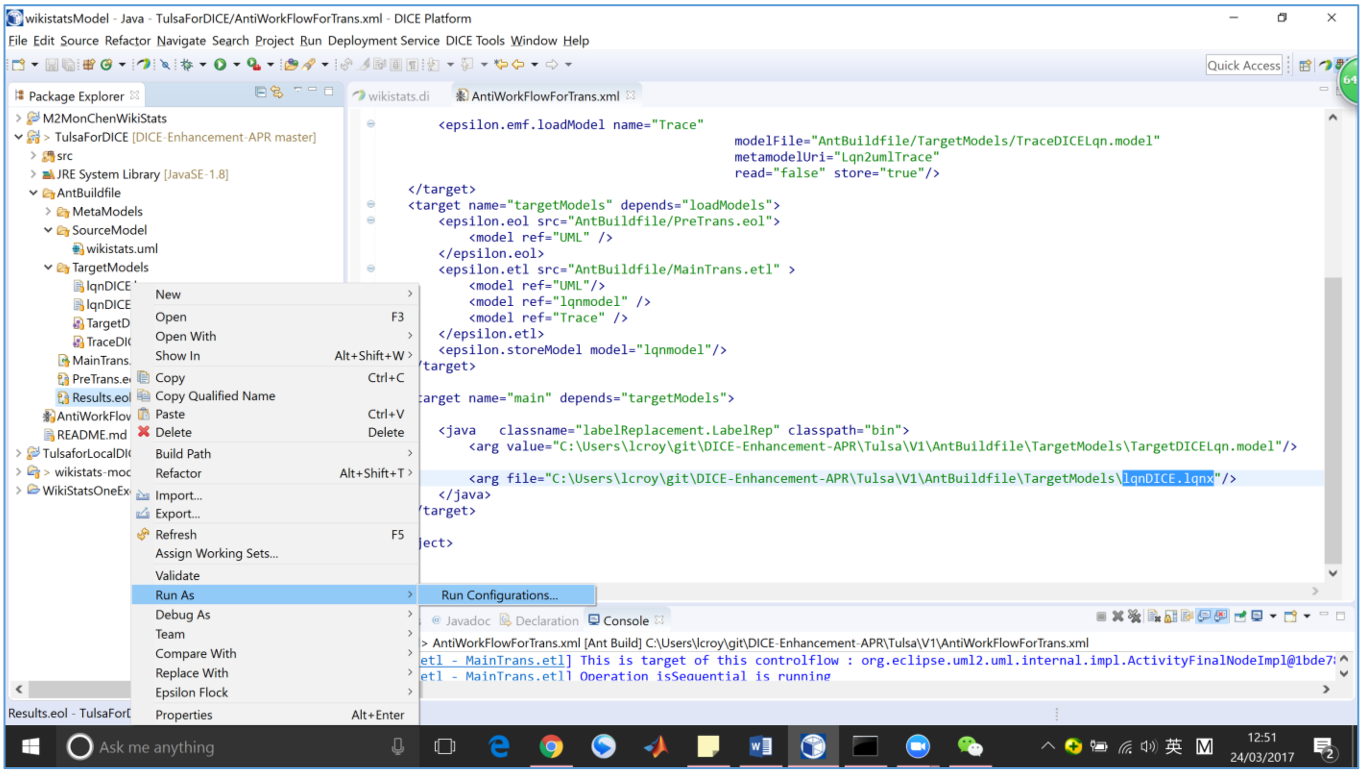
Step 5: Generate the LQN model

The files in the red boxes are generated LQN models after running the Ant build file.


```
> TulsaForDICE [DICE-Enhancement-APR master]
    src
    JRE System Library [JavaSE-1.8]
    AntBuildfile
        MetaModels
        SourceModel
            wikistats.uml
        TargetModels
            lqnDICE.lqnx
            lqnDICE.lqxo
            TargetDICELqn.model
            TraceDICELqn.model
        MainTrans.etl
        PreTrans.eol
        Results.eol
    AntiWorkFlowForTrans.xml
    README.md
```

Step 6: Feedback of Performance results to Software Model:

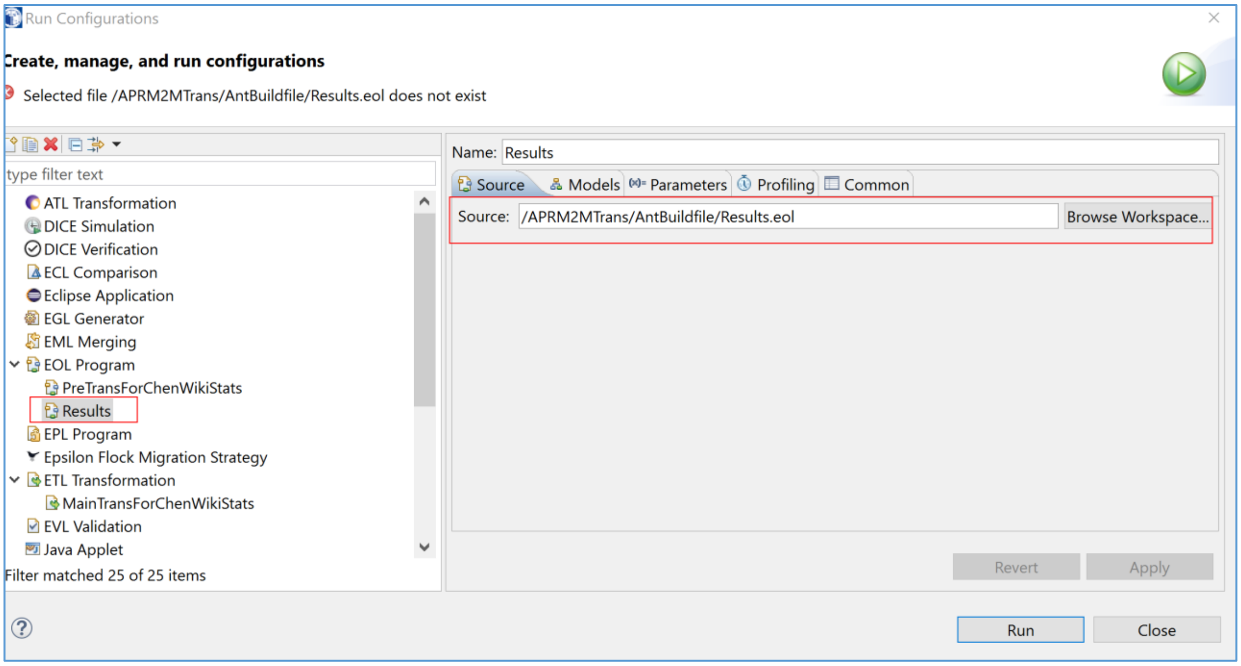
1) Right click on Results.eol (its path /AntBuildfile/Results.eol): Run As -> Run Configuration



```
        <epsilon.emf.loadModel name="Trace"
                                            modelFile="AntBuildfile/TargetModels/TraceDICELqn.model"
                                            metamodelUri="Lqn2umlTrace"
                                            read="false" store="true"/>
    </target>
    <target name="targetModels" depends="loadModels">
        <epsilon.eol src="AntBuildfile/PreTrans.eol">
            <model ref="UML" />
        </epsilon.eol>
        <epsilon.etl src="AntBuildfile/MainTrans.etl" >
            <model ref="UML"/>
            <model ref="lqnmodel" />
            <model ref="Trace" />
        </epsilon.etl>
        <epsilon.storeModel model="lqnmodel"/>
/target>

arget name="main" depends="targetModels">

    <java   classname="labelReplacement.LabelRep" classpath="bin">
        <arg value="C:\Users\lcroy\git\DICE-Enhancement-APR\Tulsa\V1\AntBuildfile\TargetModels\TargetDICELqn.model"/>

        <arg file="C:\Users\lcroy\git\DICE-Enhancement-APR\Tulsa\V1\AntBuildfile\TargetModels\lqnDICE.lqnx"/>
    </java>
/target>

ject>
```

```
> AntiWorkFlowForTrans.xml [Ant Build] C:\Users\lcroy\git\DICE-Enhancement-APR\Tulsa\V1\AntiWorkFlowForTrans.xml
etl - MainTrans.etl] This is target of this controlflow : org.eclipse.uml2.uml.internal.impl.ActivityFinalNodeImpl@1bde7
etl - MainTrans.etl] Operation isSequential is running
```

2) Click "New launch configuration" button to import the Results.eol file, and then click "Browse Workspace…" to select the Results.eol.



Create, manage, and run configurations

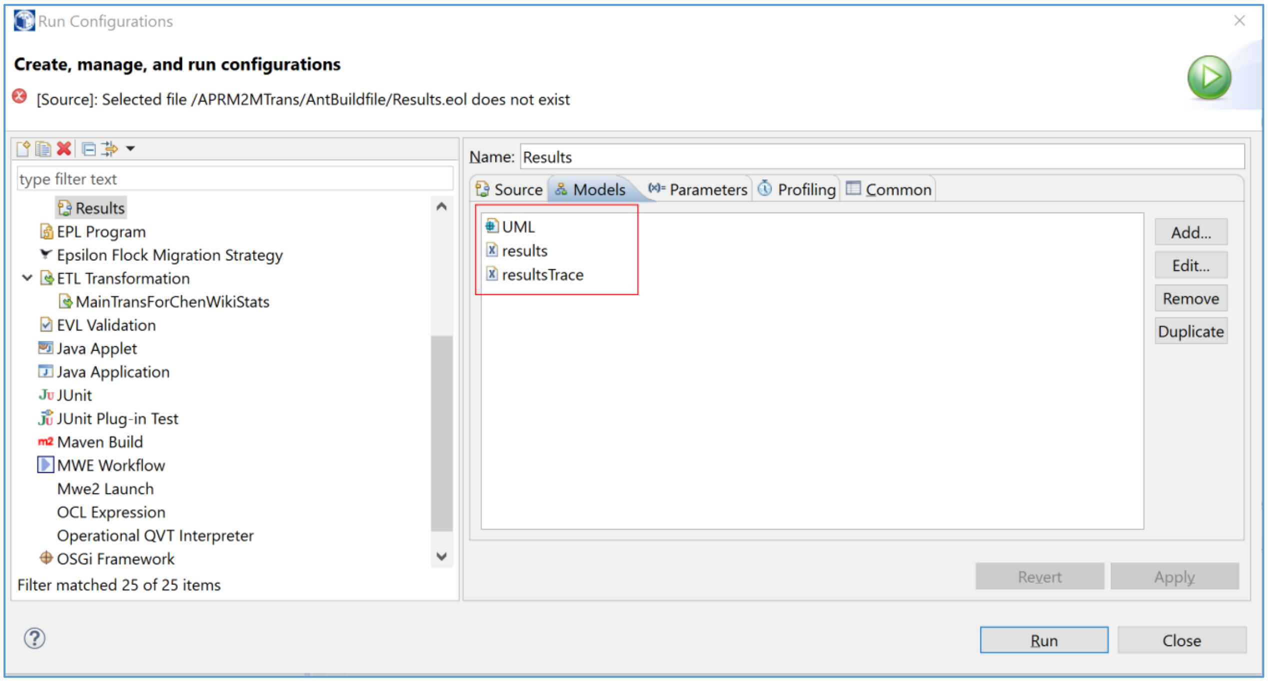
Selected file /APRM2MTrans/AntBuildfile/Results.eol does not exist

Name: Results

Source: /APRM2MTrans/AntBuildfile/Results.eol

Filter matched 25 of 25 items

3) In configuration you need to add three files: UML file, Solved file (lqnDICE.lqxo) and Trace file (TraceDICELqn.model).



Run Configurations

Create, manage, and run configurations

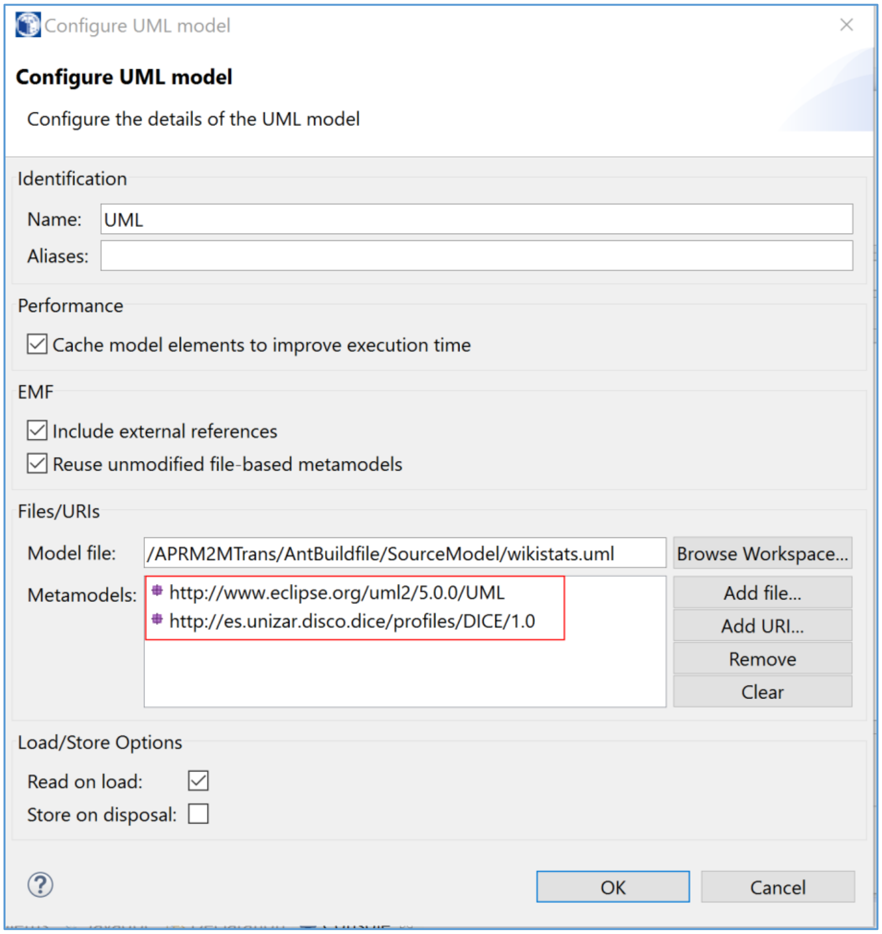
[Source]: Selected file /APRM2MTrans/AntBuildfile/Results.eol does not exist

Name: Results

Models:

- UML
- results
- resultsTrace

- Add UML file - wikistats.uml. Including UML and DICE profile as Metamodels



Configure UML model

Configure UML model

Configure the details of the UML model

Identification

Name: UML

Aliases:

Performance

☑ Cache model elements to improve execution time

EMF

☑ Include external references

☑ Reuse unmodified file-based metamodels

Files/URIs

Model file: /APRM2MTrans/AntBuildfile/SourceModel/wikistats.uml

Metamodels:

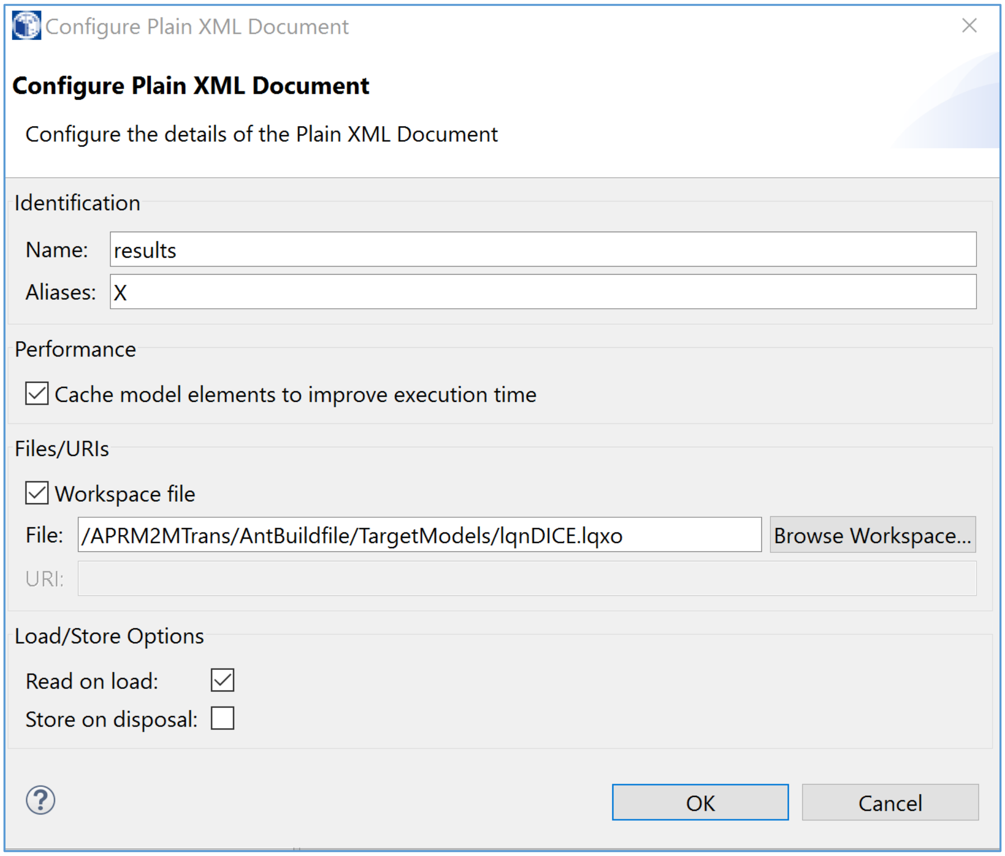
- http://www.eclipse.org/uml2/5.0.0/UML
- http://es.unizar.disco.dice/profiles/DICE/1.0

Load/Store Options

Read on load: ☑

Store on disposal: □

- Add a plain xml file for analysis results – lqnDICE.lqxo (To obtain the lqnDICE.lqxo, user needs to use LQN solver, e.g., LQNS, to solver the lqnDICE.lqnx file.)



Configure Plain XML Document

Configure Plain XML Document

Configure the details of the Plain XML Document

Identification

Name: results

Aliases: X

Performance

☑ Cache model elements to improve execution time

Files/URIs

☑ Workspace file

File: /APRM2MTrans/AntBuildfile/TargetModels/lqnDICE.lqxo

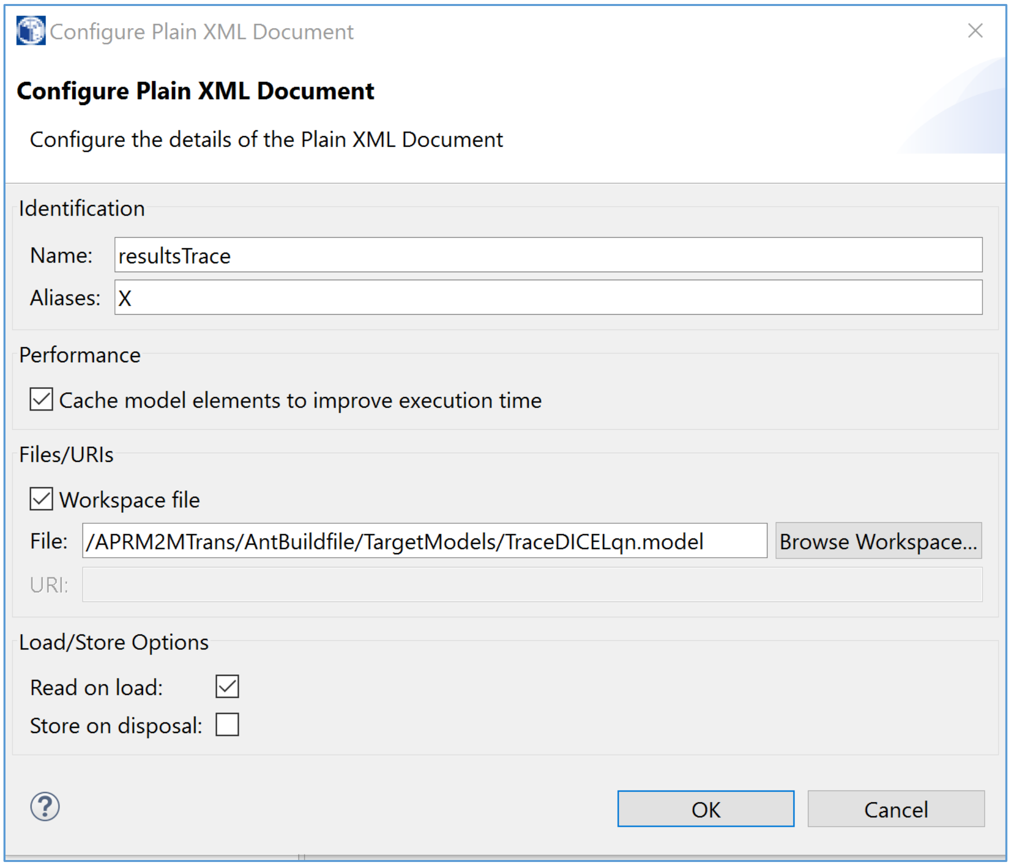
URI:

Load/Store Options

Read on load: ☑

Store on disposal: □

- Add a plain xml file for trace – TraceDICELqn.model(generated automatically after running the transformation



Configure Plain XML Document

Configure Plain XML Document

Configure the details of the Plain XML Document

Identification

Name: resultsTrace

Aliases: X

Performance

☑ Cache model elements to improve execution time

Files/URIs

☑ Workspace file

File: /APRM2MTrans/AntBuildfile/TargetModels/TraceDICELqn.model

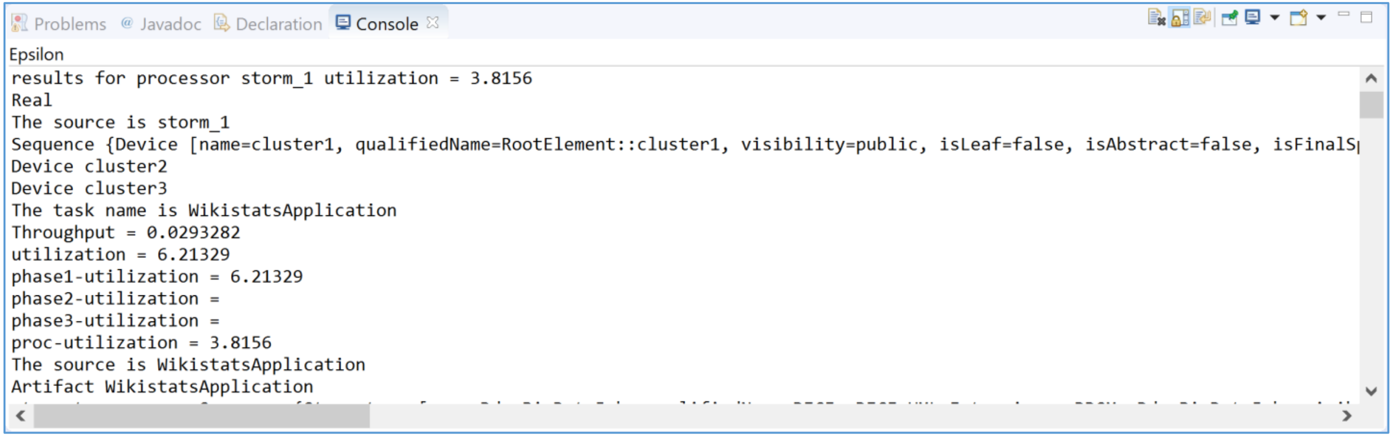
URI:

Load/Store Options

Read on load: ☑

Store on disposal: □

4) Click “run” button and the results will show at console. The following is an example of the analysis results.



```
results for processor storm_1 utilization = 3.8156
Real
The source is storm_1
Sequence {Device [name=cluster1, qualifiedName=RootElement::cluster1, visibility=public, isLeaf=false, isAbstract=false, isFinalS
Device cluster2
Device cluster3
The task name is WikistatsApplication
Throughput = 0.0293282
utilization = 6.21329
phase1-utilization = 6.21329
phase2-utilization =
phase3-utilization =
proc-utilization = 3.8156
The source is WikistatsApplication
Artifact WikistatsApplication
```