

Design Space Exploration - Feature #3541

Change Request # 4013 (New): [UI] Collection task SWT based views -> JavaFX-based views

Feature # 3434 (New): [JavaFX] Migration of the DSE Perspective to JavaFX

Feature # 3446 (Closed): [JavaFX] Migrate and Rework the Synthesis view

Basic integration of the new Synthesis View

10/02/2018 03:59 PM - Alexander Diewald

Status: Closed	Start date: 10/02/2018
Priority: Normal	Due date:
Assignee:	% Done: 100%
Category:	Estimated time: 10.00 hours
Target version: AF3 2.18 - Feature Freeze	
Description	
Goals	
<ul style="list-style-type: none">• The number of synthesis buttons is reduced to one.• The scheduling and the deployment synthesis can be started from the GUI with default settings and one selected RuleSet.	
Steps	
<ul style="list-style-type: none">• The synthesis fxml file and the corresponding controller class is present in the exploration.ui plugin.• Reduce the three synthesis buttons to one and connect it to the new synthesis view.• Add basic control logic to show ExplorationTargets.• Add basic control logic to show the RuleSets.• Add control logic to create RuleSets.• Add control logic to trigger the backend execution.	
Related issues:	
Related to Feature #3338: Enhance stopping criteria for DSE backends	Rejected 03/20/2018

History

#1 - 01/25/2019 06:30 PM - Alexander Diewald

- Target version changed from AF3 2.15 RC1 (Feature Freeze) to AF3 2.15 RC1 (Feature Freeze)

#2 - 05/13/2019 02:15 PM - Johannes Eder

- Target version changed from AF3 2.15 RC1 (Feature Freeze) to AF3 2.16 RC1 (Feature Freeze)

#3 - 09/30/2019 01:53 PM - Alexander Diewald

- Target version changed from AF3 2.16 RC1 (Feature Freeze) to AF3 2.17 (Feature Freeze)

#4 - 09/30/2019 02:08 PM - Alexander Diewald

- Related to Feature #3338: Enhance stopping criteria for DSE backends added

#5 - 10/25/2019 11:29 AM - Alexander Diewald

- Priority changed from Normal to High

#6 - 01/24/2020 11:49 AM - Alexander Diewald

- Status changed from New to Rejected

#7 - 01/24/2020 11:50 AM - Alexander Diewald

Duplicate of [#3446](#)

#8 - 01/24/2020 11:51 AM - Alexander Diewald

- Status changed from Rejected to New

#9 - 04/16/2020 11:23 AM - Alexander Diewald

- Target version changed from AF3 2.17 (Feature Freeze) to AF3 2.18 - Feature Freeze

#10 - 08/21/2020 06:52 PM - Alexander Diewald

- Status changed from New to Resolved

- Assignee changed from Alexander Diewald to Johannes Eder

- % Done changed from 0 to 100

MRs:

- Kernel: https://git.fortiss.org/af3/kernel/-/merge_requests/126
- AF3: https://git.fortiss.org/af3/af3/-/merge_requests/363
- RCP: https://git.fortiss.org/af3/af3-rcp/-/merge_requests/34

Testing:

Take the ACC example, set the PeriodicConstraint limit to "200" to avoid infeasible DSE scheduling setups.

Testing will use two variants of the ACC example, one where no allocations are defined, one where tasks are allocated to exec units are defined before the import into a DSE project.

- Model without existing task to exec unit allocation:
 - Import, run a deployment exploration, select the solution, run a schedule exploration, export the model, save the AF3 project, check the console.
 - Import, run a joint deployment & schedule exploration, export the model, save the AF3 project, check the console.
 - Import, create an objective and a constraint, define rule sets, run a deployment exploration, export the model, save the AF3 project, check the console.
- Model with existing task-to-exec unit allocations:
 - Import, run a schedule exploration, export the model, save the AF3 project, check the console.
 - Import, run a deployment exploration, select the solution, run a schedule exploration, export the model, save the AF3 project, check the console.
 - Import, run a joint deployment & schedule exploration, export the model, save the AF3 project, check the console.
 - Import, create an objective and a constraint, define rule sets, run a deployment exploration, export the model, save the AF3 project, check the console.

#11 - 09/03/2020 09:09 AM - Alexander Diewald

- Assignee changed from Johannes Eder to Simon Barner

#12 - 09/04/2020 03:46 PM - Simon Barner

Bug 1: Inconvenient renaming of Rule set

- Import model
- Create at least one deployment constraint
- Synthesis -> Deployment -> Create Rule Set
- Long click on "New Rule Set" -> Assign new name
- Problem: one has to hit ENTER to set the new name. Modern UI would use the new value when the edit field loses the focus again

#13 - 09/04/2020 03:56 PM - Simon Barner

Bug 2: Crash when adding constraint to constraint rule set

- Import model
- Create at least two deployment constraints
- Select one constraint
- Synthesis -> Deployment -> Create Rule Set
- Select the other constraint and the new rule set
- Hit *Add to* button and observe below Exception

Please also be sure to fix this for objective rule sets (untested)

```
Caused by: java.lang.IllegalStateException: Cannot modify resource set without a write transaction
    at org.eclipse.emf.transaction.impl.TransactionChangeRecorder.assertWriting(TransactionChangeRecorder.java:349)
    at org.eclipse.emf.transaction.impl.TransactionChangeRecorder.appendNotification(TransactionChangeRecorder.java:303)
    at org.eclipse.emf.transaction.impl.TransactionChangeRecorder.processObjectNotification(TransactionChangeRecorder.java:285)
    at org.eclipse.emf.transaction.impl.TransactionChangeRecorder.notifyChanged(TransactionChangeRecorder.java:241)
    at org.eclipse.emf.common.notify.impl.BasicNotifierImpl.eNotify(BasicNotifierImpl.java:424)
    at org.eclipse.emf.ecore.util.EcoreEList.dispatchNotification(EcoreEList.java:249)
```

```
at org.eclipse.emf.common.notify.impl.NotifyingListImpl.addUnique(NotifyingListImpl.java:304)
at org.eclipse.emf.common.util.AbstractEList.add(AbstractEList.java:304)
at org.fortiss.af3.exploration.ui.perspective.synthesis.SynthesisFXContentController.onAddConstraintRuleSet(SynthesisFXContentController.java:355)
```

#14 - 09/04/2020 05:05 PM - Simon Barner

- File ACC_bug3.af3_23 added

Bug 3: NPE in SMT transformation

- Import model (resulting model is attached)
- Create a function coupling constraint (I tested with 4 tasks, 3 of which are known)
 - Task_SpeedPlausibilization
 - Task_<
 - Task_Const,
 - T...; ...
- Create a function decoupling constraint
 - Task_ThreshLow
 - Task_&&
- Select both constraints
- Add them to a new rule set
- Select rule set
- Check feasibility
- Observe below crash

-> Please move this to a separate ticket if this problem is not related to the UI

Error executing DSE:

```
null.
java.lang.NullPointerException
com.microsoft.z3.Context.checkContextMatch(Context.java:3974)
com.microsoft.z3.Context.mkFuncDecl(Context.java:480)
com.microsoft.z3.Z3javaAPIWrapper.createFunction(Z3javaAPIWrapper.java:98)
org.fortiss.af3.exploration.smt.modeltransformation.DSMLTransformationService.getAllocateFunction(DSMLTransformationService.java:466)
org.fortiss.af3.exploration.smt.modeltransformation.DefaultExpressionTransformer.createAllocationExpression(DefaultExpressionTransformer.java:324)
org.fortiss.af3.exploration.smt.modeltransformation.DefaultExpressionTransformer.createLocationExpression(DefaultExpressionTransformer.java:234)
org.fortiss.af3.exploration.smt.modeltransformation.DefaultExpressionTransformer.toSMTBoolean(DefaultExpressionTransformer.java:184)
org.fortiss.af3.exploration.smt.modeltransformation.DefaultExpressionTransformer.transform(DefaultExpressionTransformer.java:109)
org.fortiss.af3.exploration.smt.modeltransformation.ConstraintTransformationAdapter.transform(ConstraintTransformationAdapter.java:97)
org.fortiss.af3.exploration.smt.modeltransformation.NonQuantifiedExpressionTransformer.toQuantifier(NonQuantifiedExpressionTransformer.java:80)
org.fortiss.af3.exploration.smt.modeltransformation.NonQuantifiedExpressionTransformer.transform(NonQuantifiedExpressionTransformer.java:62)
org.fortiss.af3.exploration.smt.modeltransformation.ConstraintTransformationAdapter.transform(ConstraintTransformationAdapter.java:97)
org.fortiss.af3.exploration.smt.modeltransformation.NonQuantifiedExpressionTransformer.toQuantifier(NonQuantifiedExpressionTransformer.java:80)
org.fortiss.af3.exploration.smt.modeltransformation.NonQuantifiedExpressionTransformer.transform(NonQuantifiedExpressionTransformer.java:62)
org.fortiss.af3.exploration.smt.modeltransformation.ConstraintTransformationAdapter.transform(ConstraintTransformationAdapter.java:97)
org.fortiss.af3.exploration.smt.modeltransformation.DSMLtoSMTTransformer.extractSMTEExpr(DSMLtoSMTTransformer.java:242)
org.fortiss.af3.exploration.smt.modeltransformation.DSMLtoSMTTransformer.transform(DSMLtoSMTTransformer.java:169)
org.fortiss.af3.exploration.smt.solver.SolverRun.<init>(SolverRun.java:124)
org.fortiss.af3.exploration.smt.solver.DeploymentRun.<init>(DeploymentRun.java:55)
org.fortiss.af3.exploration.smt.backend.Z3Backend.executeDSE(Z3Backend.java:97)
org.fortiss.af3.exploration.service.internal.DSEBackendService$1.run(DSEBackendService.java:176)
org.eclipse
```

#15 - 09/04/2020 05:29 PM - Simon Barner

- Status changed from Resolved to Feedback

- Assignee changed from Simon Barner to Alexander Diewald

Intermediate fixing of the 3 bugs suggested.

#16 - 09/08/2020 04:08 PM - Alexander Diewald

- Assignee changed from Alexander Diewald to Simon Barner

Bug 1 & 2 are resolved. Bug 1 was way simpler to solve than initially thought.

Bug 3 could not be reproduced if the model is copied to the runtime workspace manually. It could be reproduced by using the import wizard, but the provided model is corrupted in that case. A separate ticket has been already created: [#4059](#). Please retry after updating to the tip of the branch.

IMPORTANT: There are also changes in the plugin org.fortiss.af3.exploration that were not reviewed yet. The review comments in exploration.ui are addressed.

#17 - 09/10/2020 09:28 AM - Simon Barner

Bug 4: Changes to a RuleSet are not reflected in the *DSE Navigator*. They are only visible after saving and reloading the DSE configuration into the perspective.

In particular

- Renaming a Rule Set
- Adding a constraint to a rule set. This is particularly important since the *DSE Navigator* is the only way to view a previously created rule set. If you agree with the idea, please add another (feature) ticket to highlight the respective constraints/objectives when selecting a rule set in the table on the right-hand side

#18 - 09/10/2020 09:29 AM - Simon Barner

Bug 5: "Create Rule Set >>" and "Add to..." are not disabled (greyed out) when the respective constraint/objective lists are empty

In particular, this is the case when the synthesis type is not selected yet.

#19 - 09/10/2020 09:39 AM - Simon Barner

Bug 6: Data dictionary is named "null - Schedule" in first test case

Perform first test case, i.e.:

- Model without existing task to exec unit allocation:
 - Import, run a deployment exploration, select the solution, run a schedule exploration, export the model, save the AF3 project, check the console.

#20 - 09/10/2020 09:44 AM - Simon Barner

Bug 7: Erroneous schedule in second test case: all tasks are assigned to the same ECU, and all but one tasks have phase 0

- Model without existing task to exec unit allocation:
 - Import, run a joint deployment & schedule exploration, export the model, save the AF3 project, check the console.

#21 - 09/10/2020 11:16 AM - Simon Barner

- File ACC-bug8.af3_23 added

- Assignee changed from Simon Barner to Alexander Diewald

Bug 8: Crash in 6th test case:

- Model with existing task-to-exec unit allocations:
 - Import, run a joint deployment & schedule exploration, export the model, save the AF3 project, check the console

(See ACC-bug8.af3_23 for reference). The only changes to the model were

- Set timing constraint to 200
- Define Task -> ECU allocations (in existing allocation table)

Stack trace

Error executing DSE:

```
class com.microsoft.z3.IntNum cannot be cast to class com.microsoft.z3.RatNum (com.microsoft.z3.IntNum and com.microsoft.z3.RatNum are in unnamed module of loader org.eclipse.osgi.internal.loader.EquinoxClassLoader @299376de).
class com.microsoft.z3.IntNum cannot be cast to class com.microsoft.z3.RatNum (com.microsoft.z3.IntNum and com.microsoft.z3.RatNum are in unnamed module of loader org.eclipse.osgi.internal.loader.EquinoxClassLoader @299376de)
```

```
org.fortiss.af3.exploration.smt.modeltransformation.DSMLtoSMTTransformator.computeSchedule(DSMLtoSMTTransformator.java:291)
org.fortiss.af3.exploration.smt.solver.DeploScheduleRun.transformSolution(DeploScheduleRun.java:111)
org.fortiss.af3.exploration.smt.solver.SolverRun.convertSolutionModels(SolverRun.java:249)
org.fortiss.af3.exploration.smt.solver.SolverRun.solveNonOptimized(SolverRun.java:458)
org.fortiss.af3.exploration.smt.solver.SolverRun.solve(SolverRun.java:167)
org.fortiss.af3.exploration.smt.backend.Z3Backend.executeDSE(Z3Backend.java:116)
org.fortiss.af3.exploration.service.internal.DSEBackendService$1.run(DSEBackendService.java:176)
org.eclipse.core.internal.jobs.Worker.run(Worker.java:63)
```

Note that the joint deplo+sched synthesis does not crash if no predefined task -> HW allocation exists (i.e. in test case 2)

#22 - 09/11/2020 01:19 PM - Alexander Diewald

- Status changed from Feedback to Resolved
- Assignee changed from Alexander Diewald to Simon Barner

All bugs are resolved.

Bug 8 could not be reproduced. The stack trace indicates that it is related to bug 7.

#23 - 09/11/2020 04:02 PM - Simon Barner

- Assignee changed from Simon Barner to Johannes Eder
- Priority changed from High to Normal

I confirm that bugs 1, 2, 4, 5, 6, 7 have been fixed. 8 seemed indeed to be related to 7, and for 3 a dedicated ticket has been created.

Merged, thanks for your efforts!

Please close.

#24 - 09/11/2020 05:02 PM - Alexander Diewald

- Status changed from Resolved to Closed
- Assignee deleted (Johannes Eder)

Files

ACC_bug3.af3_23	1.09 MB	09/04/2020	Simon Barner
ACC-bug8.af3_23	460 KB	09/10/2020	Simon Barner