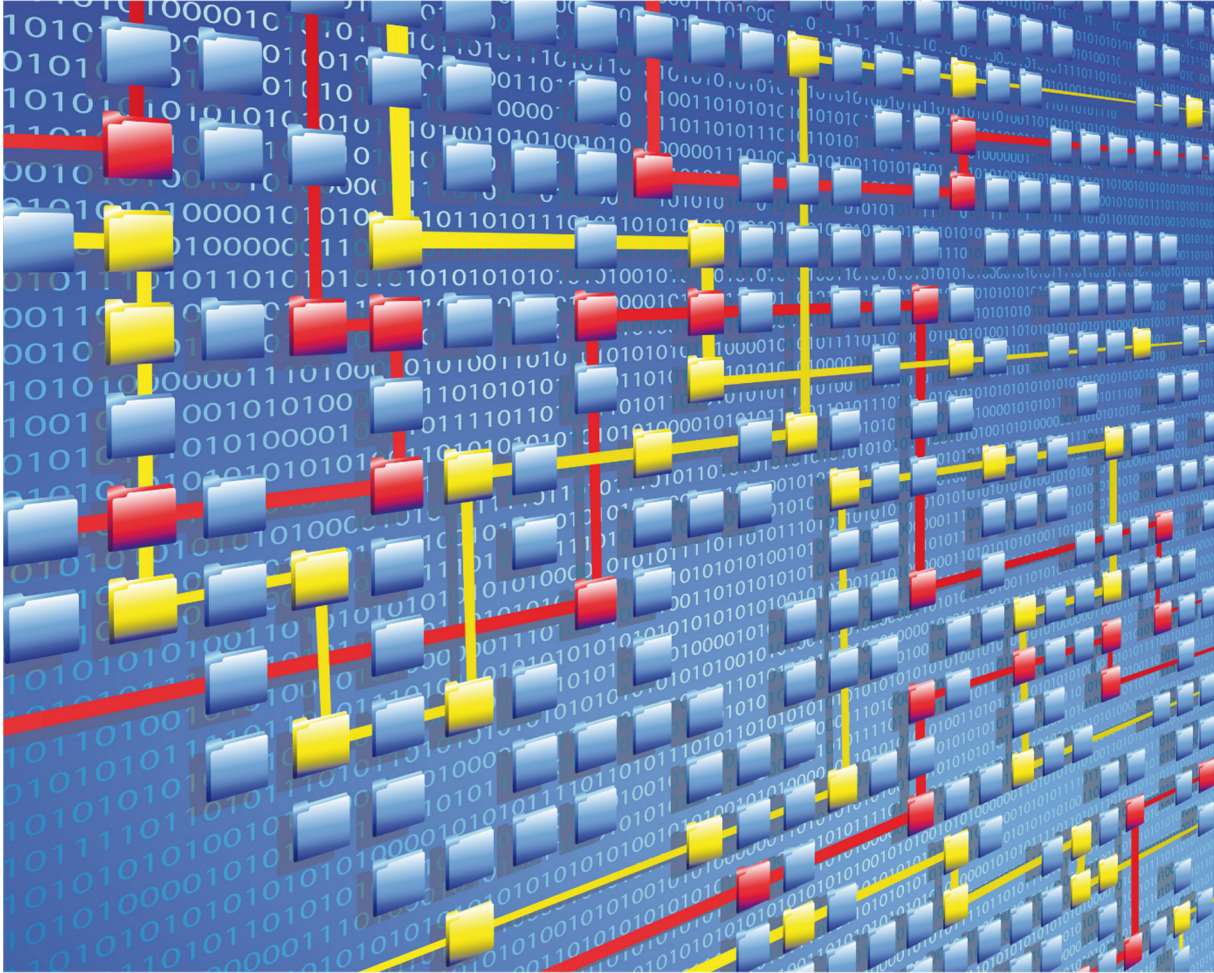


IEEE Task Force on



Process Mining

XES CERTIFICATION FOR
PROM 6.7

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TOOL

Tool

NAME

ProM

VENDOR

Eindhoven University of Technology, Open Source

VERSION

6.7

REQUESTED CERTIFICATION LEVELS

Import

A-X

Export

A-X

META

Meta

AUTHORS

Eric Verbeek

DATE

06/09/2017

HISTORY

CHANGES

AUTHOR(S)	DATE	DESCRIPTION
Eric Verbeek	06/09/2017	Added walk-throughs for all exports, using the imports.
Eric Verbeek	05/09/2017	Initial version, contains walk-throughs for all imports.

IMPORT

Import

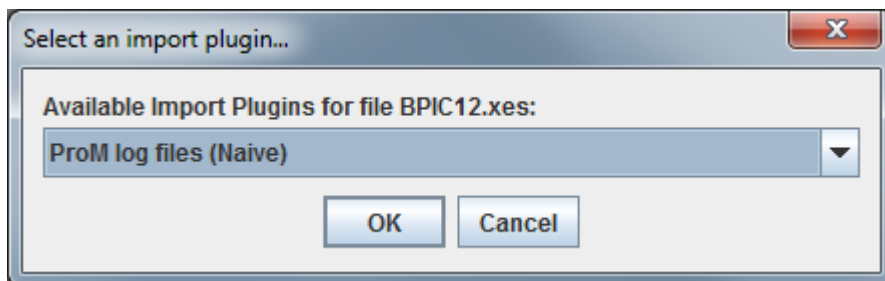
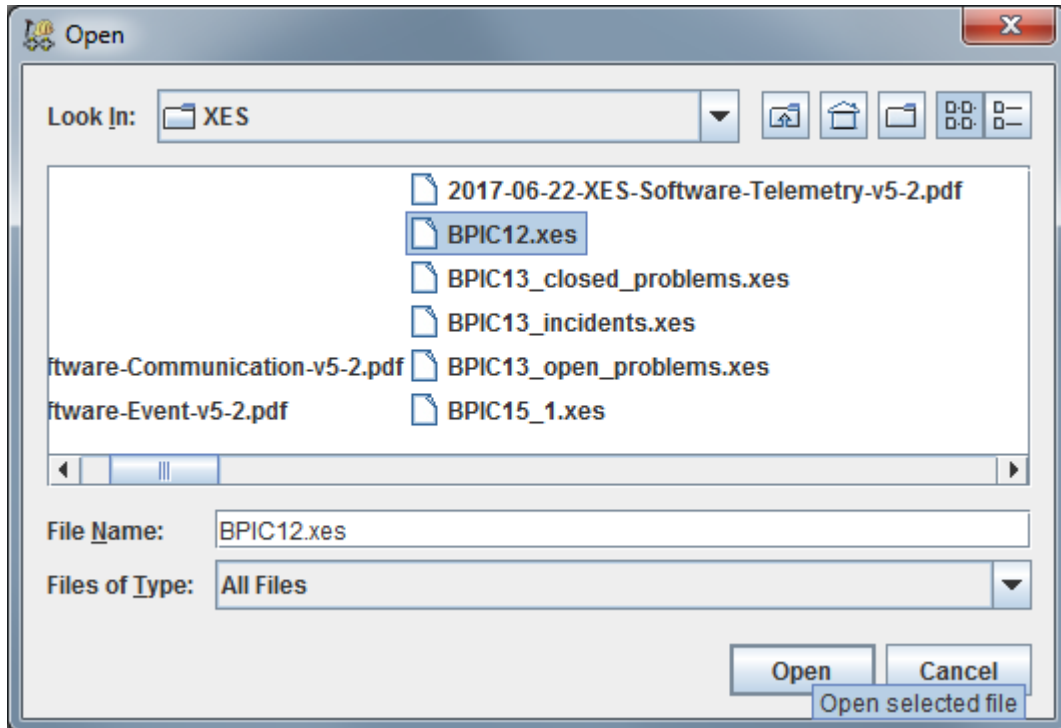
REAL-LIFE LOGS

SANITIZED BPIC LOGS

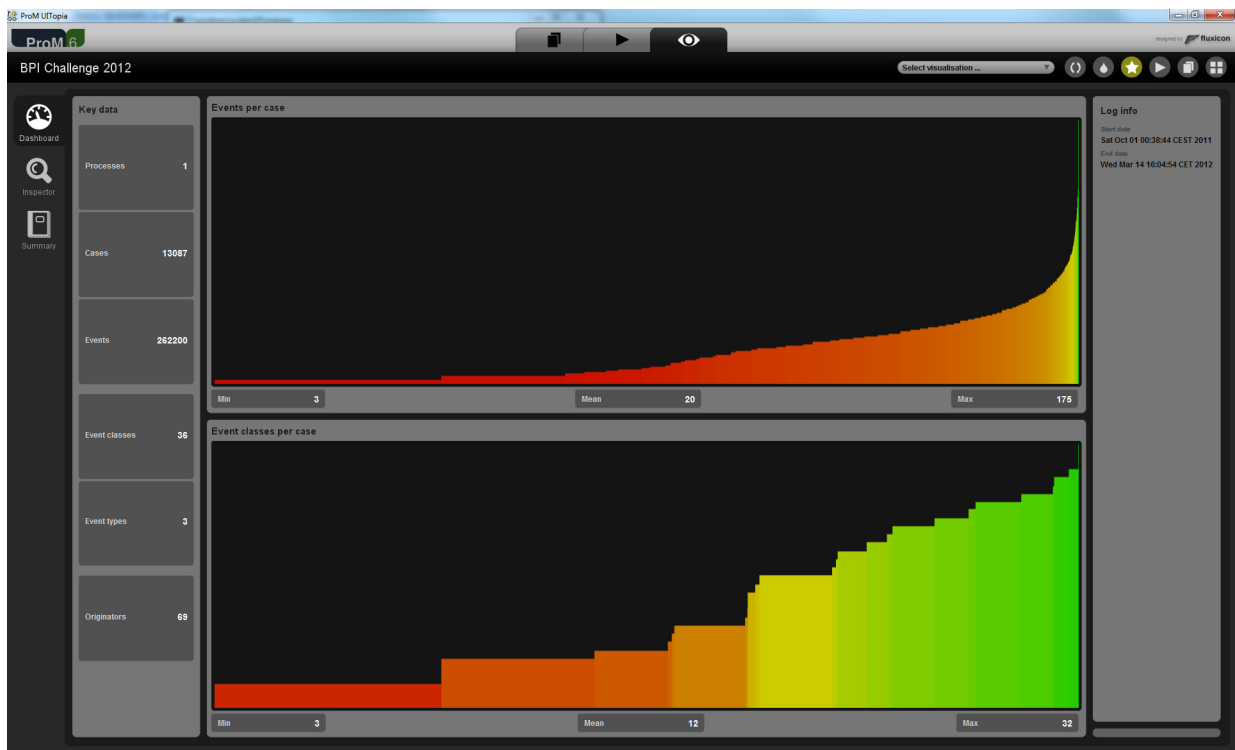
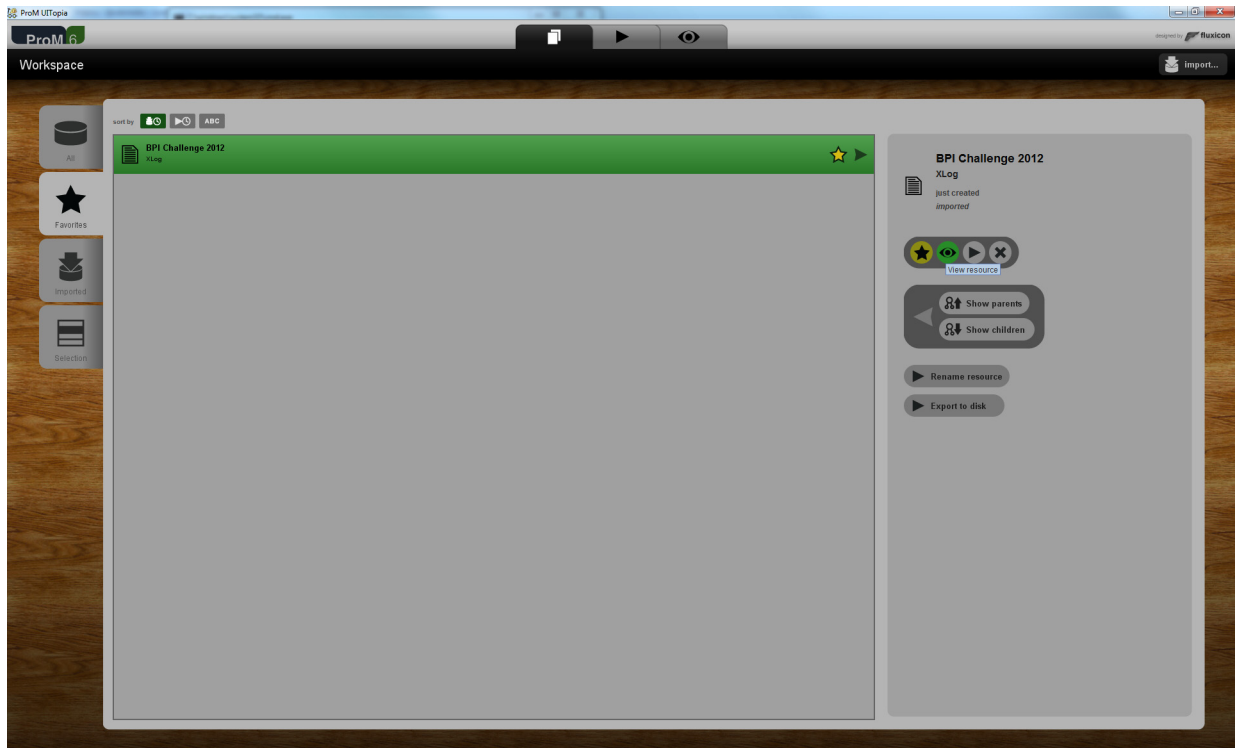
NAME	TRACES	EVENTS	SIZE IN KB
BPIC12	13,087	262,200	72,363
BPIC13_closed_problems	1,487	6,660	4,090
BPIC13_incidents	7,554	65,533	38,627
BPIC13_open_problems	819	2,351	1,370
BPIC15_1	1,199	52,217	40,261
BPIC15_2	832	44,354	33,616
BPIC15_3	1,409	59,681	45,673
BPIC15_4	1,053	47,293	36,131
BPIC15_5	1,156	59,083	44,961
BPIC17 - Offer log	42,995	193,849	107,557
BPIC17	31,509	1,202,267	565,373

IMPORT

BPIC12



IMPORT



IMPORT

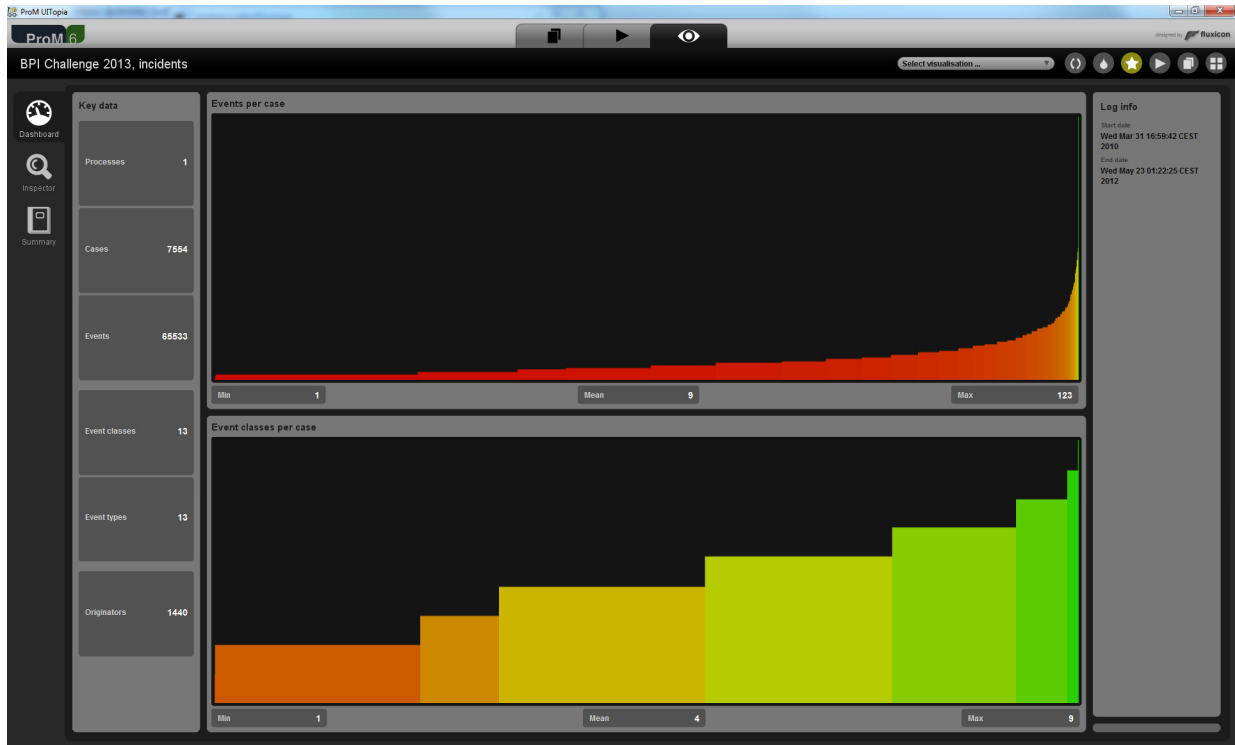
For the remainder of the real-life logs, only the last screenshot with the log dashboard will be shown. Mutatis mutandis, all other screenshots are similar, and only the last screenshot provides useful information on the imported log.

BPIC13_closed_problems



IMPORT

BPIC13_incidents



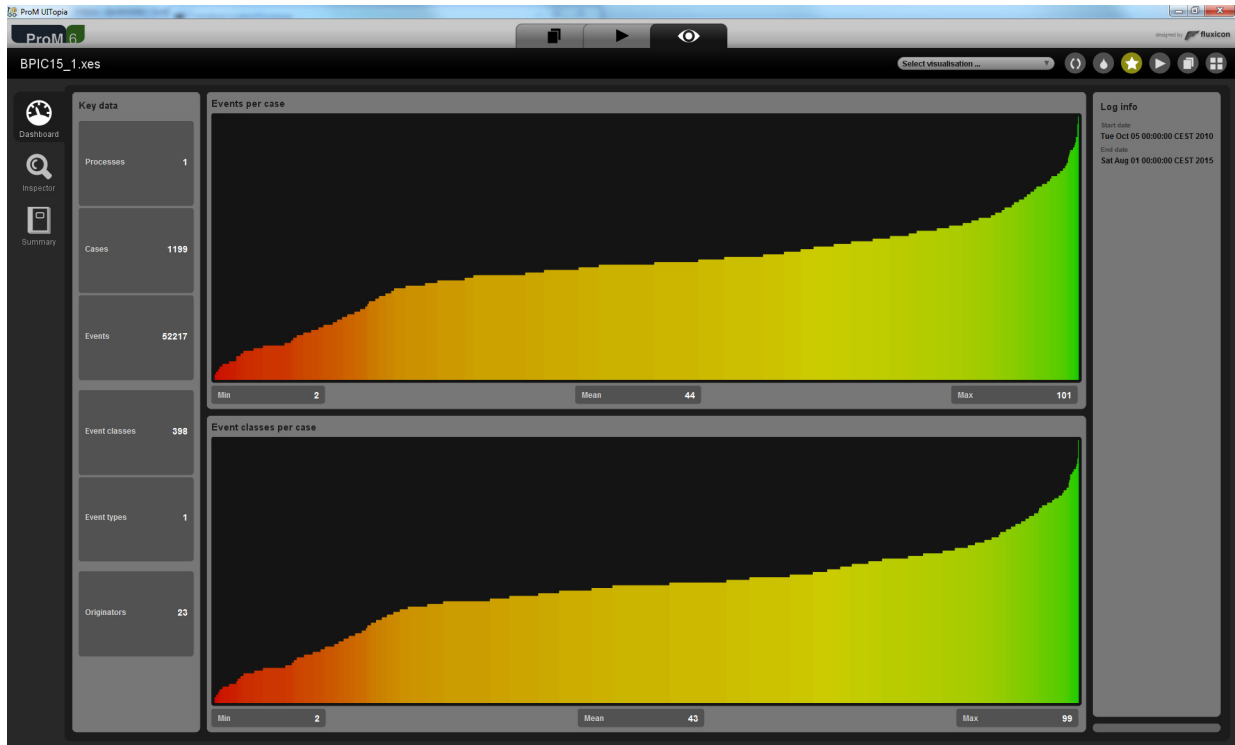
IMPORT

BPIC13_open_problems



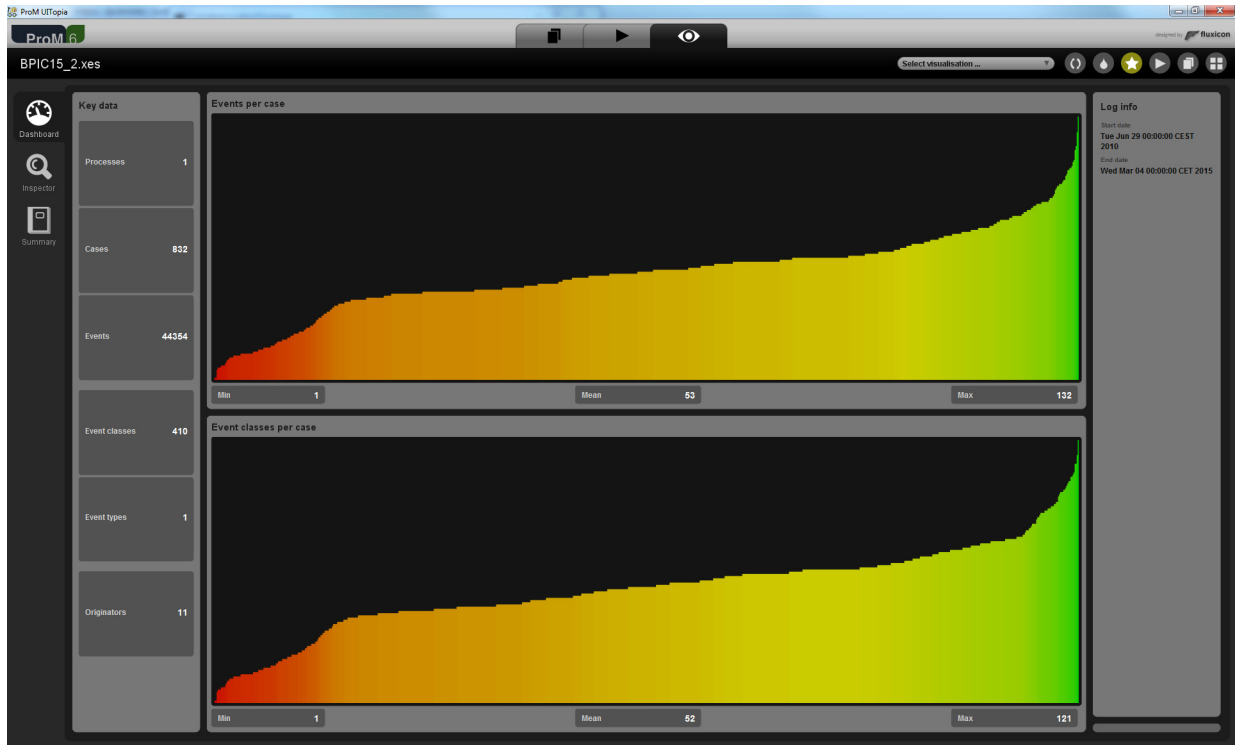
IMPORT

BPIC15_1



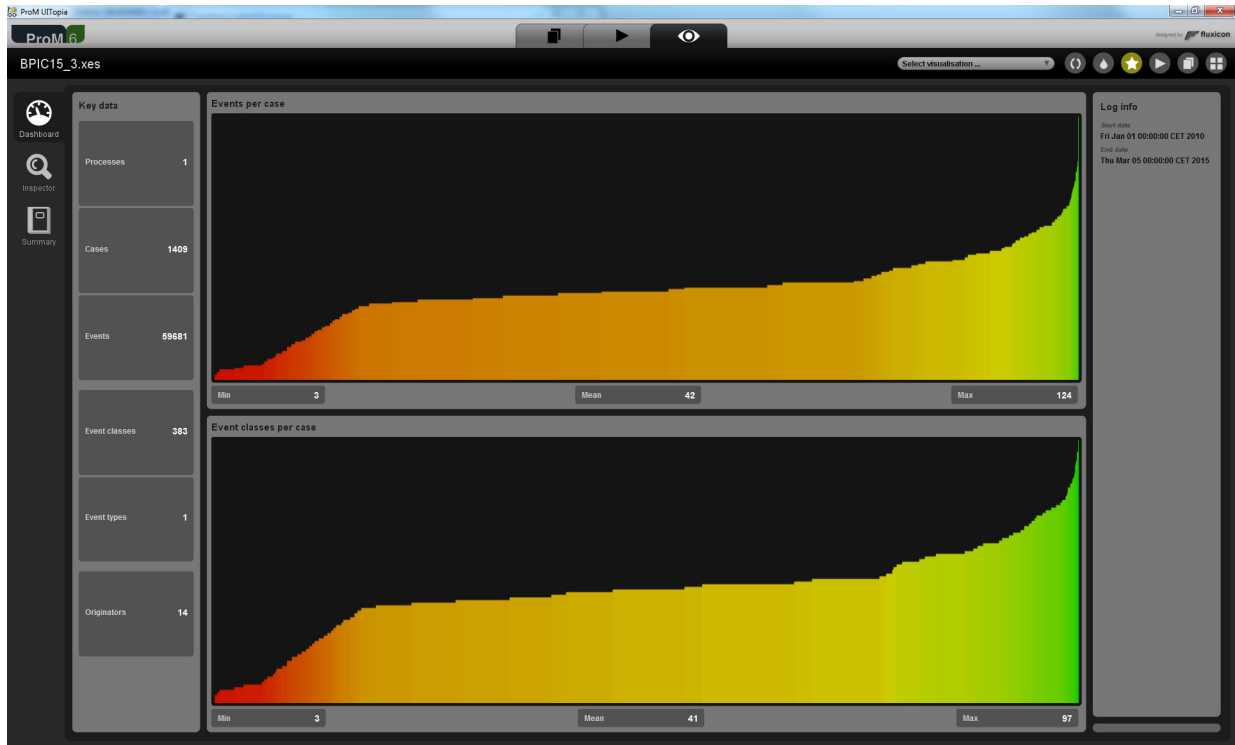
IMPORT

BPIC15_2



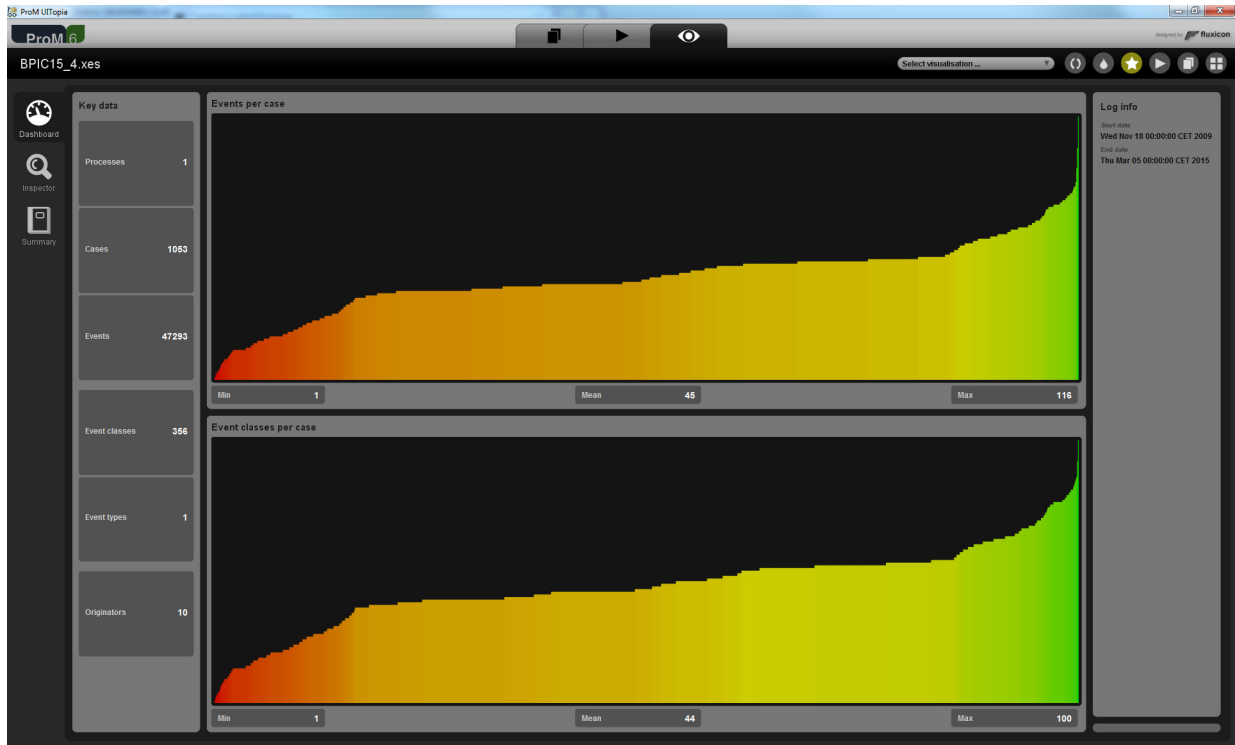
IMPORT

BPIC15_3



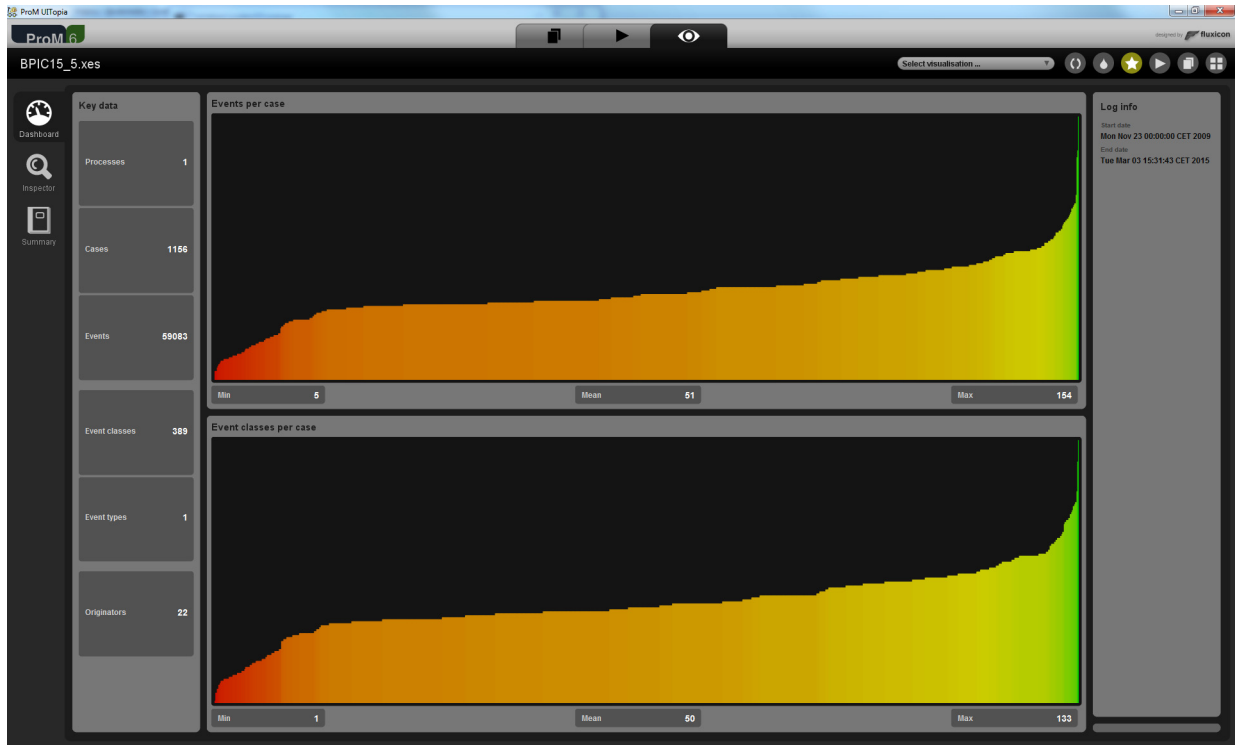
IMPORT

BPIC15_4



IMPORT

BPIC15_5



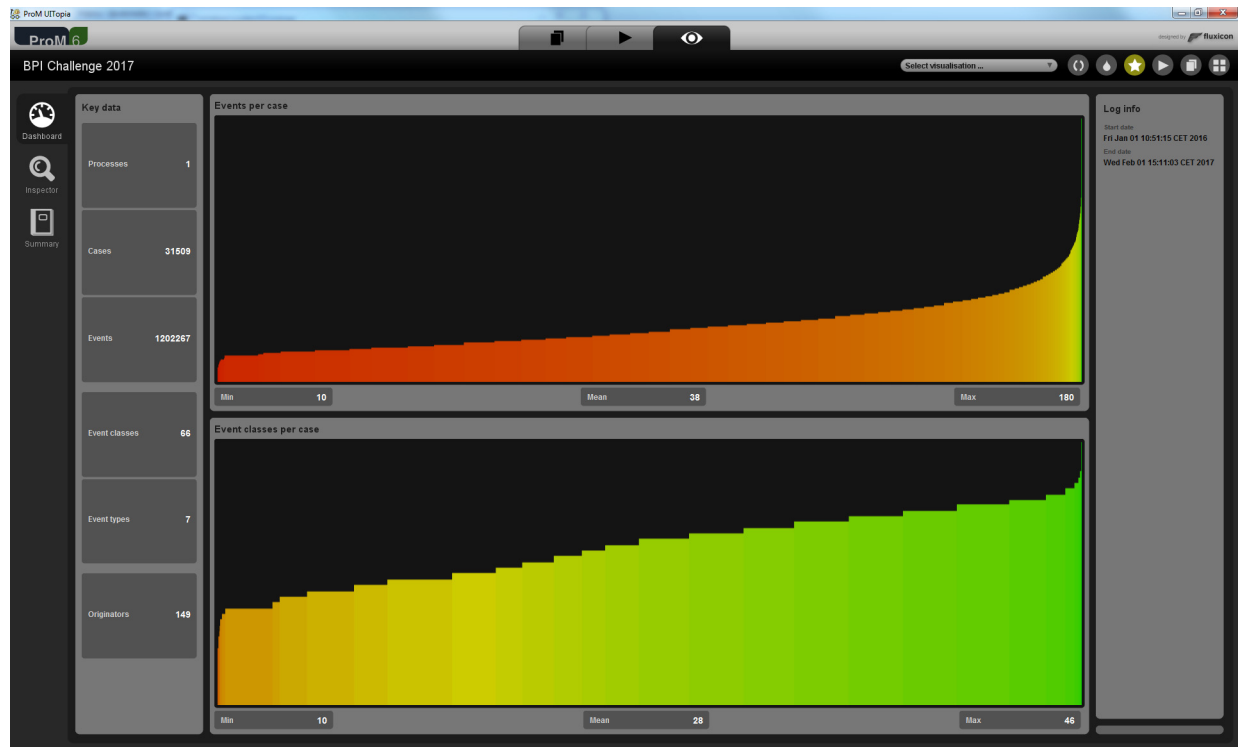
IMPORT

BPIC17 – Offer log



IMPORT

BPIC17



ARTIFICIAL LOGS

FILTERED REPAIR EXAMPLE LOGS

NAME	LEVEL	EVENT ATTRIBUTE KEYS (IF BOLD THEN GLOBAL)
LevelA1	A1	concept:name
LevelA2	A2	Classifier (concept:name AND lifecycle:transition)
LevelB1	B1	concept:name , lifecycle:transition , time:timestamp
LevelB2	B2	Classifier (concept:name AND lifecycle:transition), time:timestamp
LevelC1	C1	concept:name , org:resource
LevelC2	C2	Classifier (concept:name AND lifecycle:transition), org:resource
LevelD1	D1	concept:name , concept:instance ,

IMPORT

		lifecycle:transition, org:resource, org:group, org:role, time:timestamp
LevelD2	D2	Classifier (concept:name AND lifecycle:transition), concept:instance, org:resource, org:group, org:role, time:timestamp
FlagX1	X1	defectFixed, defectType, Key 1, Key 2, Key 3, Key 4, Key 6, phoneType, numberRepairs, {0,1,2} 2Sa!! +1 <x> , ITEMS:41, #1, o.1.1
FlagX2	X2	defectFixed, defectType, Classifier (Key 1 AND Key 6), Key 2, Key 3, Key 4, phoneType, numberRepairs, {0,1,2} 2Sa!! +1 <x> , ITEMS:41, #1, o.1.1

ATTRIBUTE TYPES AND VALUES

KEYS	TYPE	VALUES
concept:instance Key 2	string	instance 1 instance 2 instance 3 instance 4
concept:name (A1 and C1 logs)	string	Analyze Defect+complete Analyze Defect+start Archive Repair+complete Inform User+complete Register+complete Repair (Complex)+complete

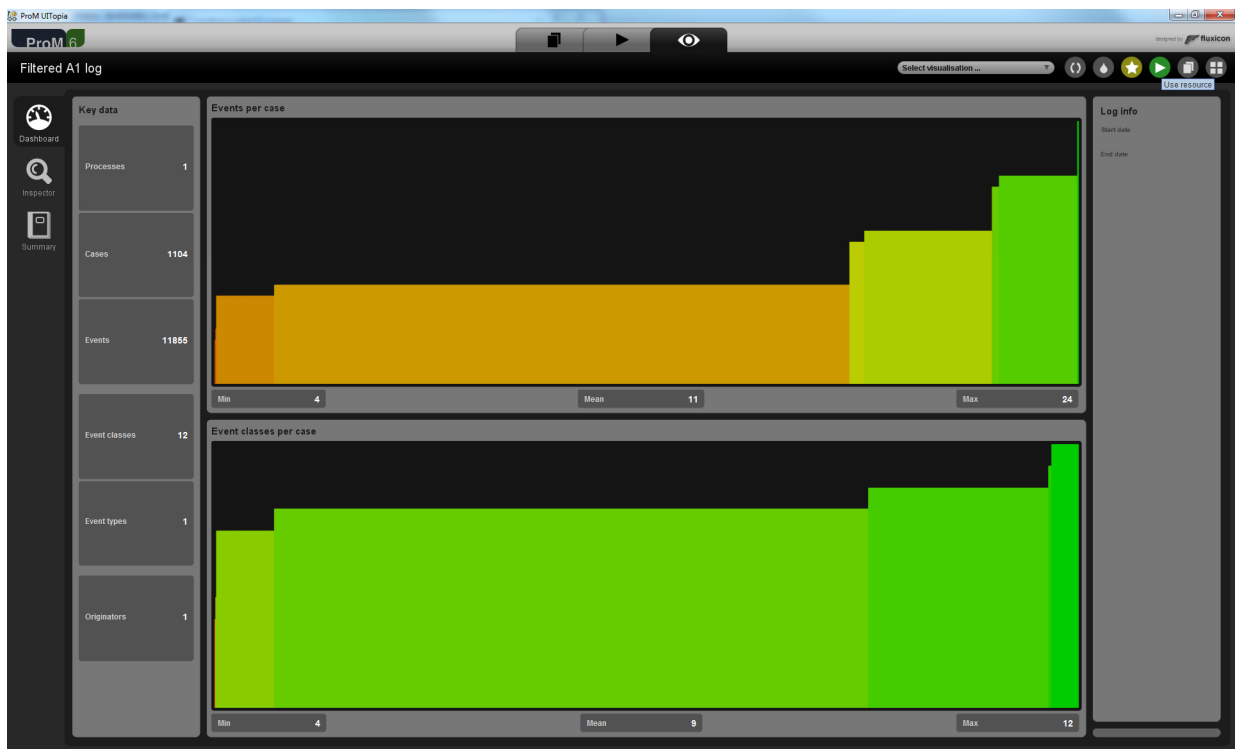
IMPORT

		Repair (Complex)+start Repair (Simple)+complete Repair (Simple)+start Restart Repair+complete Test Repair+complete Test Repair+start
concept:name (other logs) Key 1	string	Analyze Defect Archive Repair Inform User Register Repair (Simple) Repair (Complex) Restart Repair Test Repair
lifecycle:transition Key 6	string	start complete
org:group {0,1,2} 2Sa!! +1 <x>	string	Group - Group 1, 3, and 5 Group 2 and 4
org:resource Key 3	string	SolverC1 SolverC2 SolverC3 SolverS1 SolverS2 SolverS3 System Tester1 Tester2 Tester3 Tester4 Tester5 Tester6
org:role ITEMS:41, #1, o.1.1	string	Role 1, 2, and 3 Role 10 Role 9
time:timestamp Key 4	date	<i>Like</i> 1970-01-02T12:23:56.720+01:00
defectFixed	boolean	true false
defectType	int	1 10 2 3 4 5 6 7

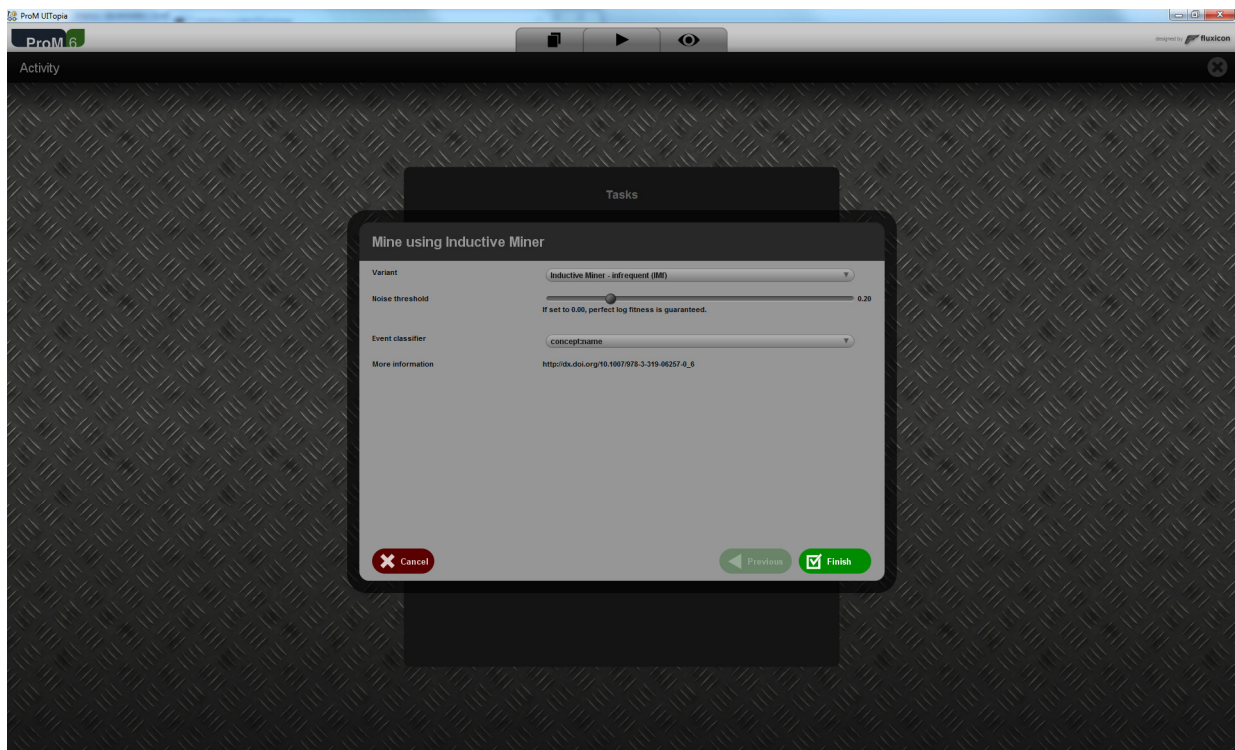
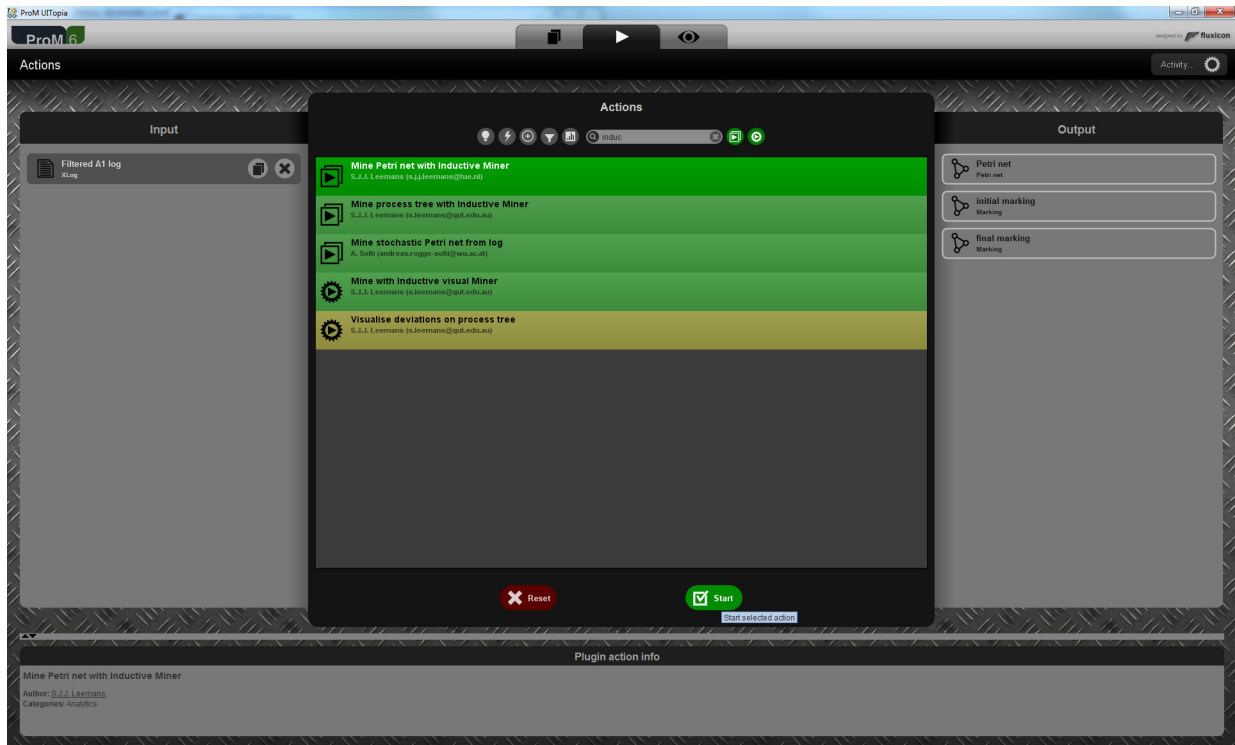
IMPORT

		8
		9
numberRepairs	int	0 1 2 3
phoneType	String	T1 T2 T3

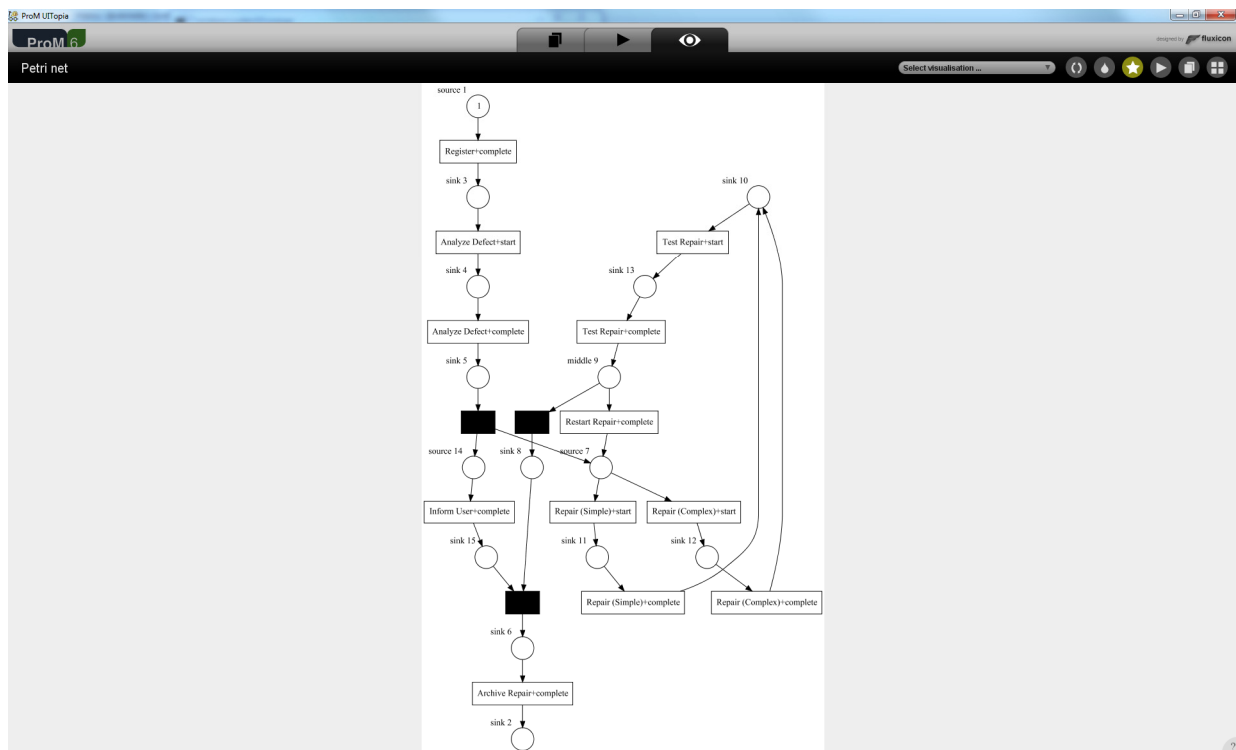
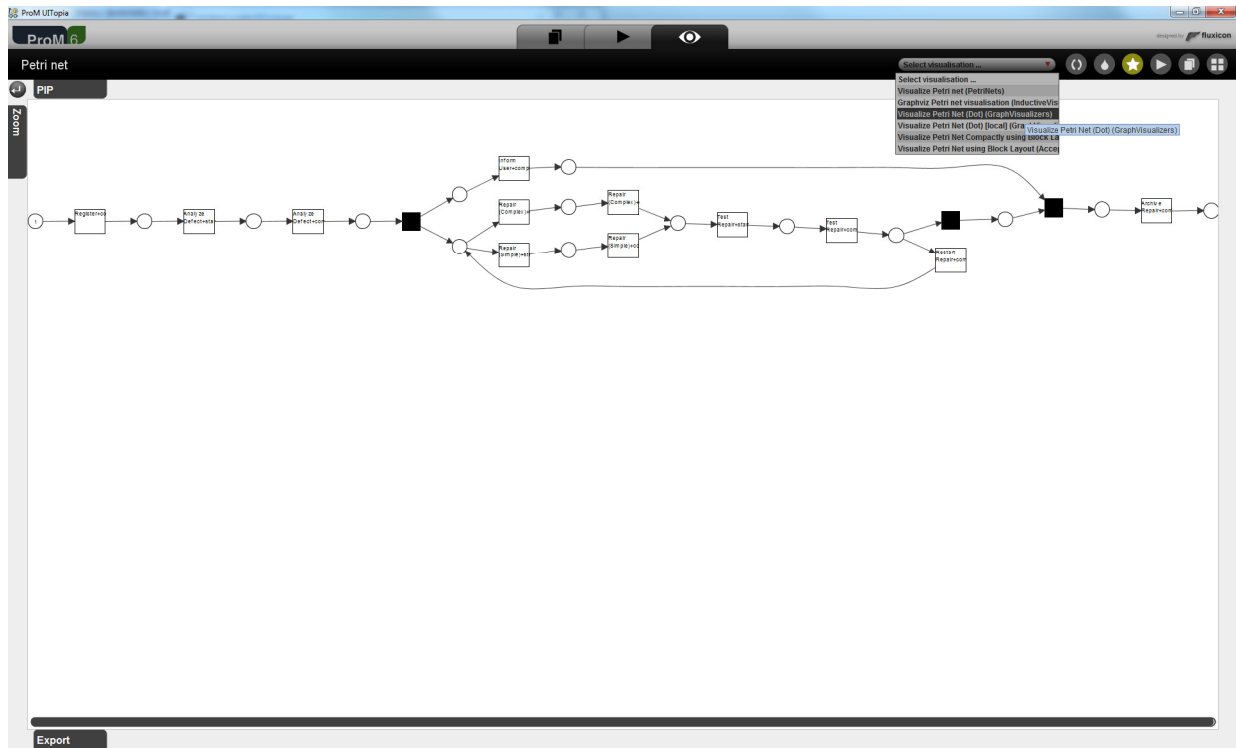
Level A1



IMPORT



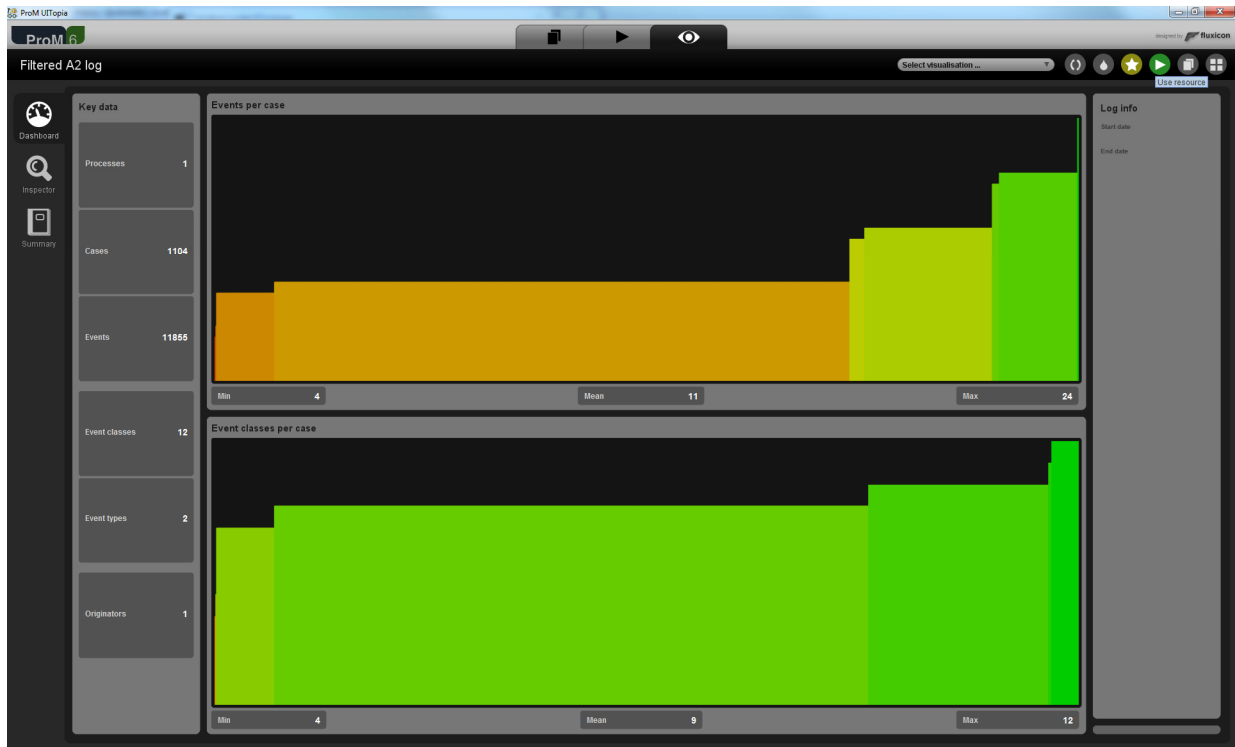
IMPORT



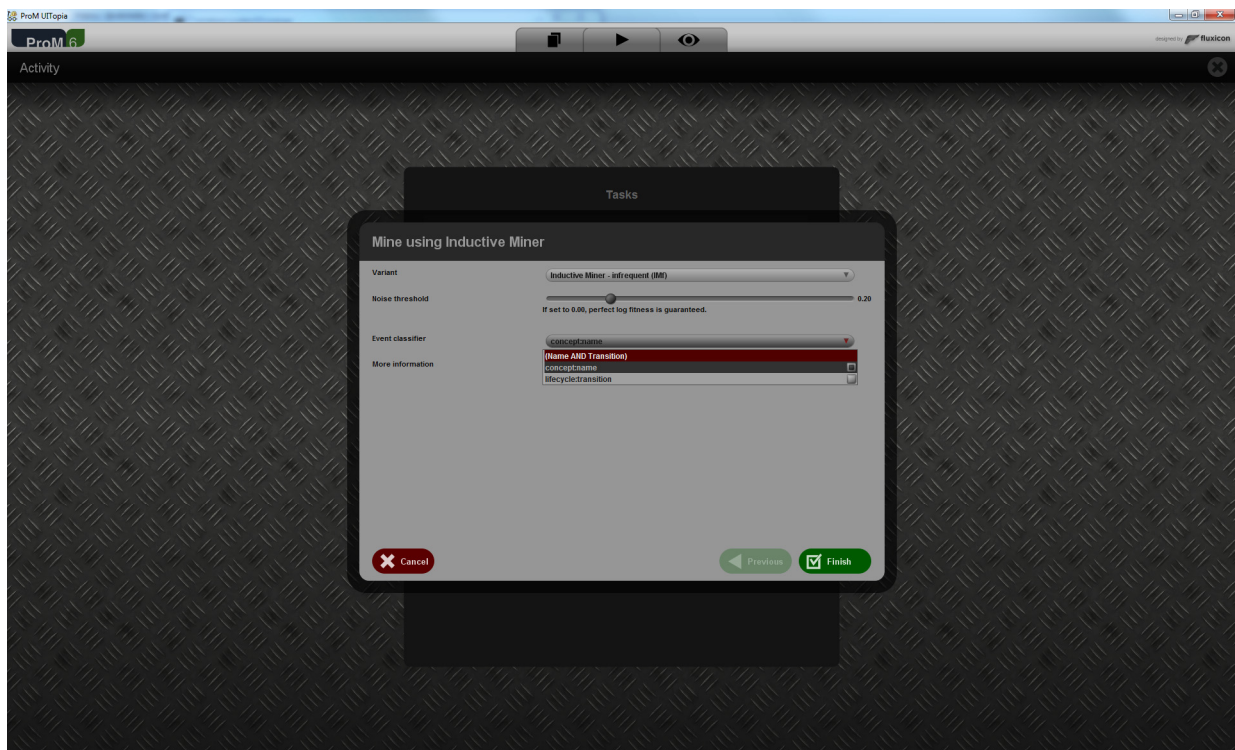
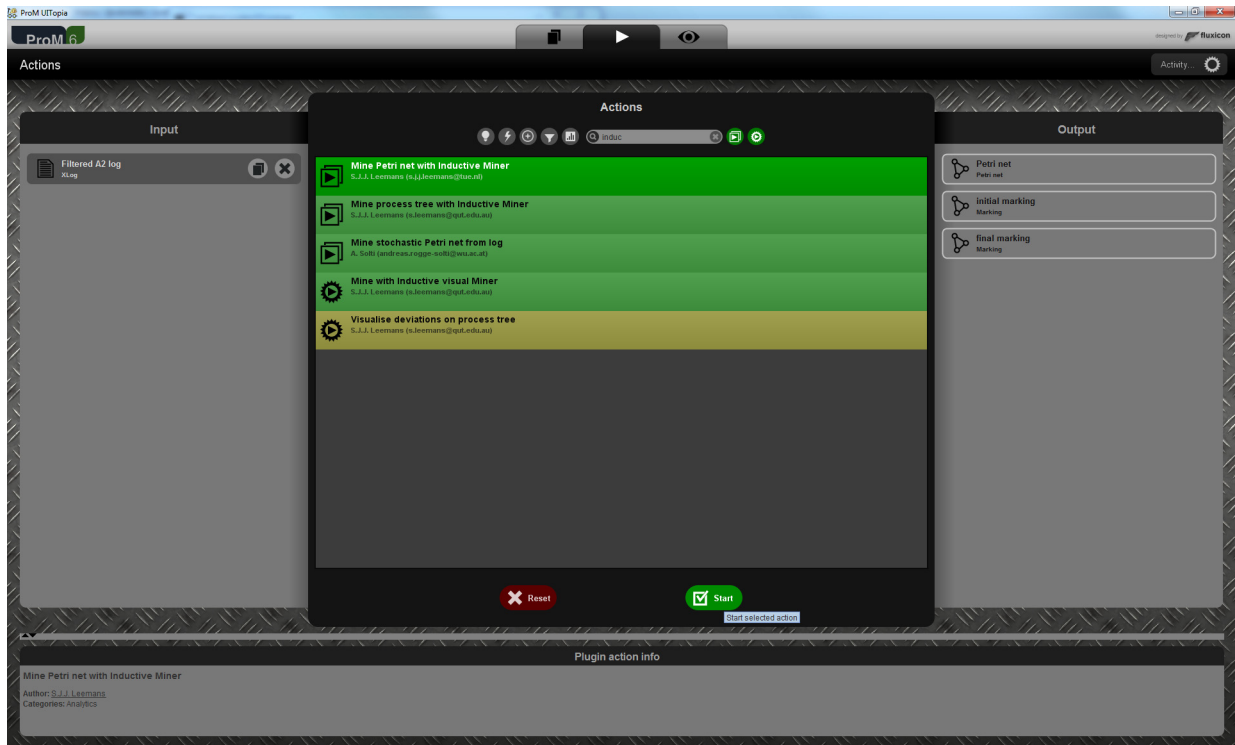
IMPORT

This clearly shows the correct activity names.

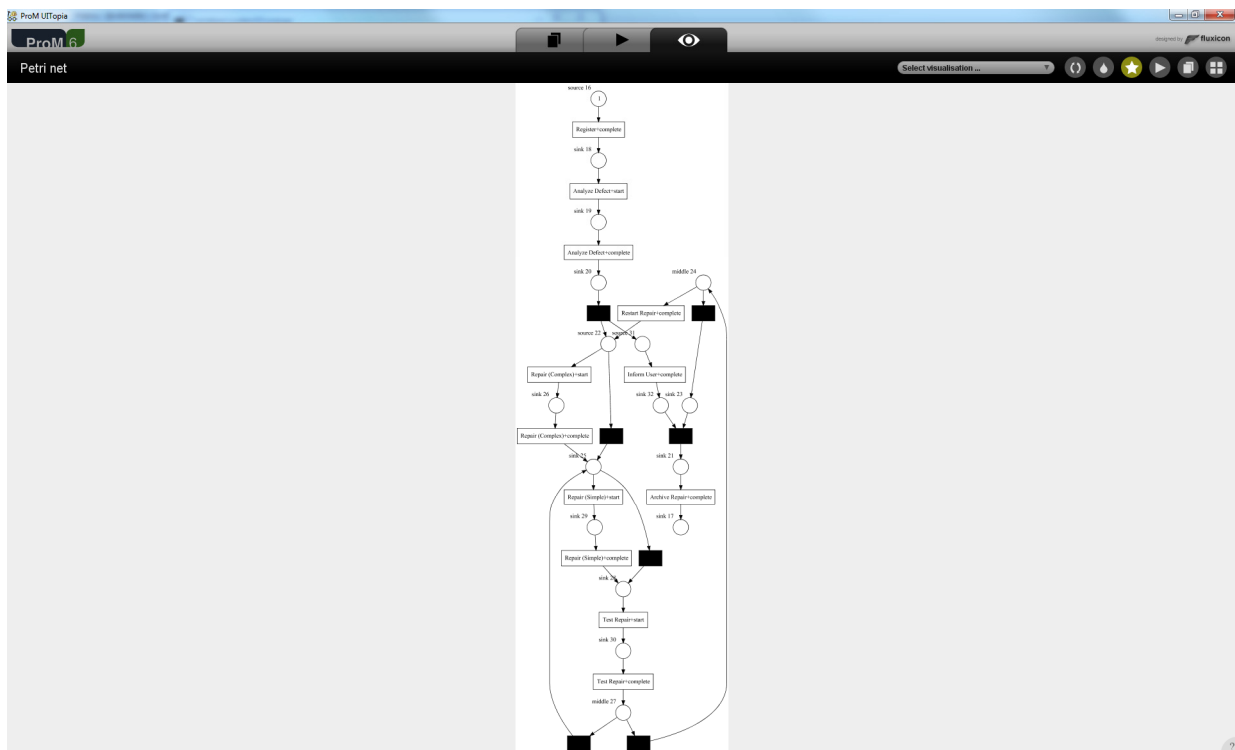
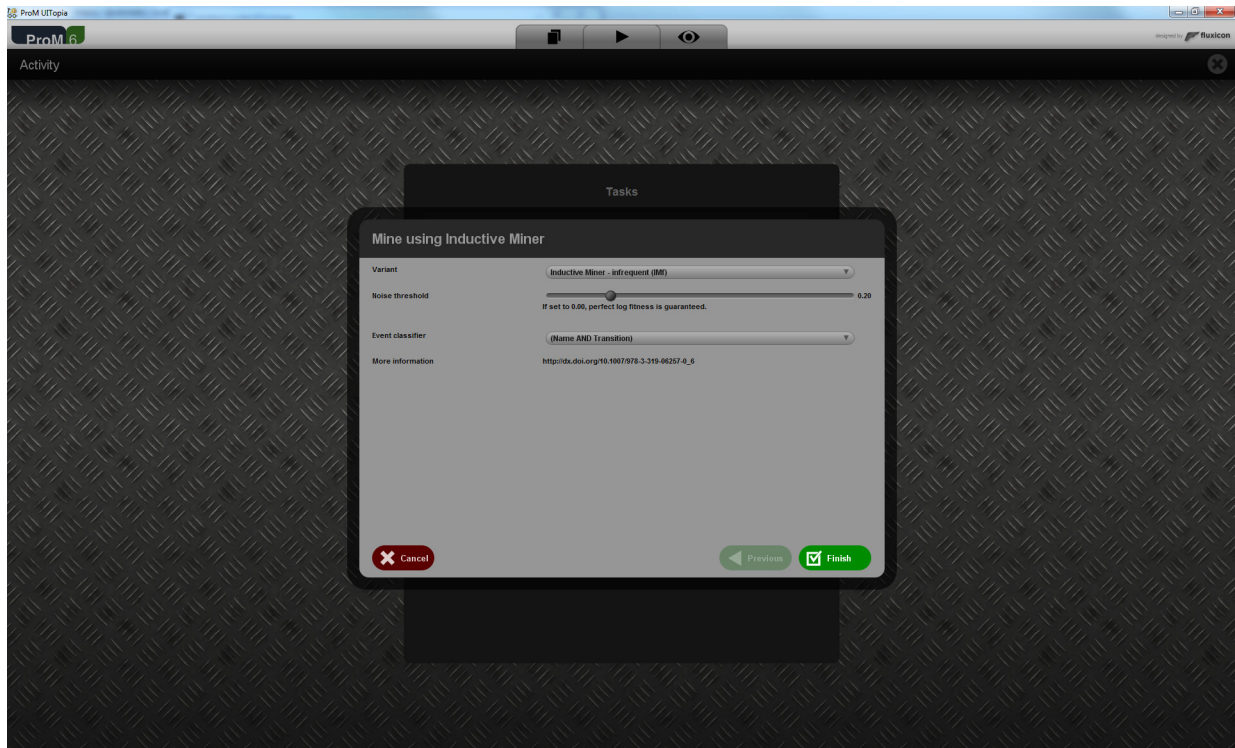
Level A2



IMPORT



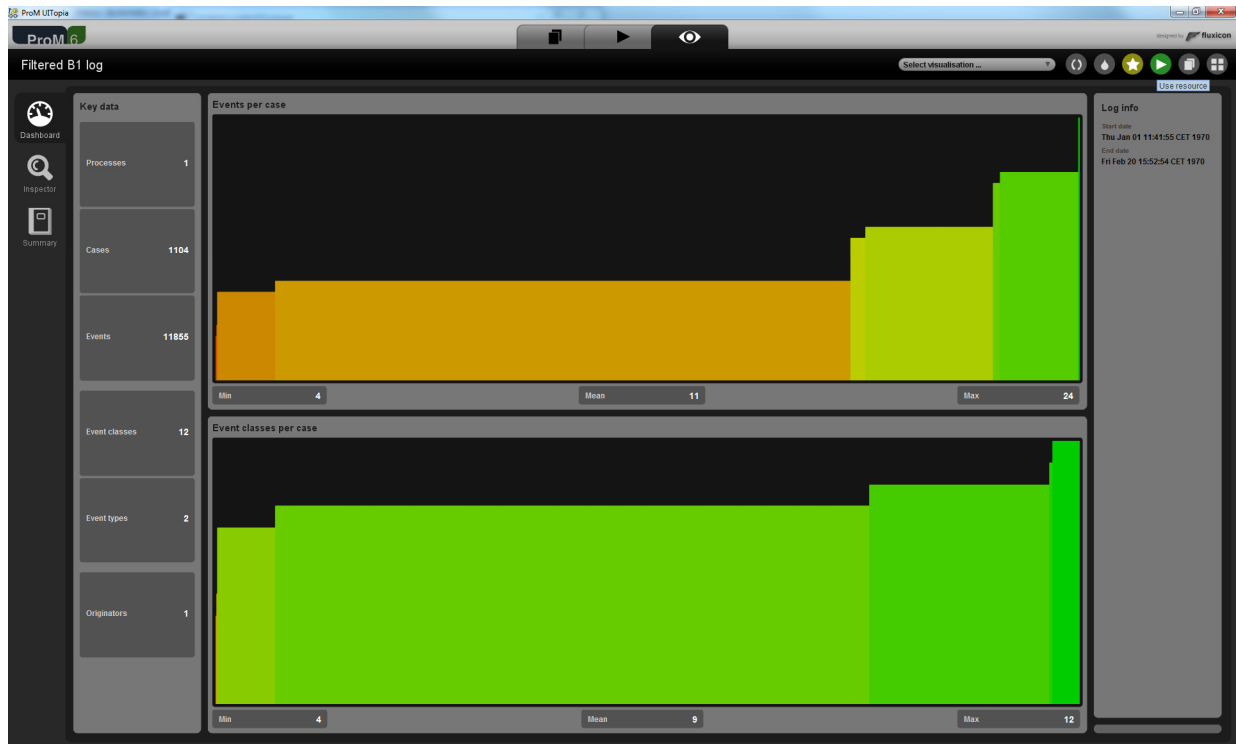
IMPORT



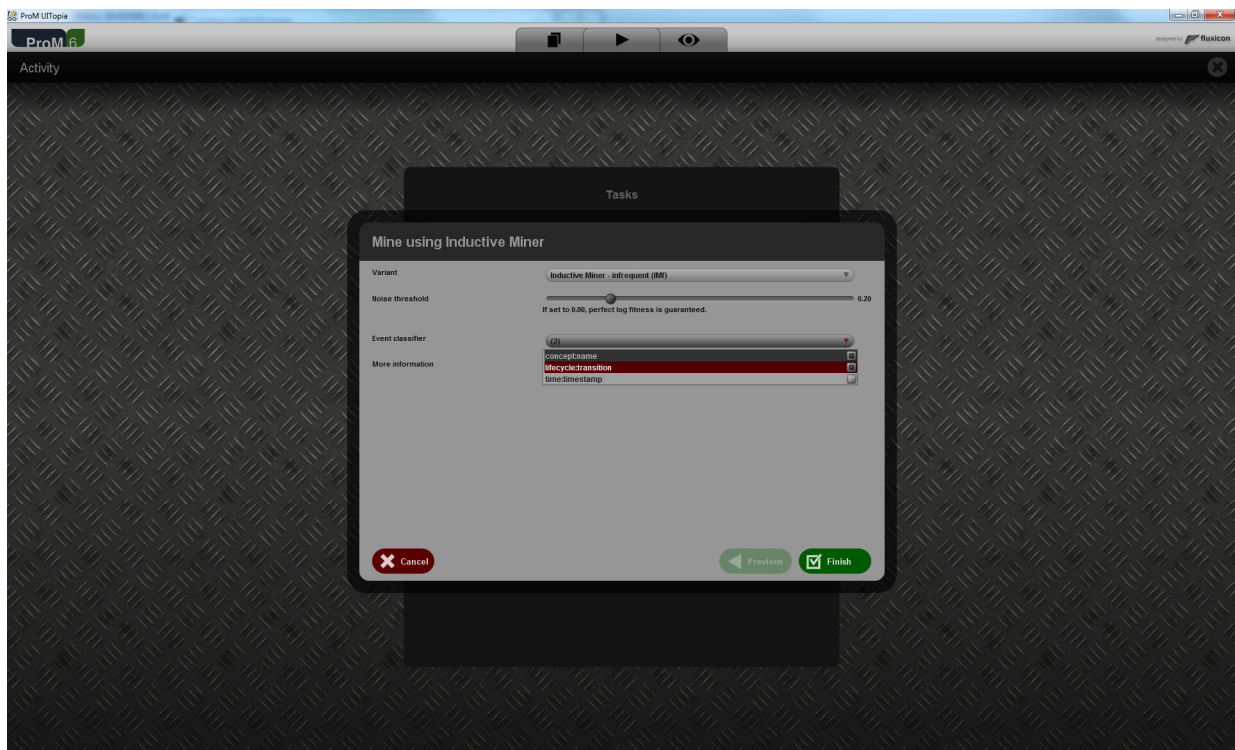
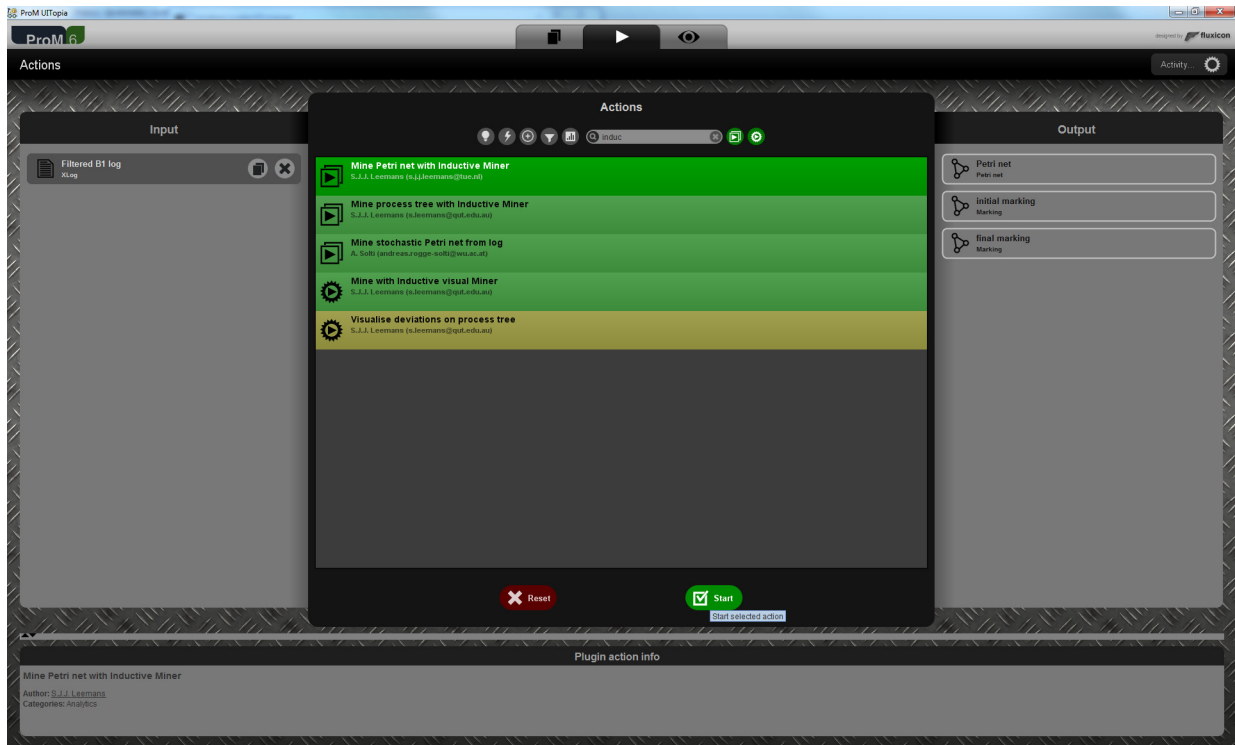
IMPORT

This clearly shows the correct combinations of concept names and lifecycle transitions (as defined by the classifier (Name AND Transition)) as activity names.

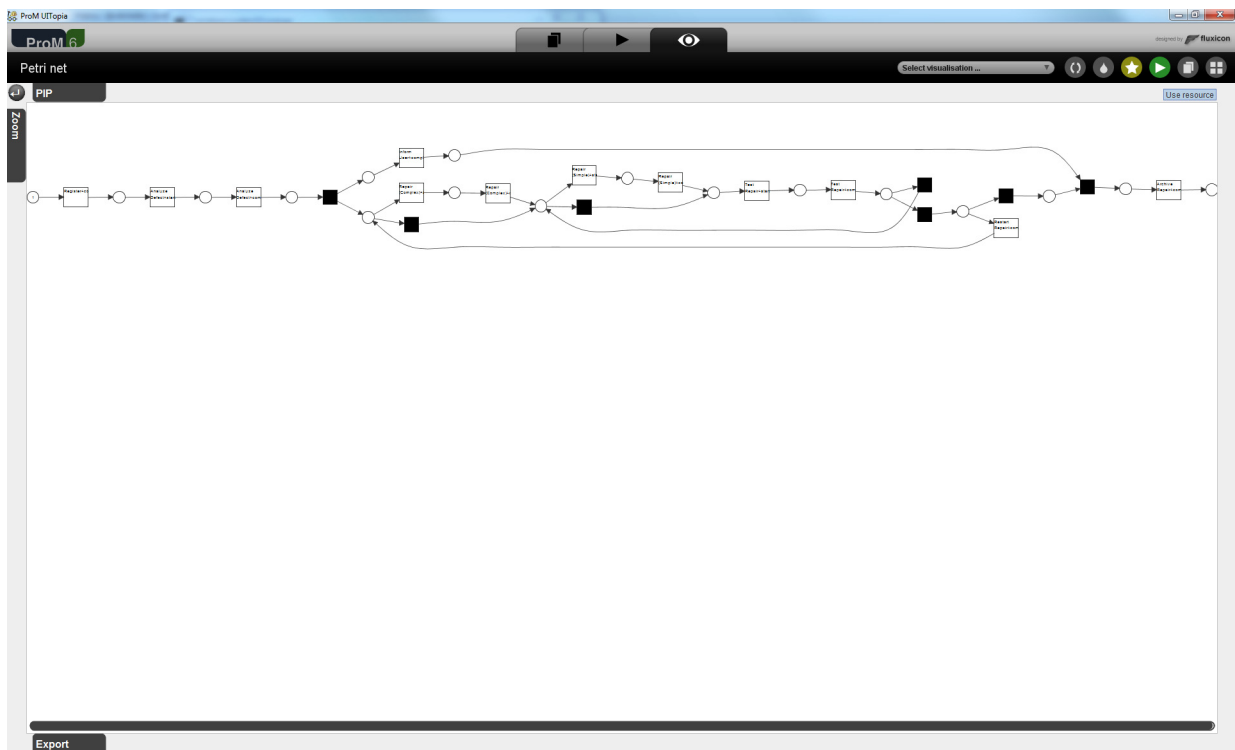
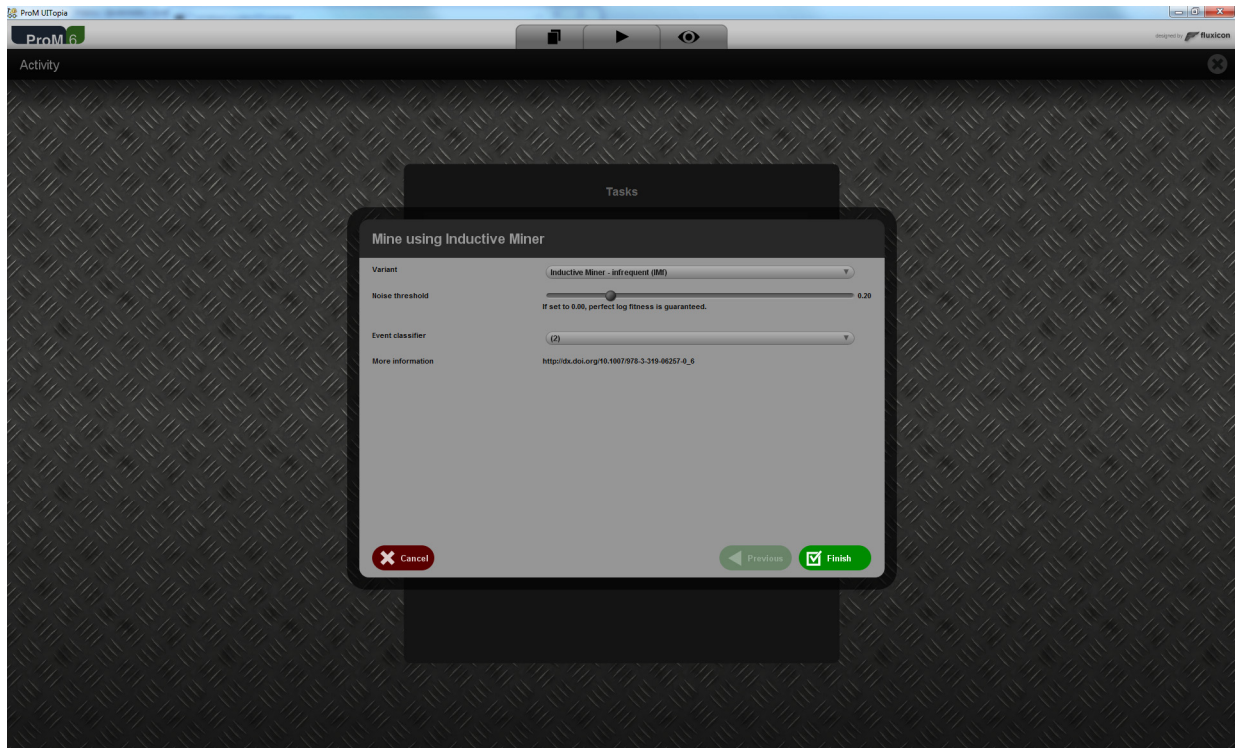
Level B1



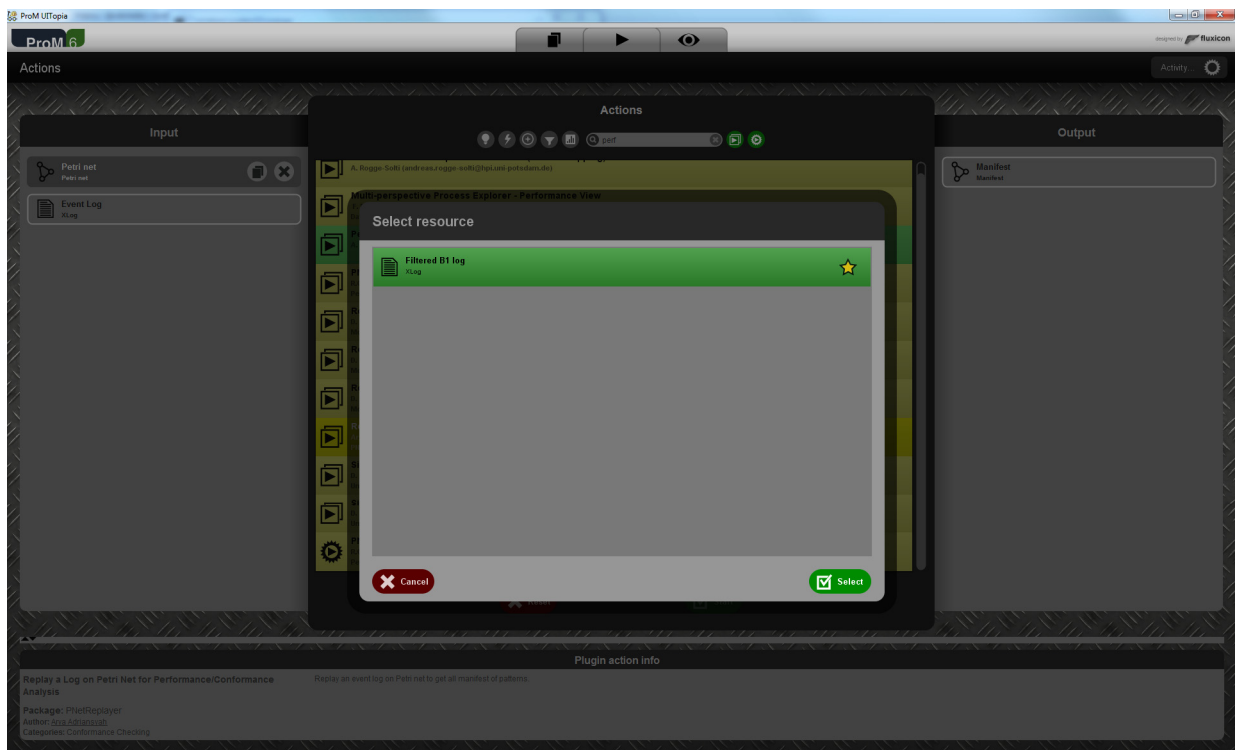
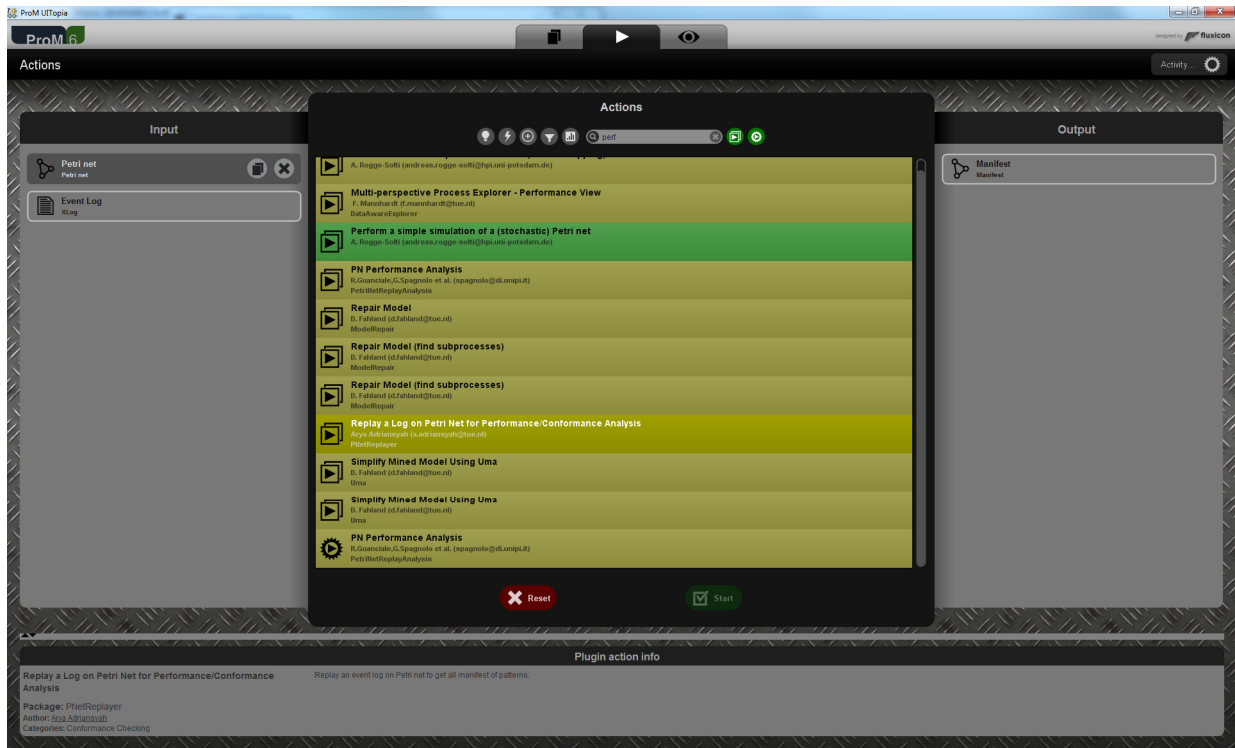
IMPORT



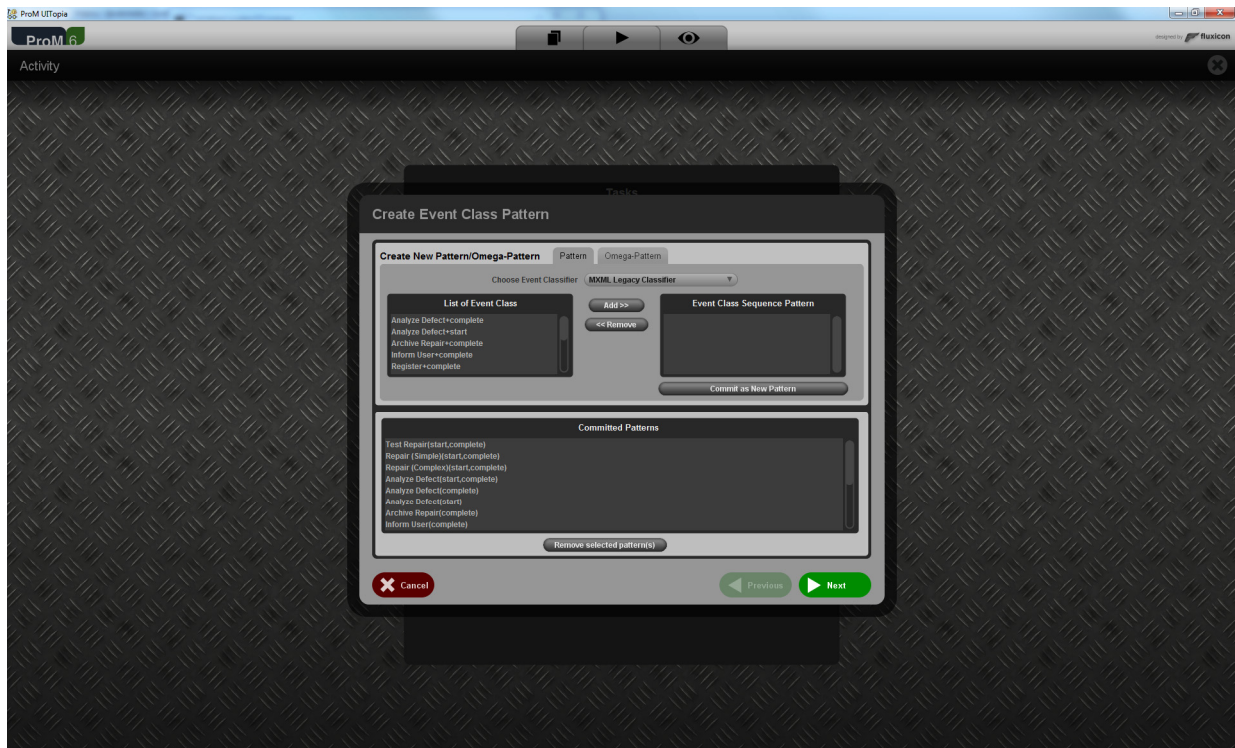
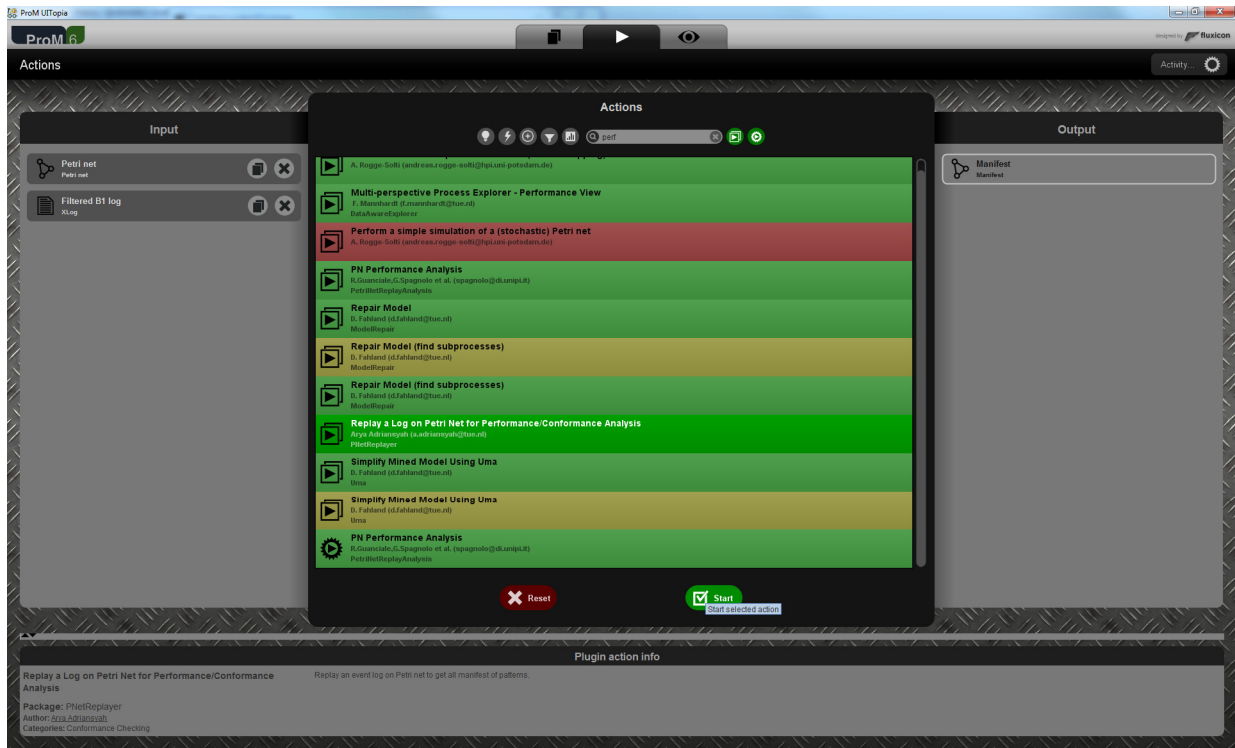
IMPORT



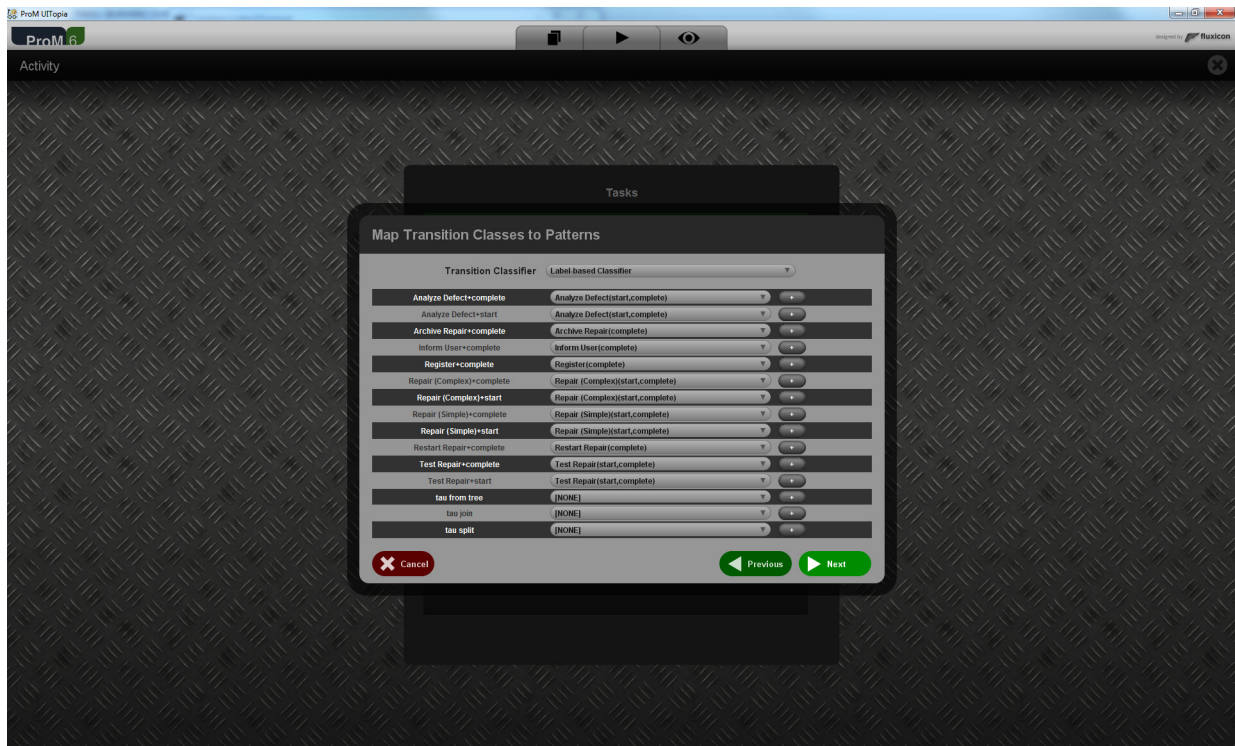
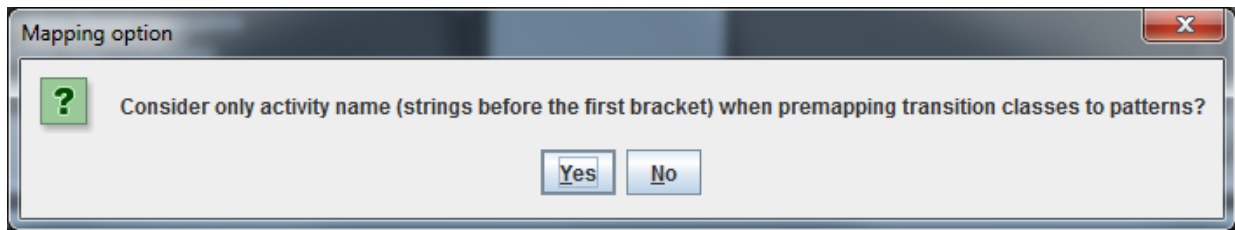
IMPORT



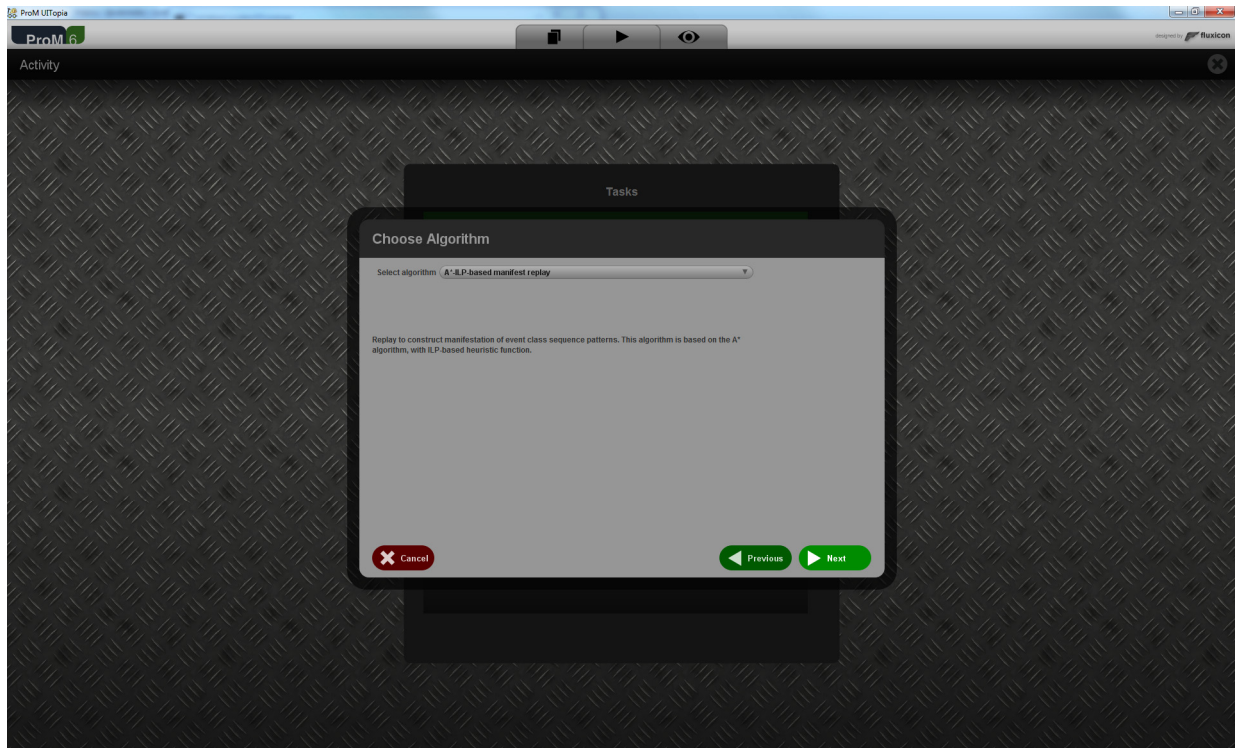
IMPORT



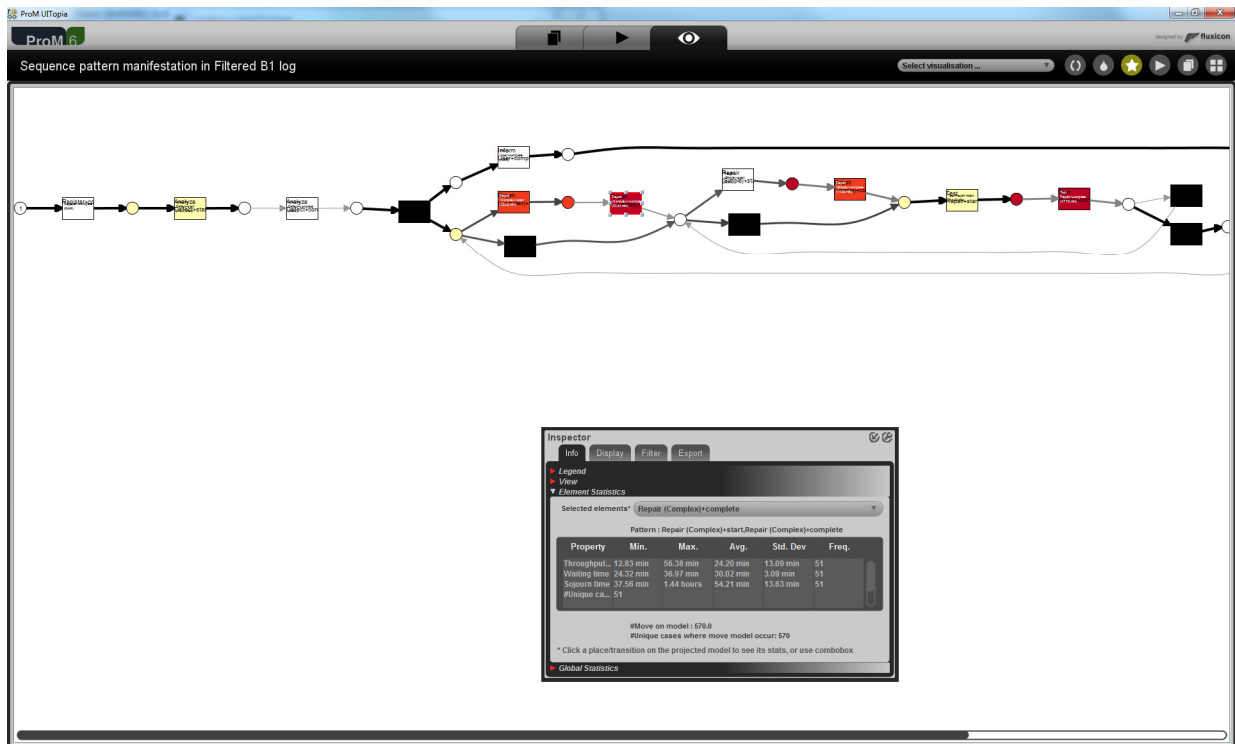
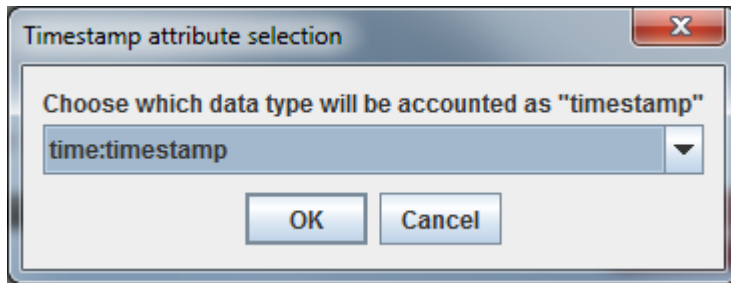
IMPORT



IMPORT



IMPORT



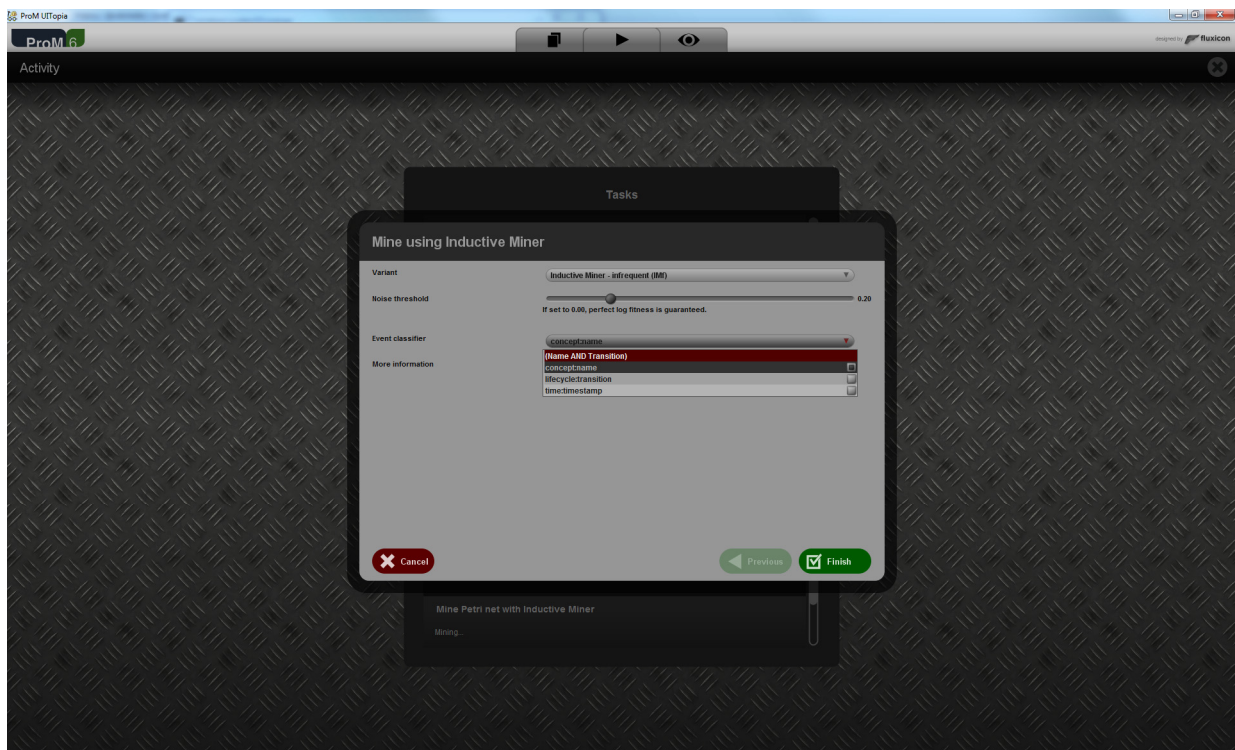
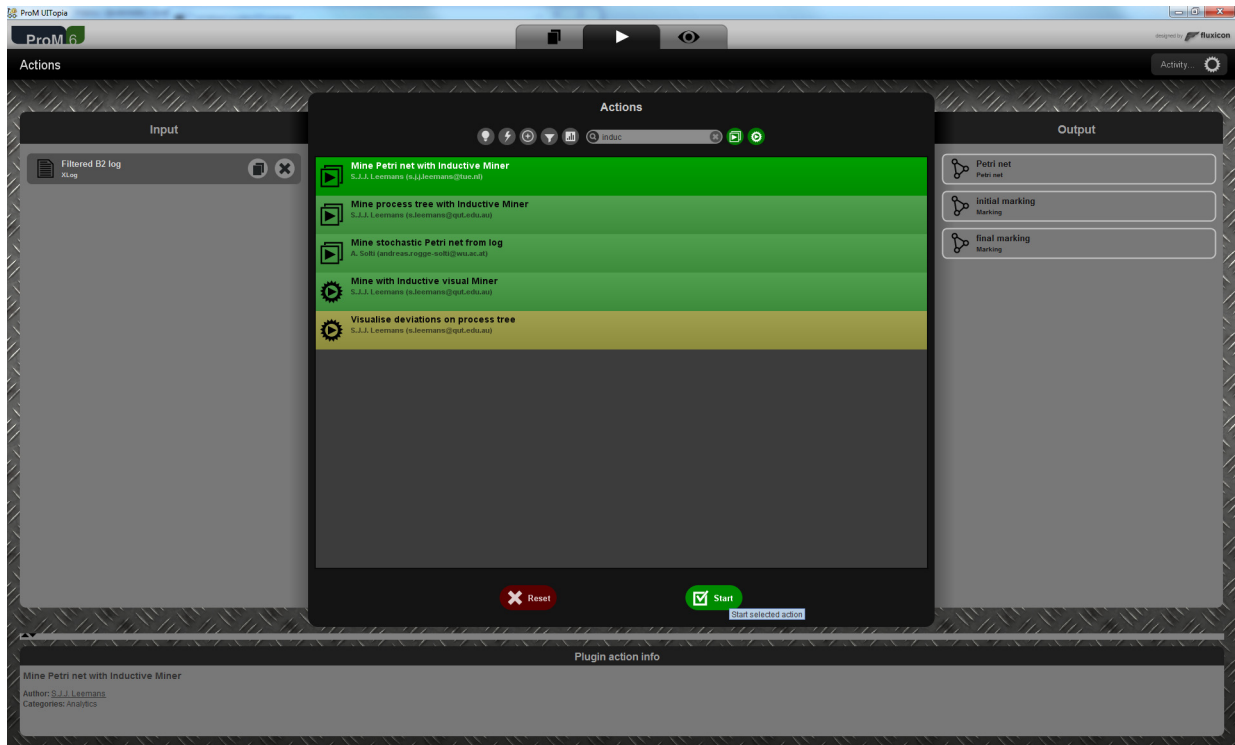
This shows that the three attributes are taken into account.

IMPORT

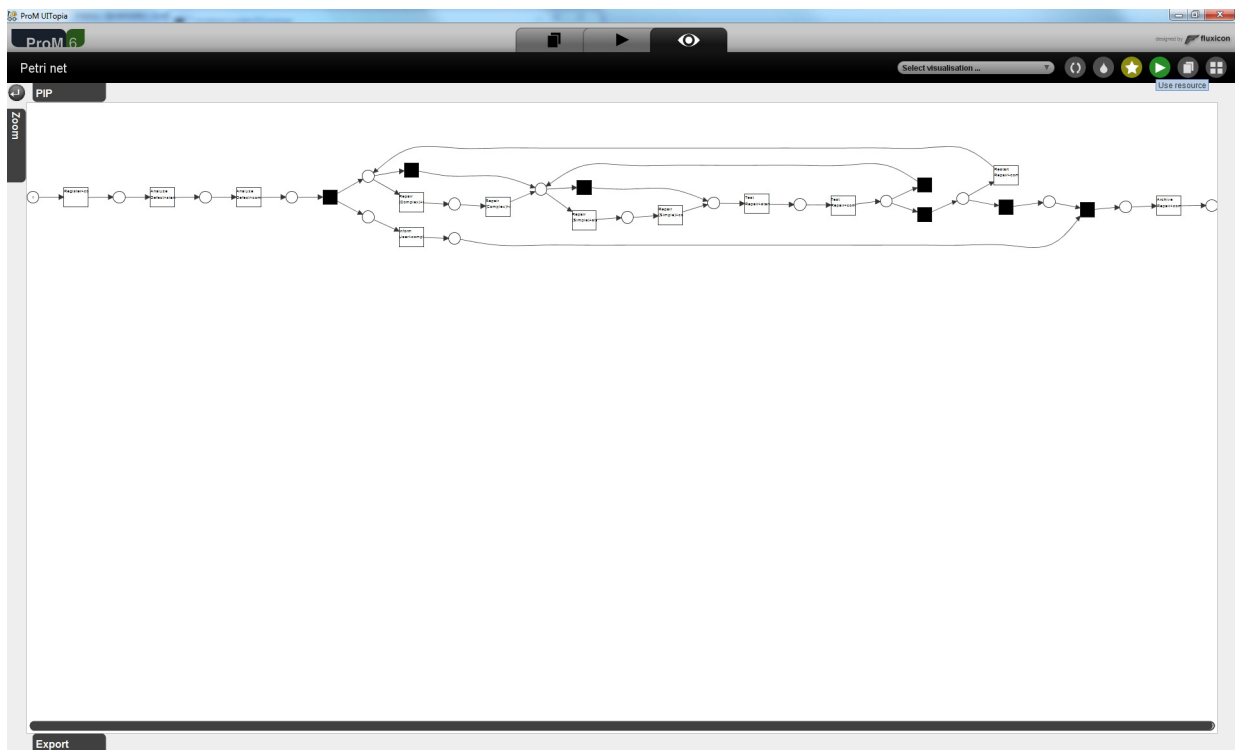
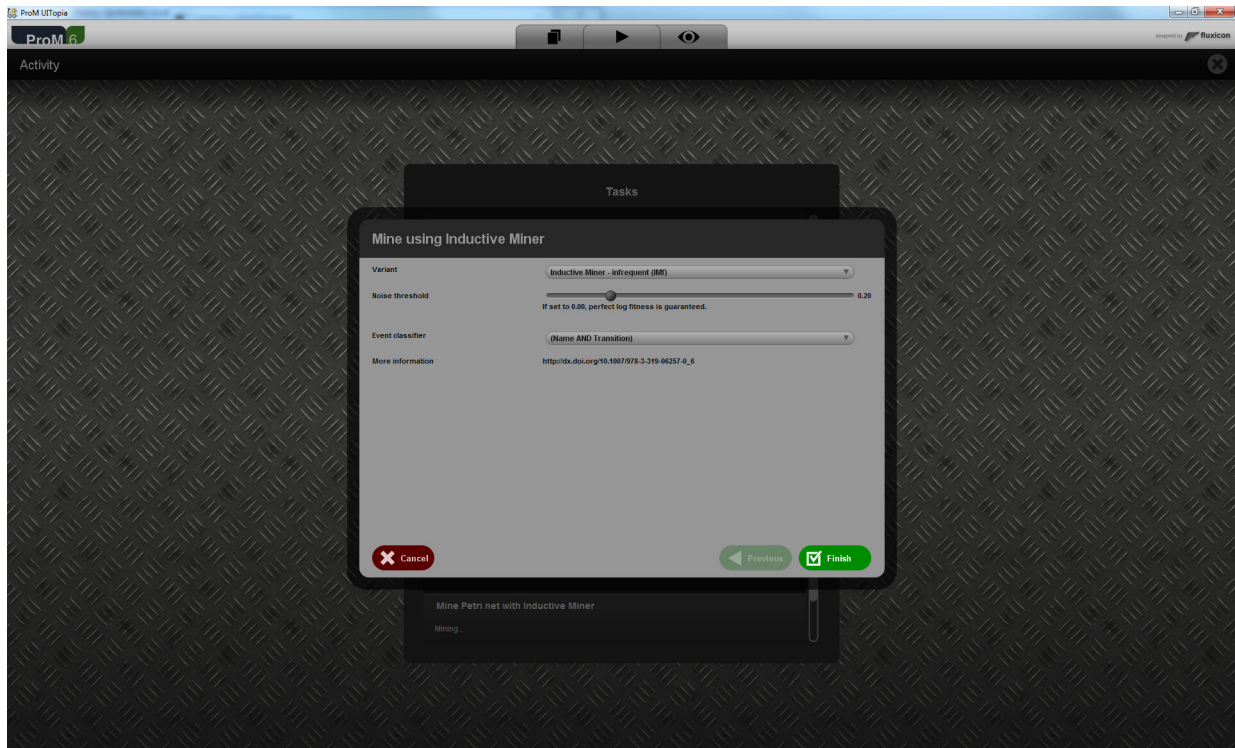
Level B2



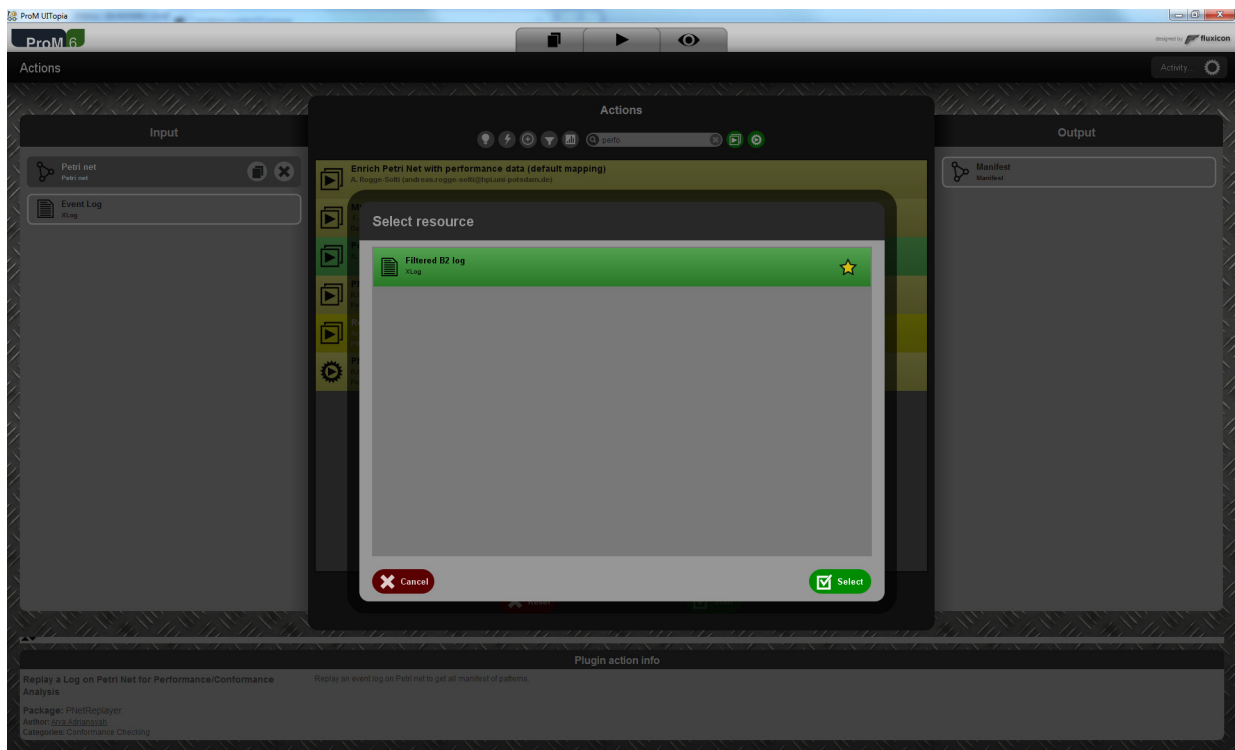
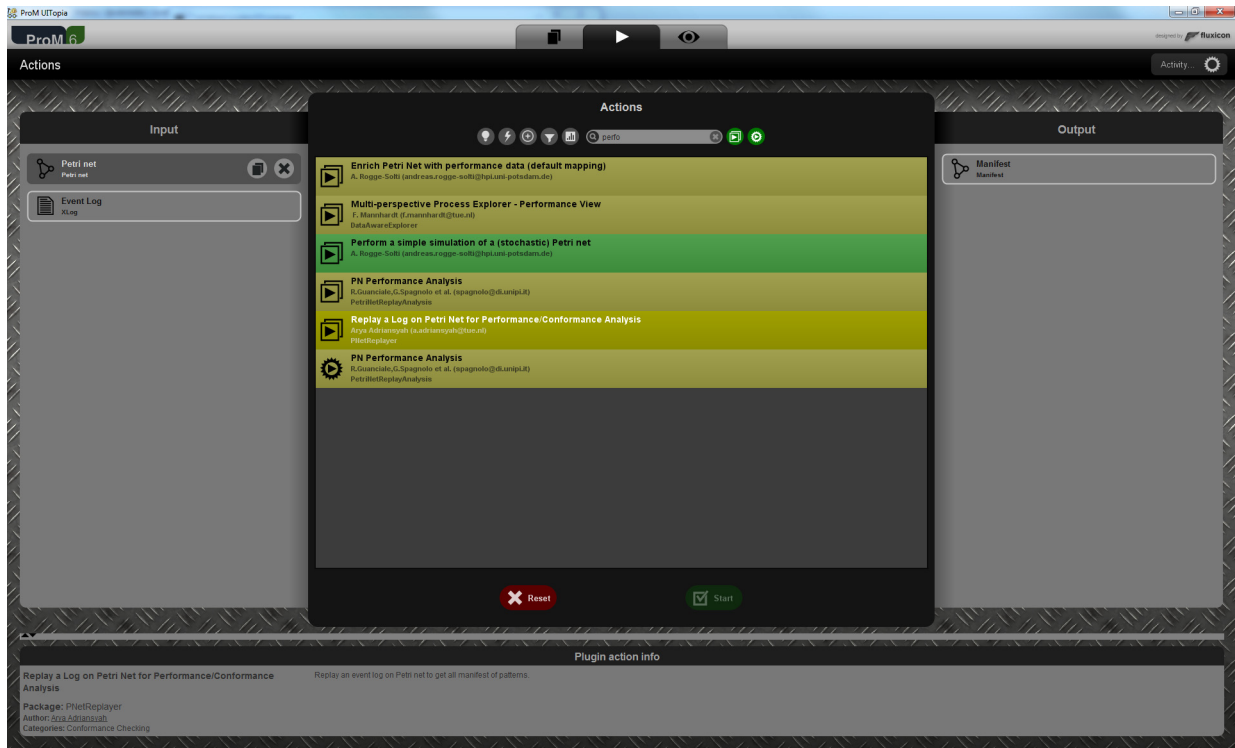
IMPORT



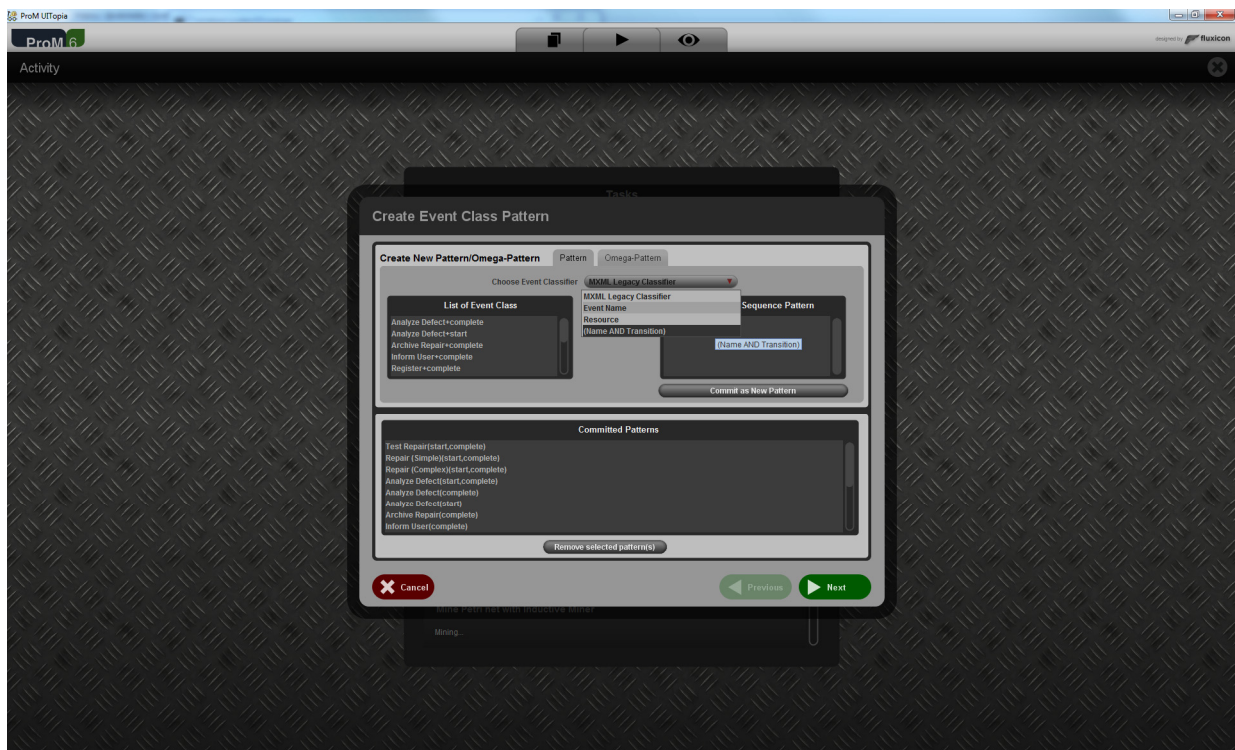
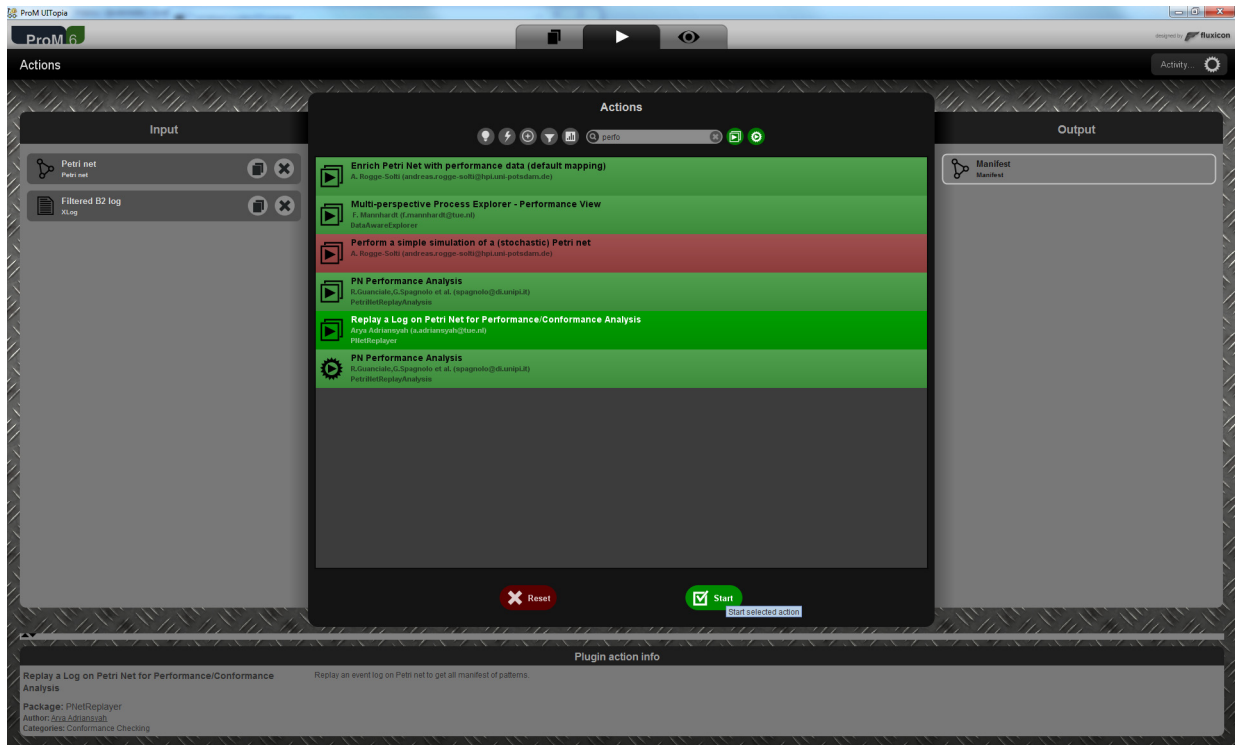
IMPORT



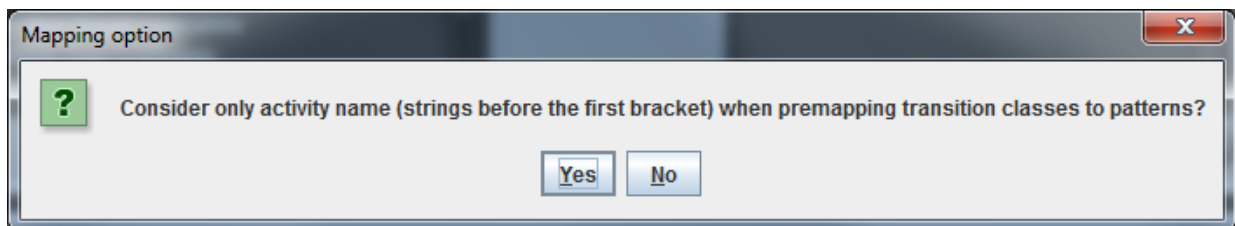
IMPORT



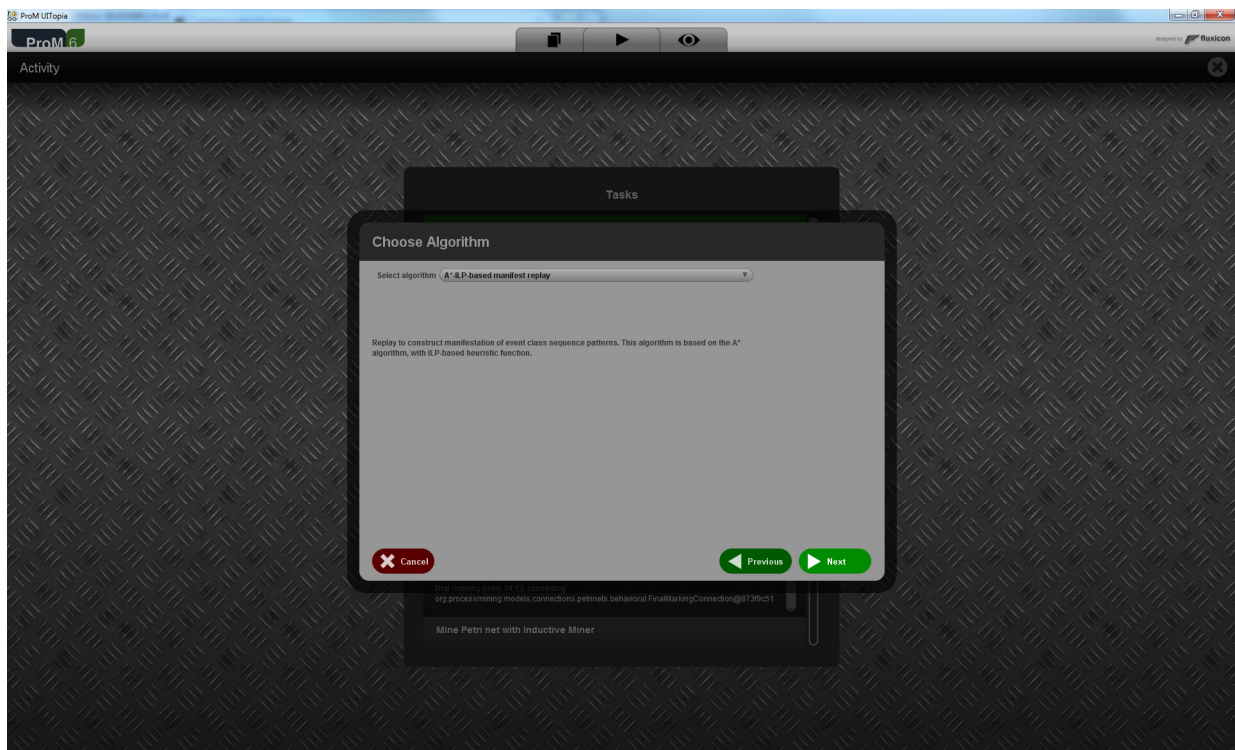
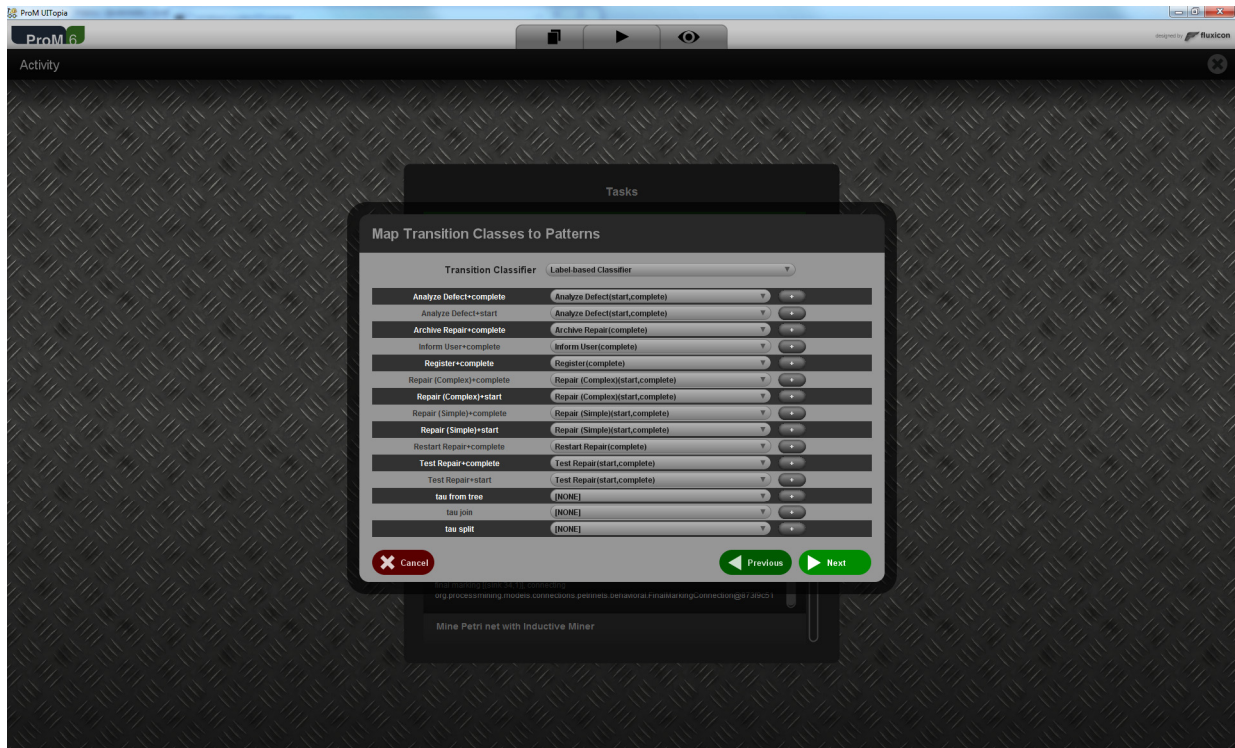
IMPORT



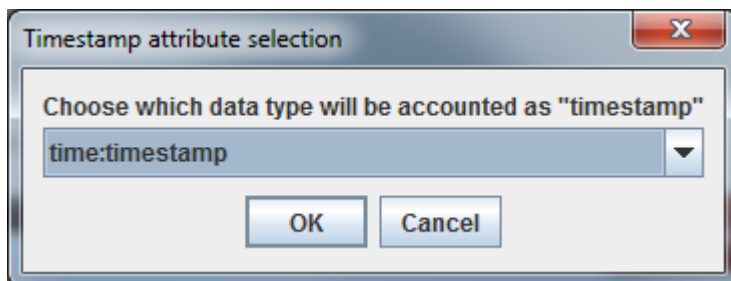
IMPORT



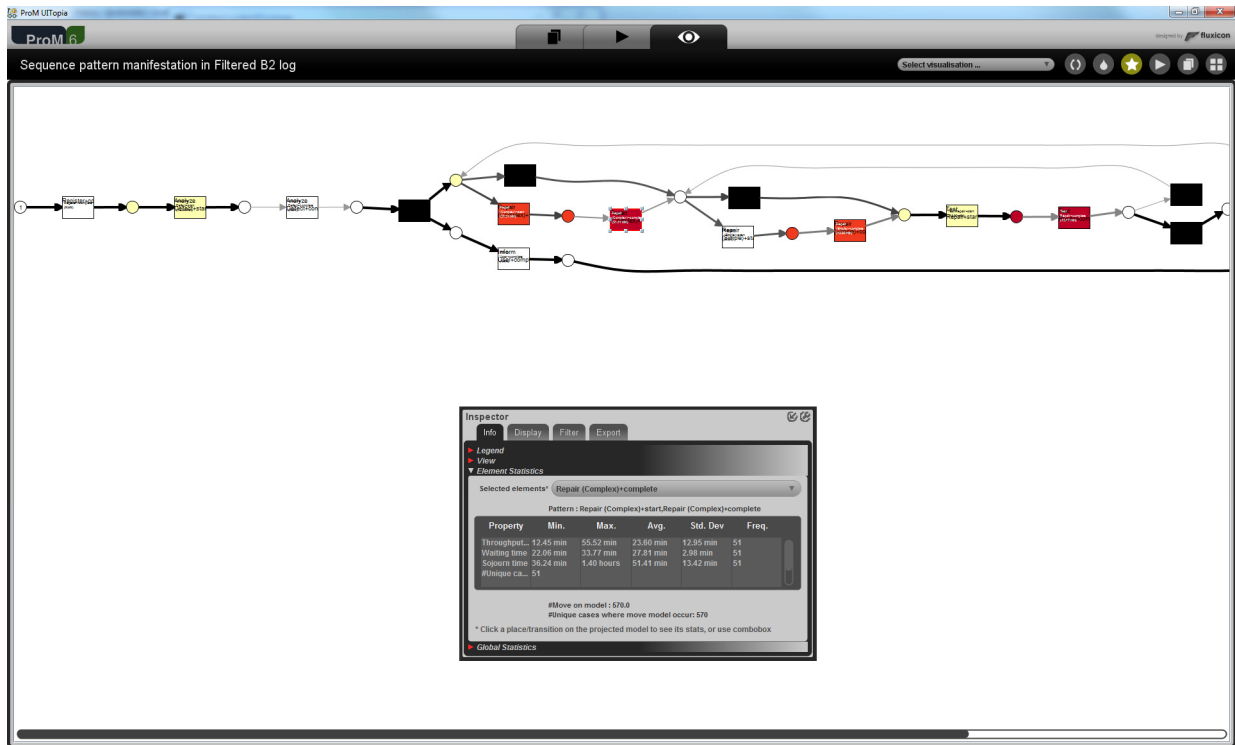
IMPORT



IMPORT



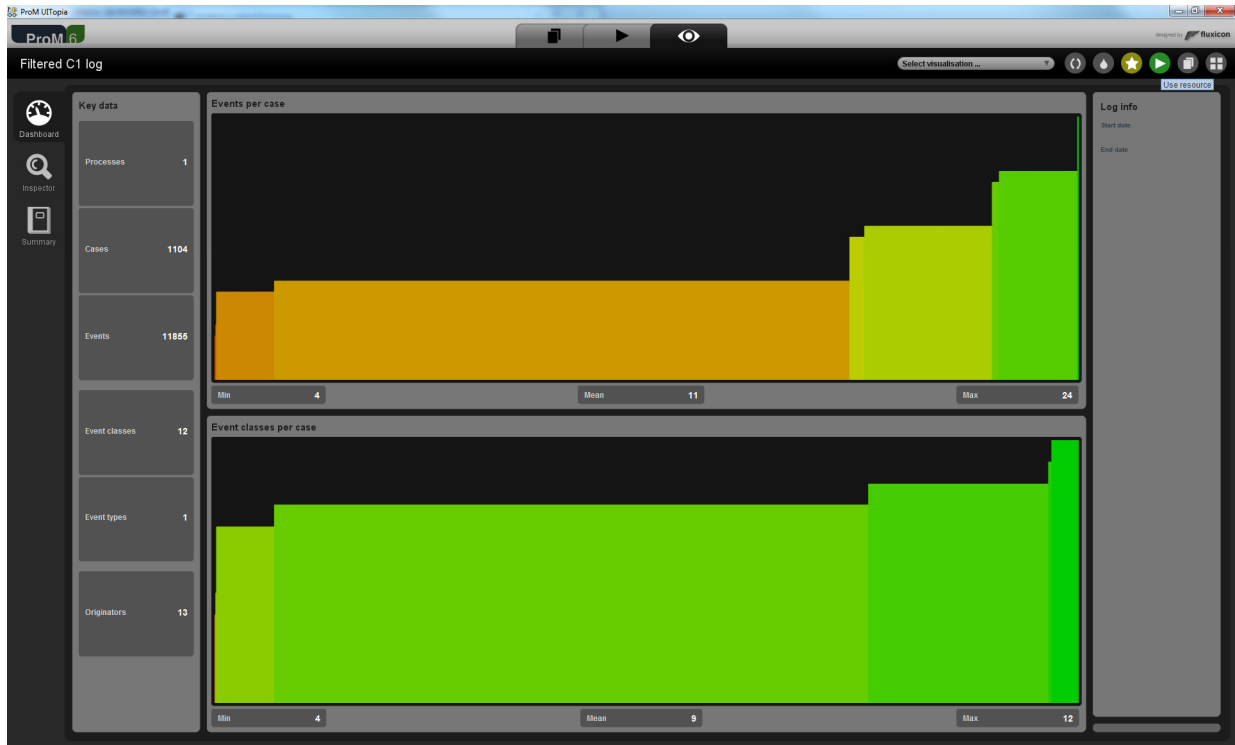
IMPORT



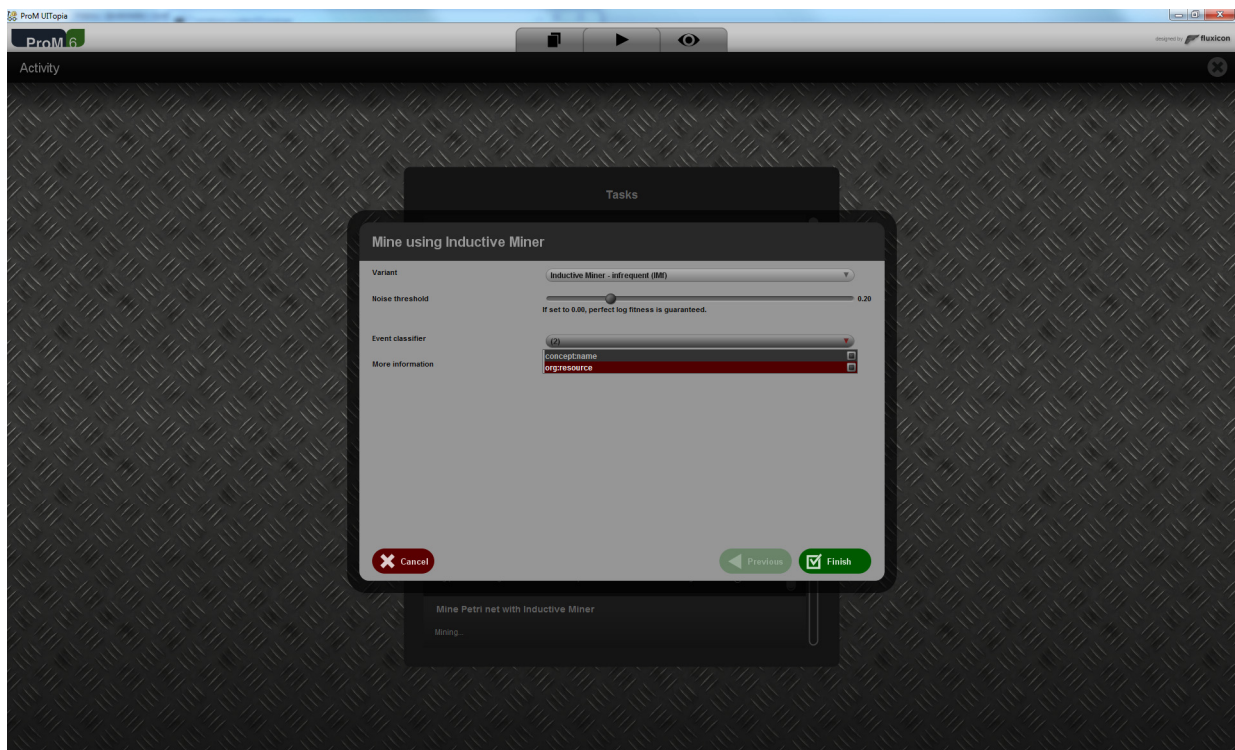
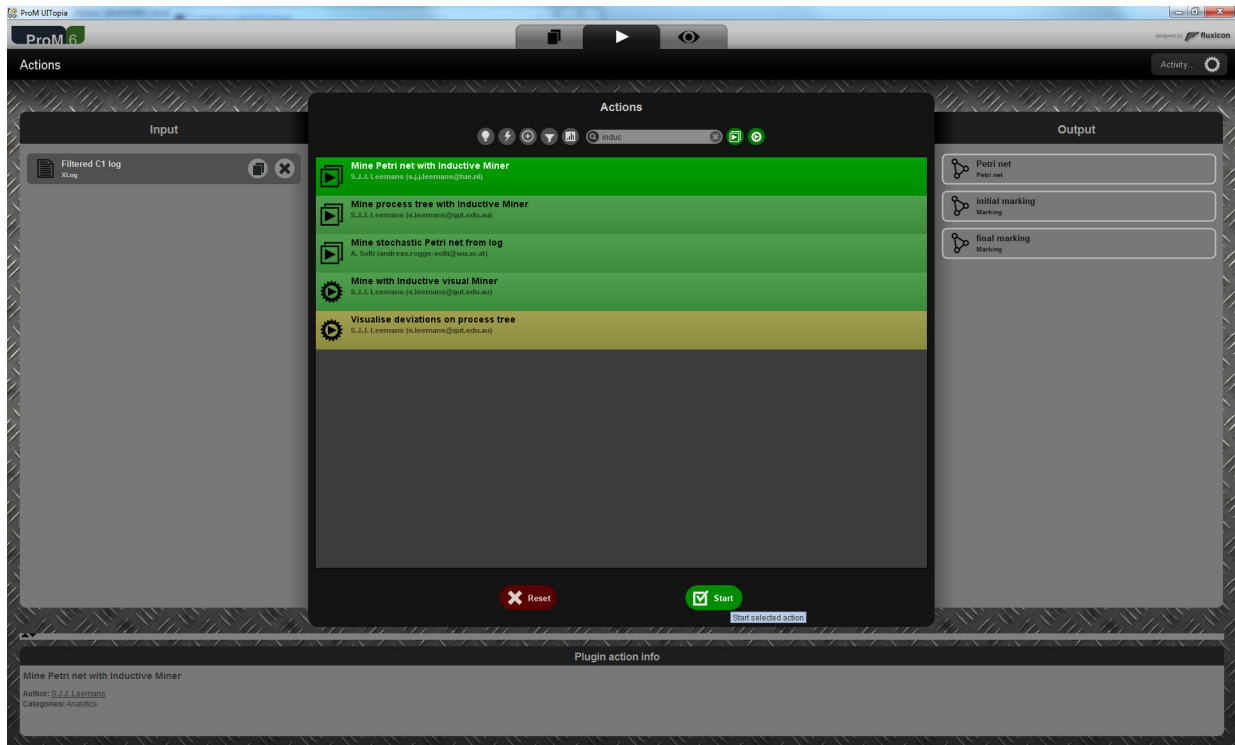
This shows that the classifier and the time:timestamp attributes contained in the log were used.

IMPORT

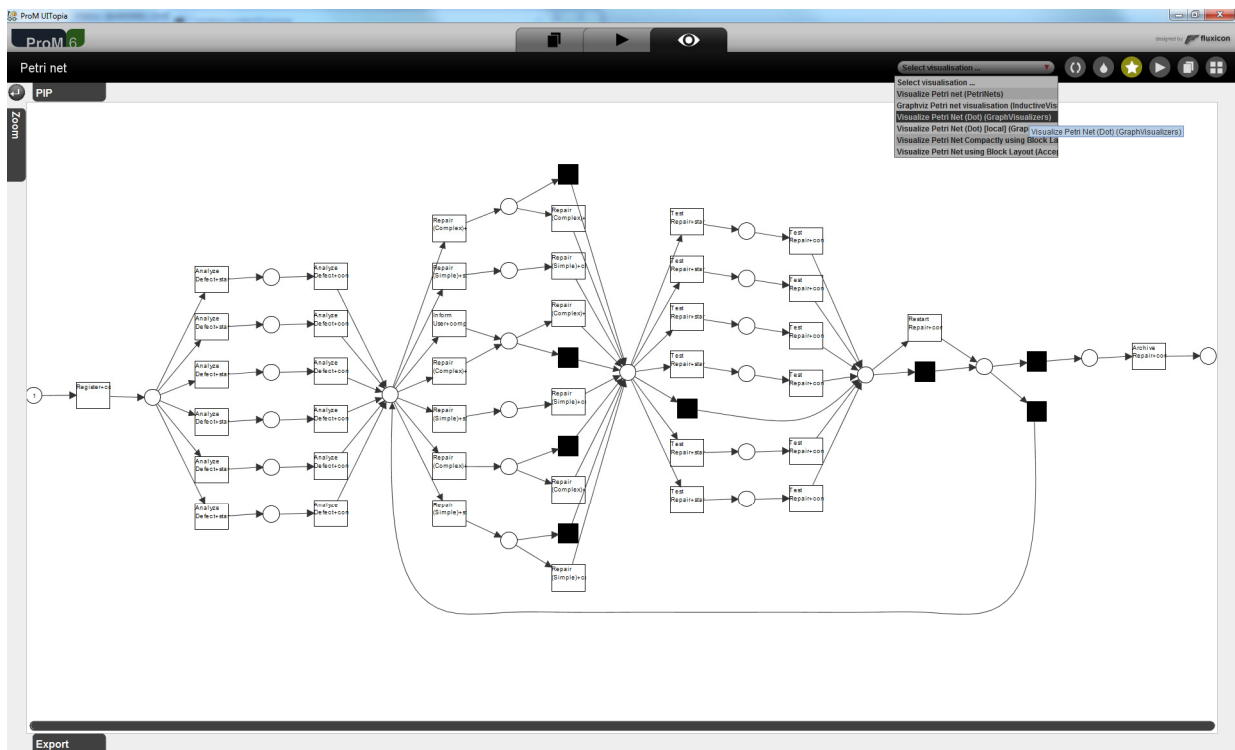
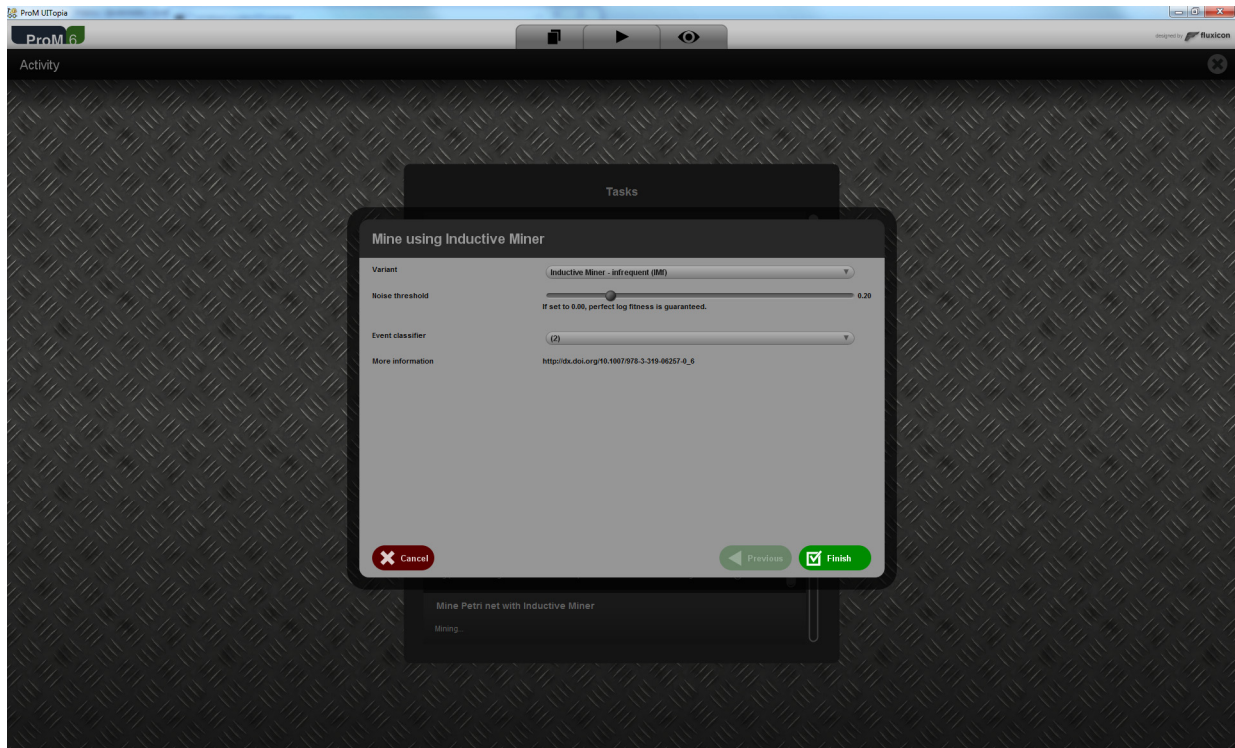
Level C1



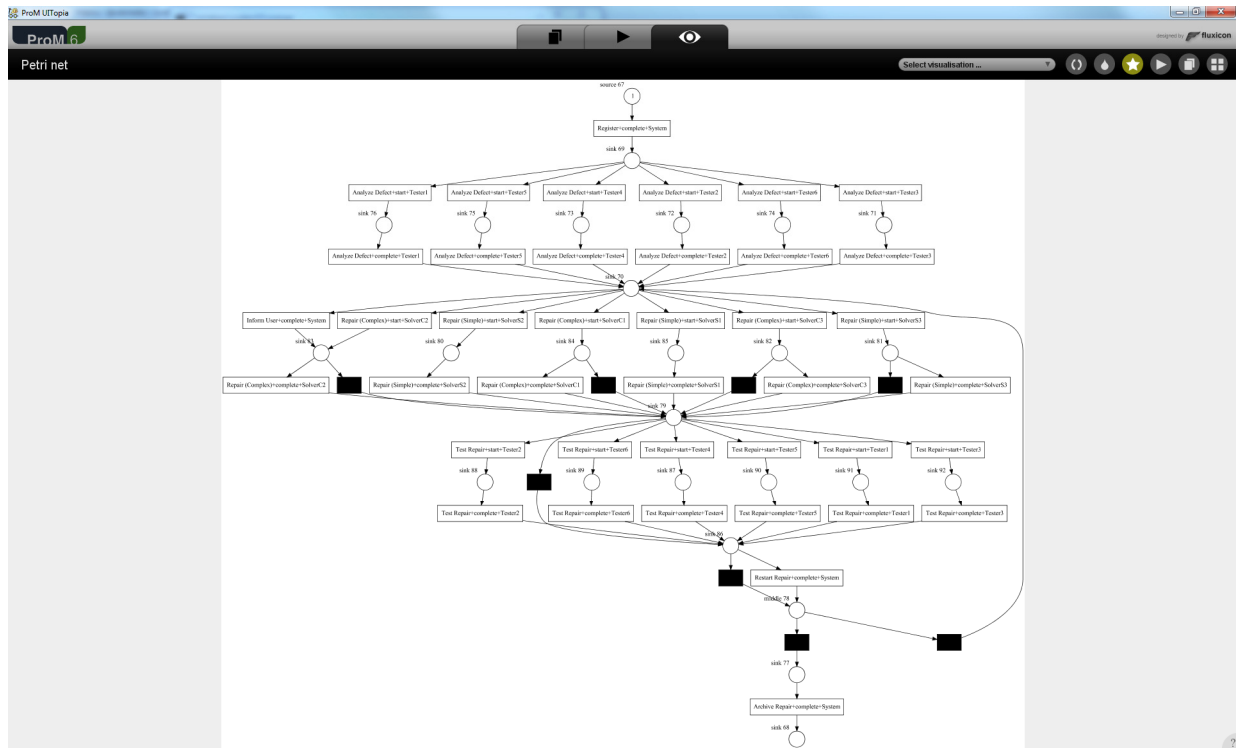
IMPORT



IMPORT



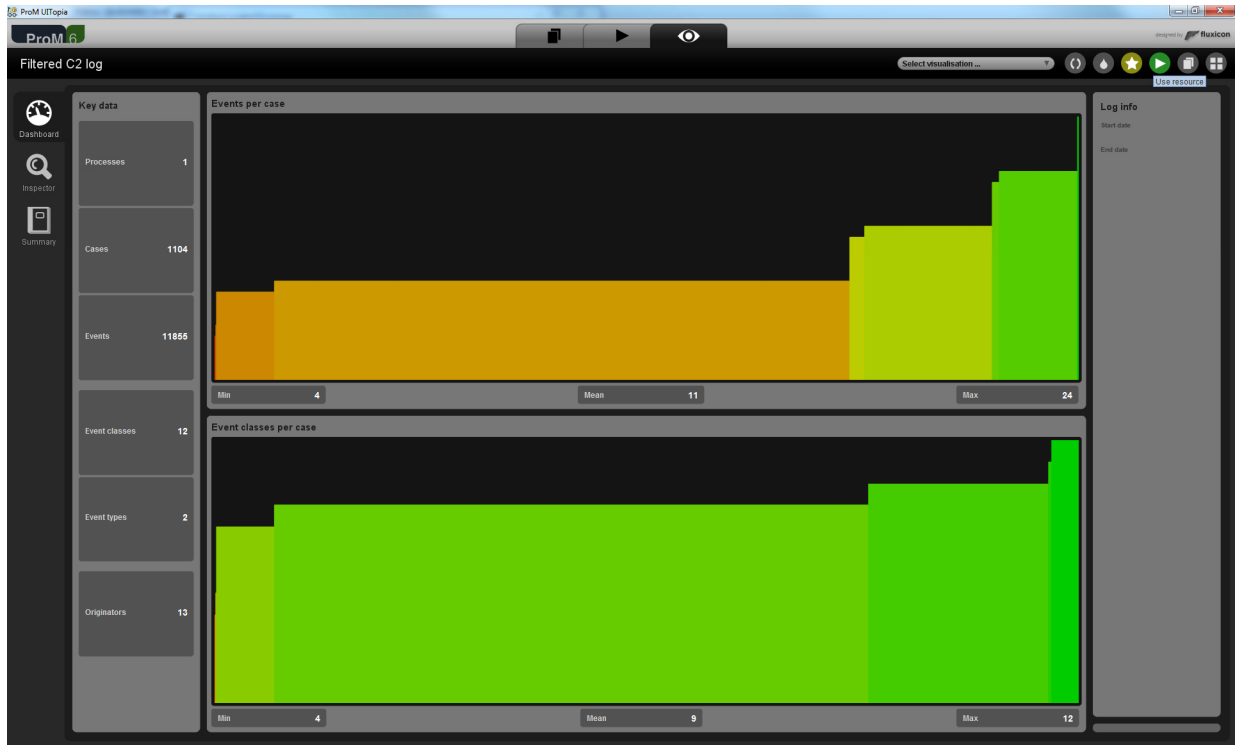
IMPORT



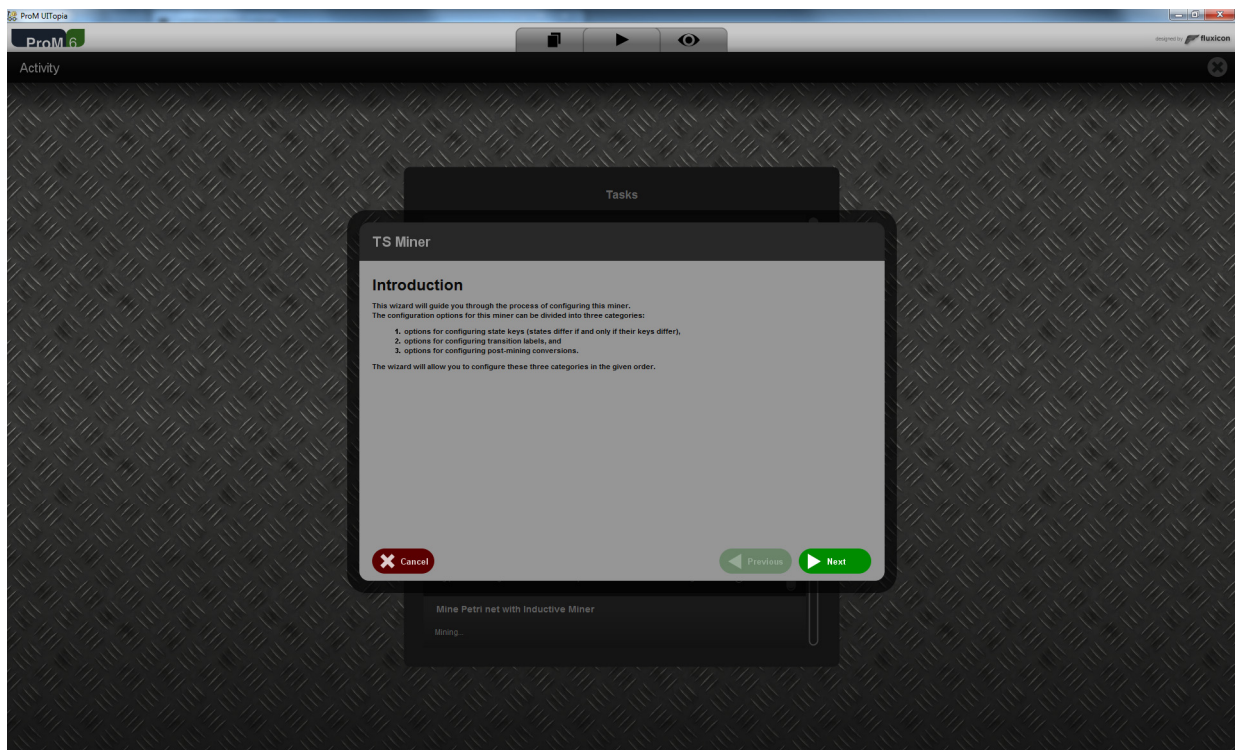
This shows that the concept:name and org:resource attributes contained in the log were used.

IMPORT

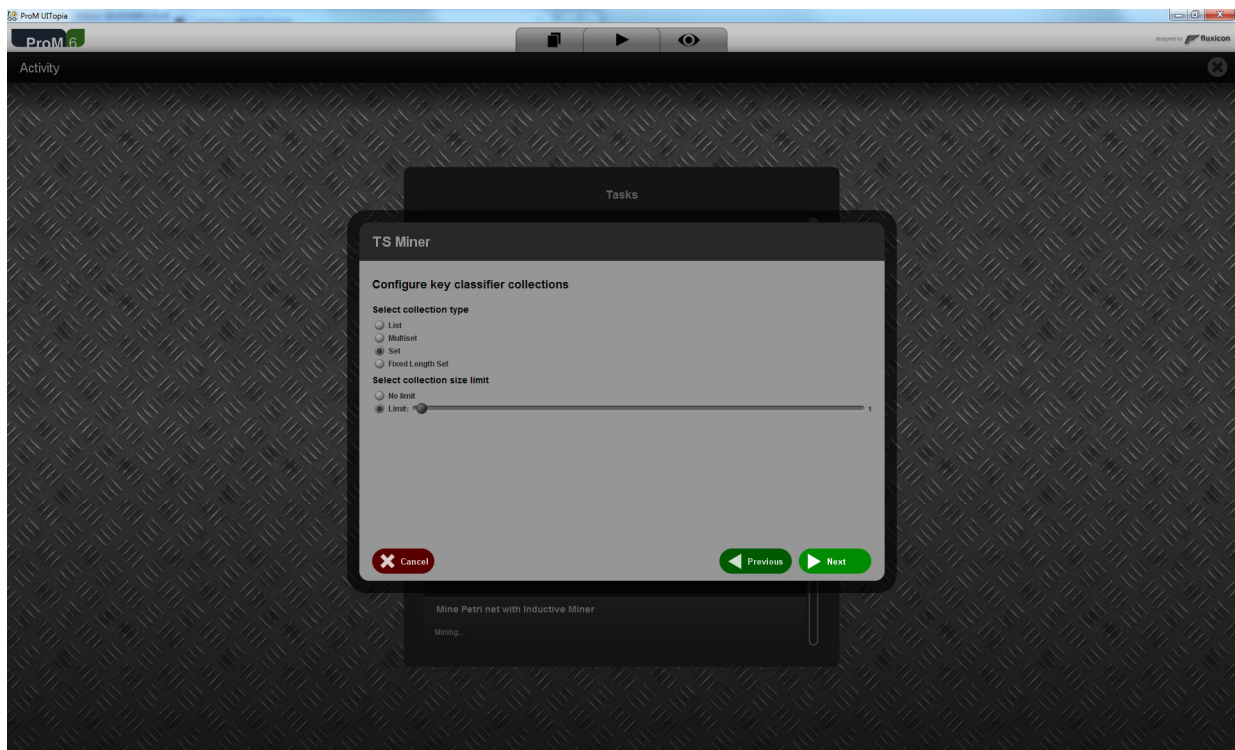
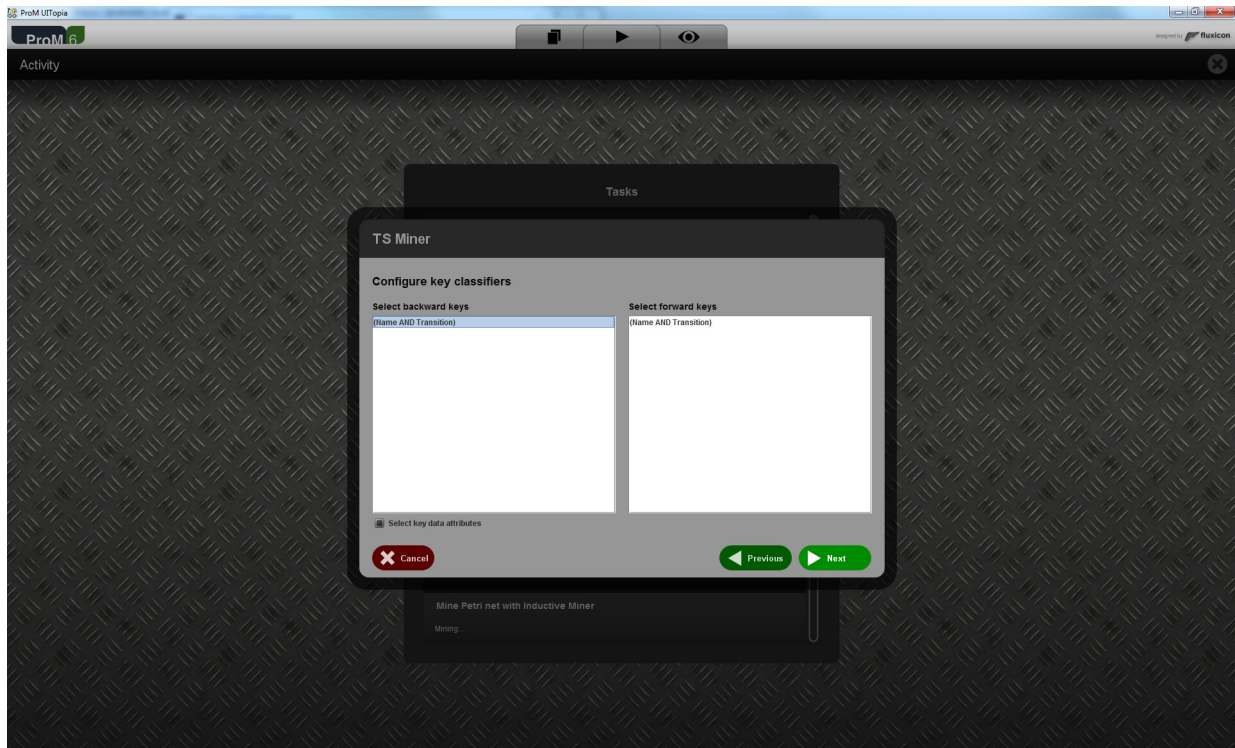
Level C2



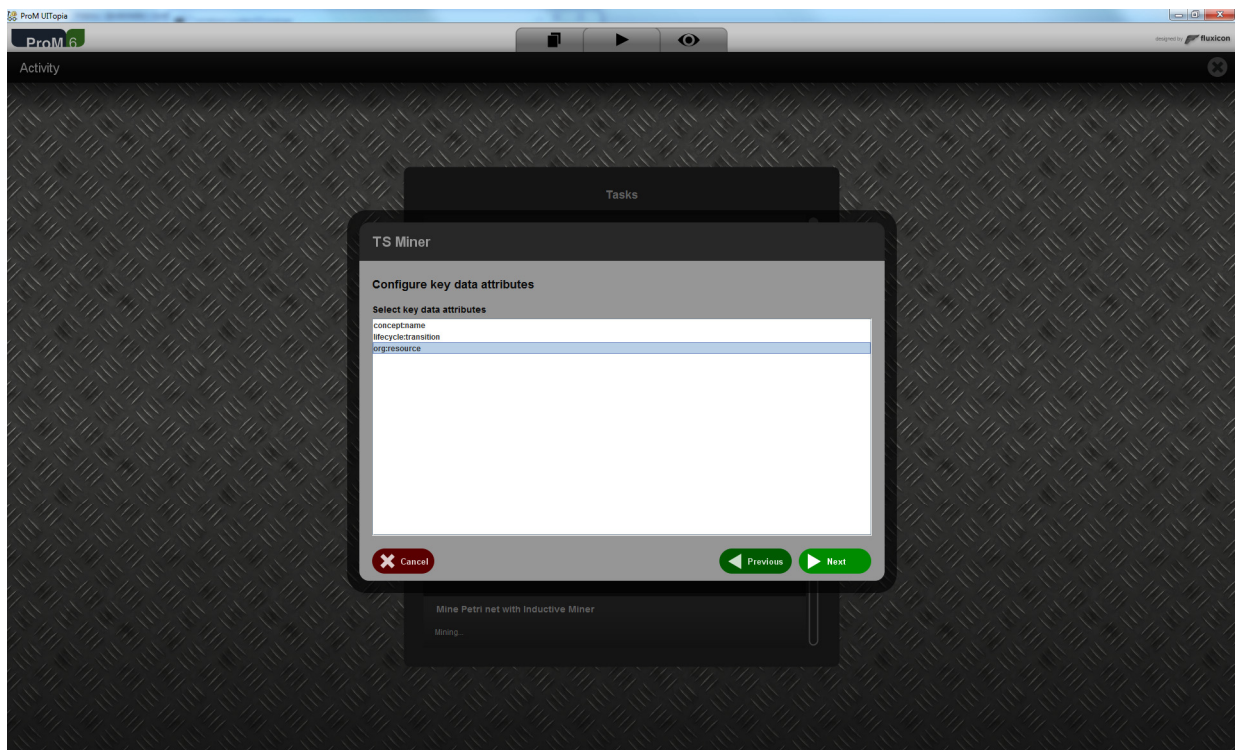
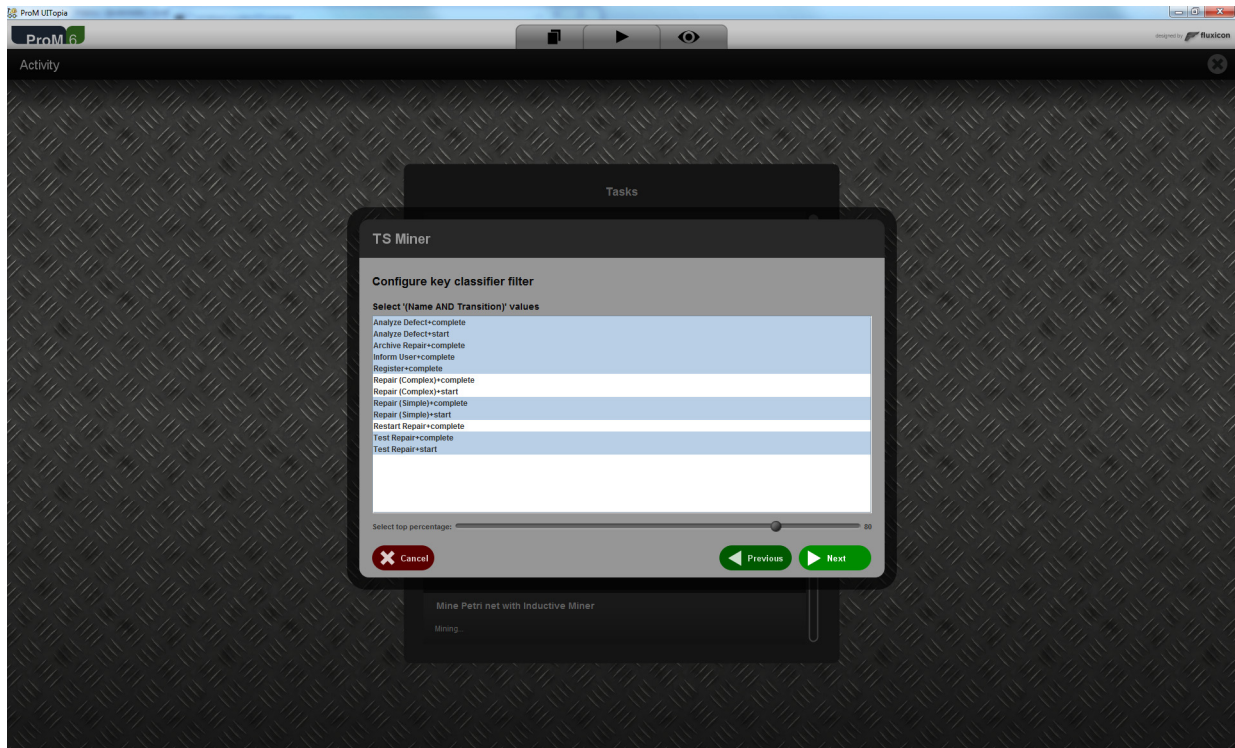
IMPORT



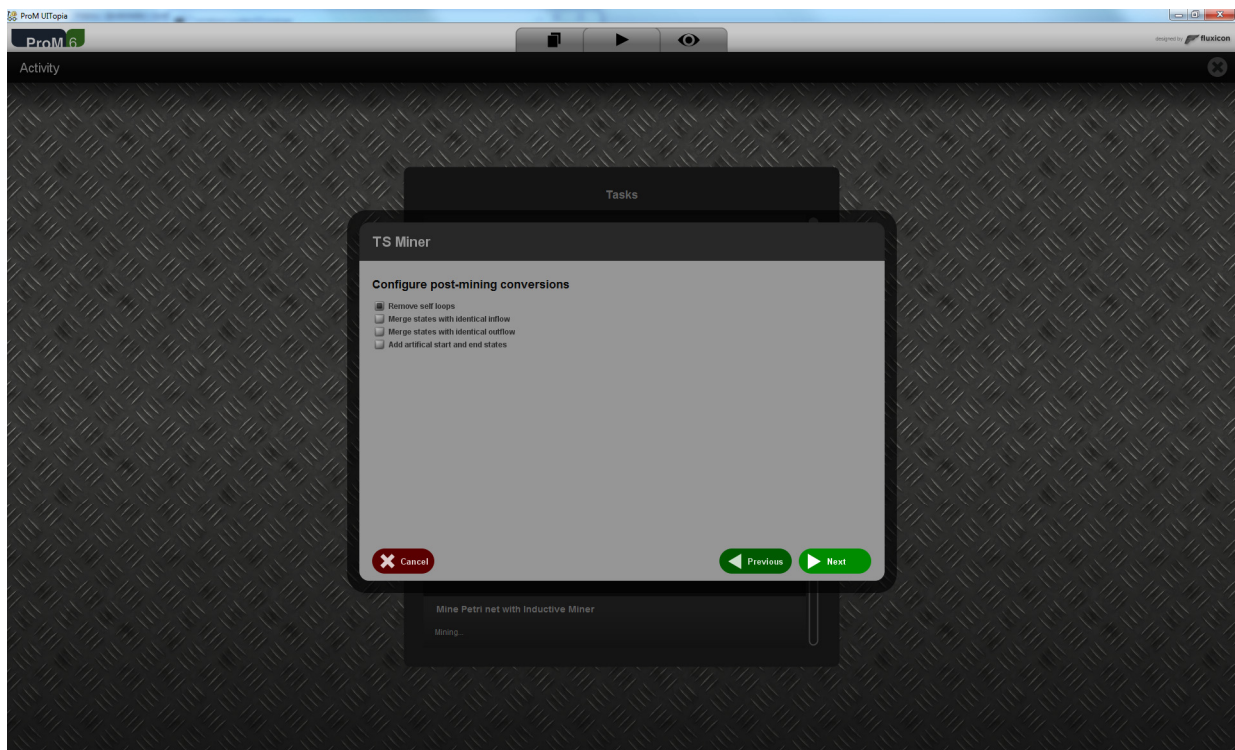
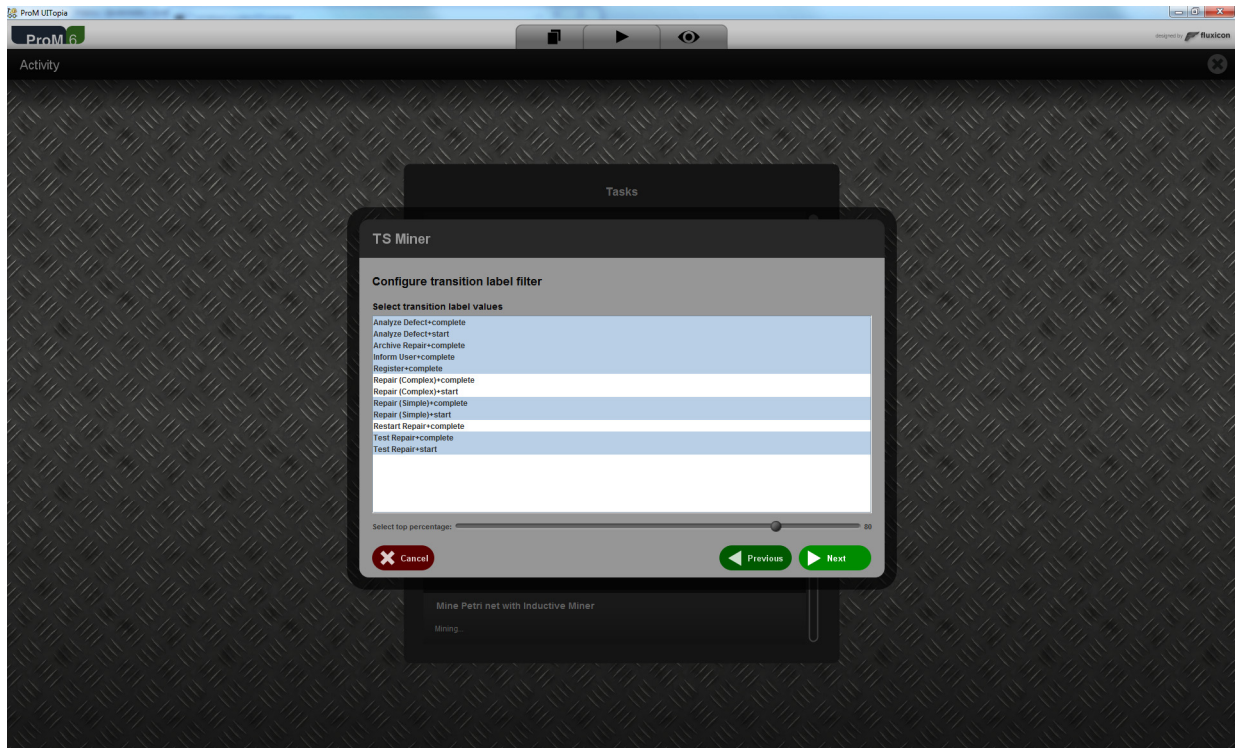
IMPORT



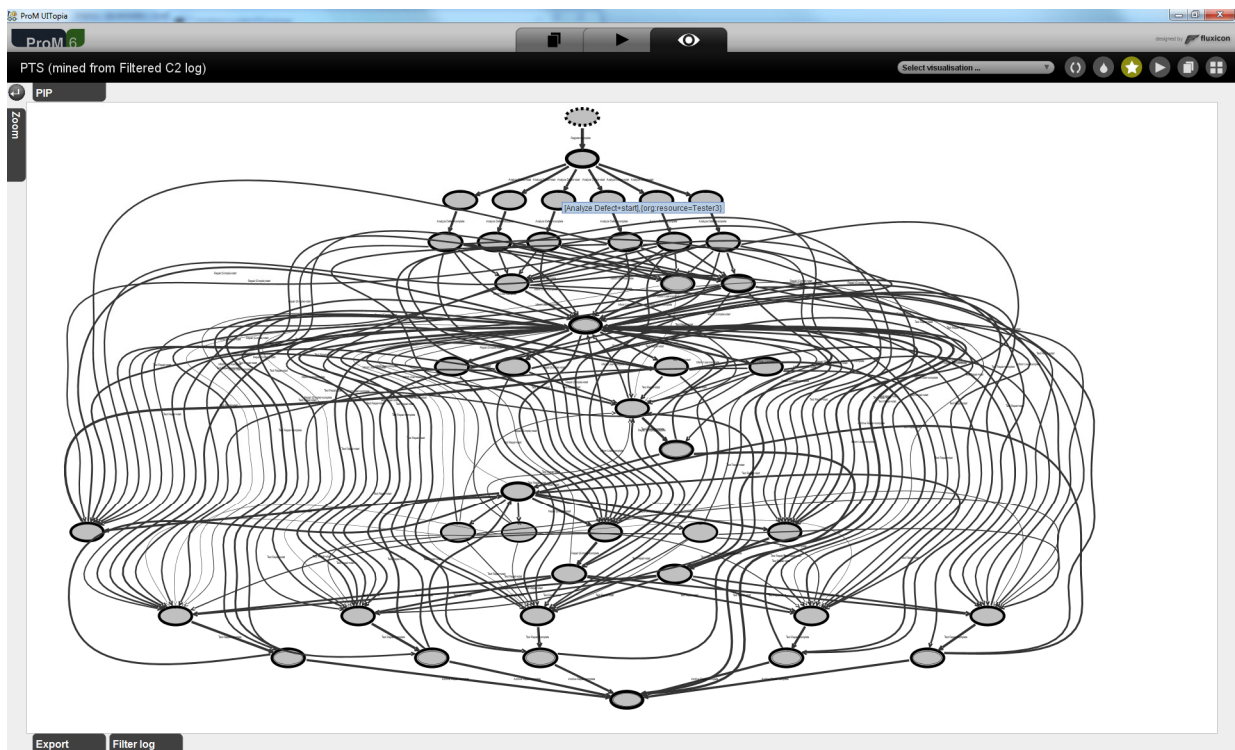
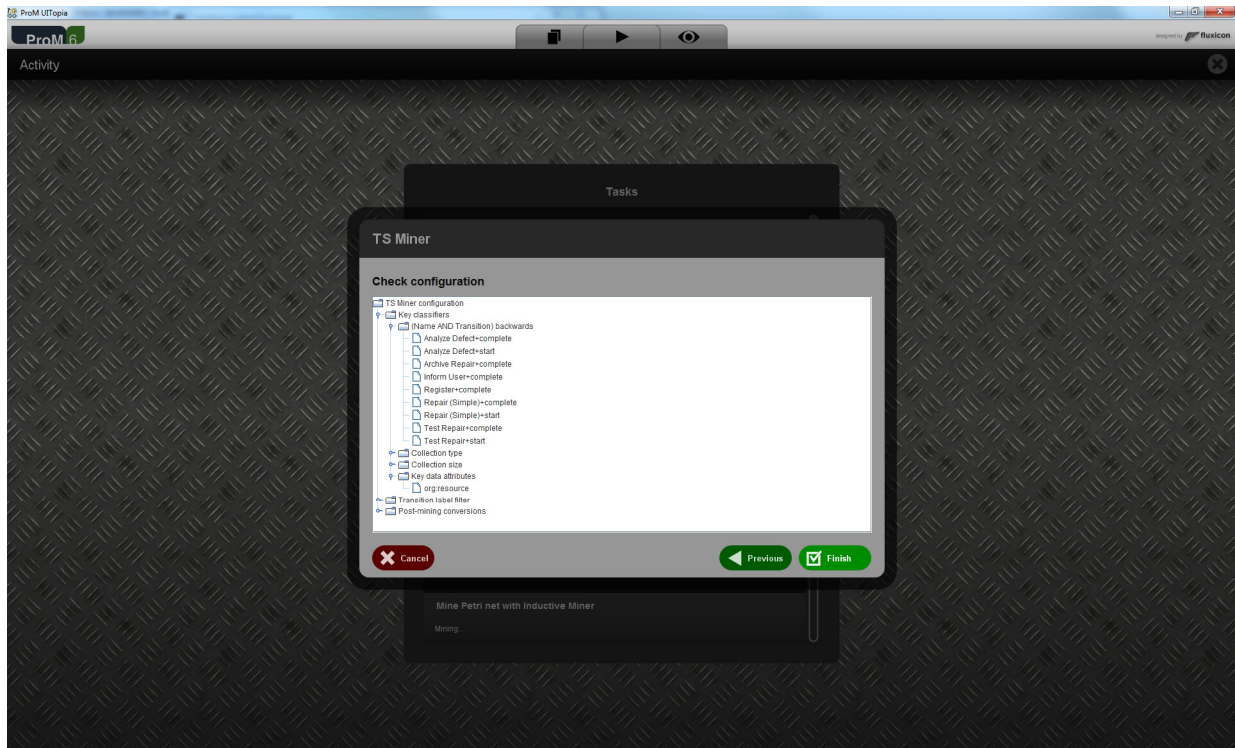
IMPORT



IMPORT



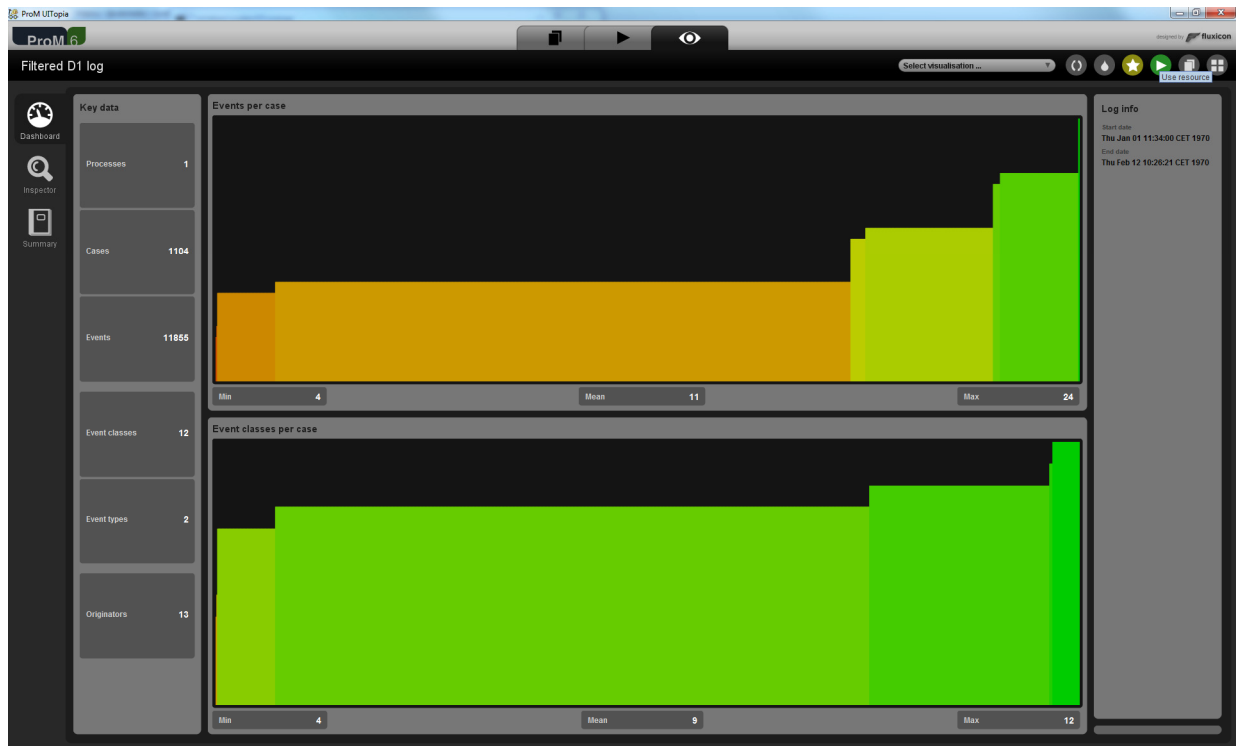
IMPORT



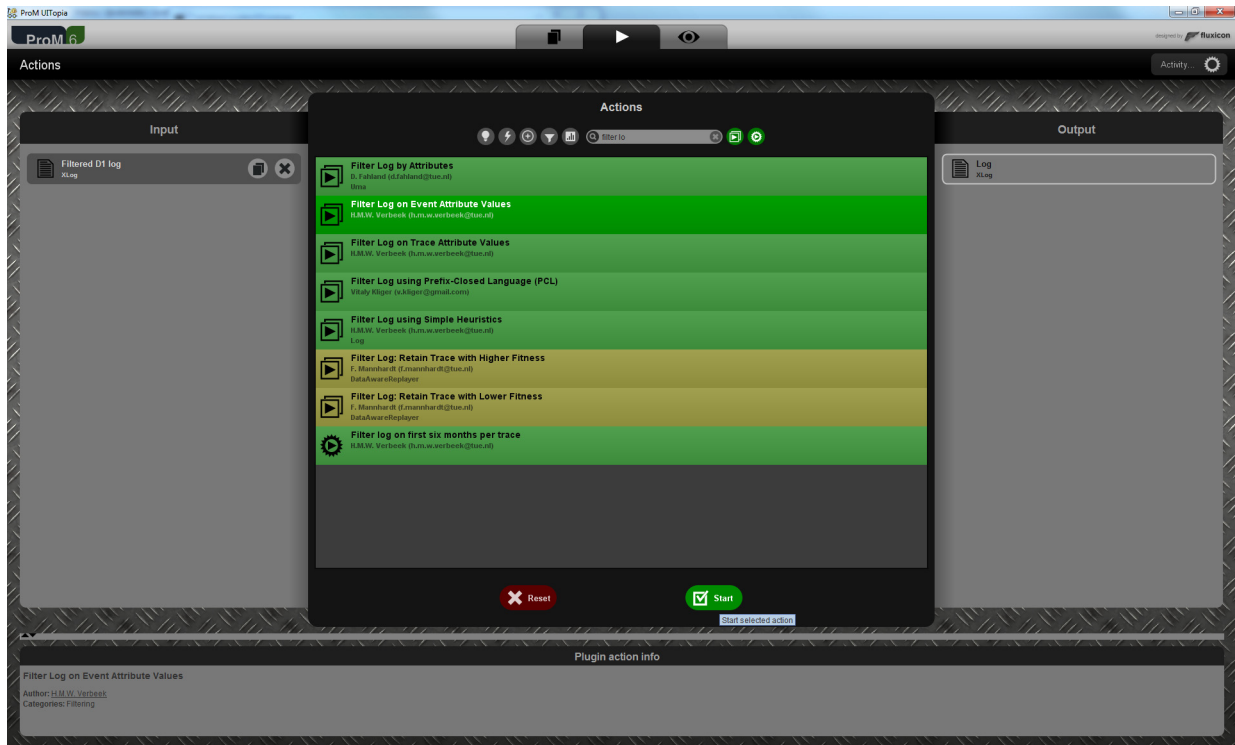
IMPORT

This shows that the classifier and the org:resource attributes contained in the log were used.

Level D1

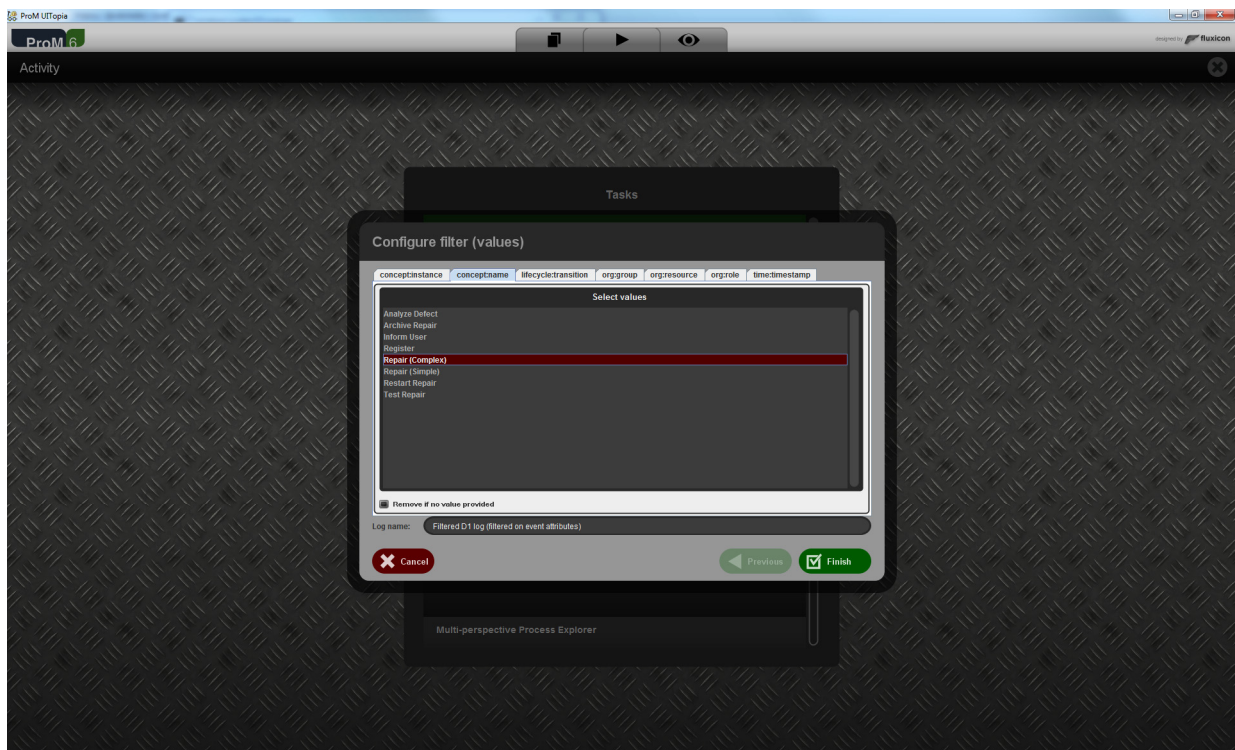
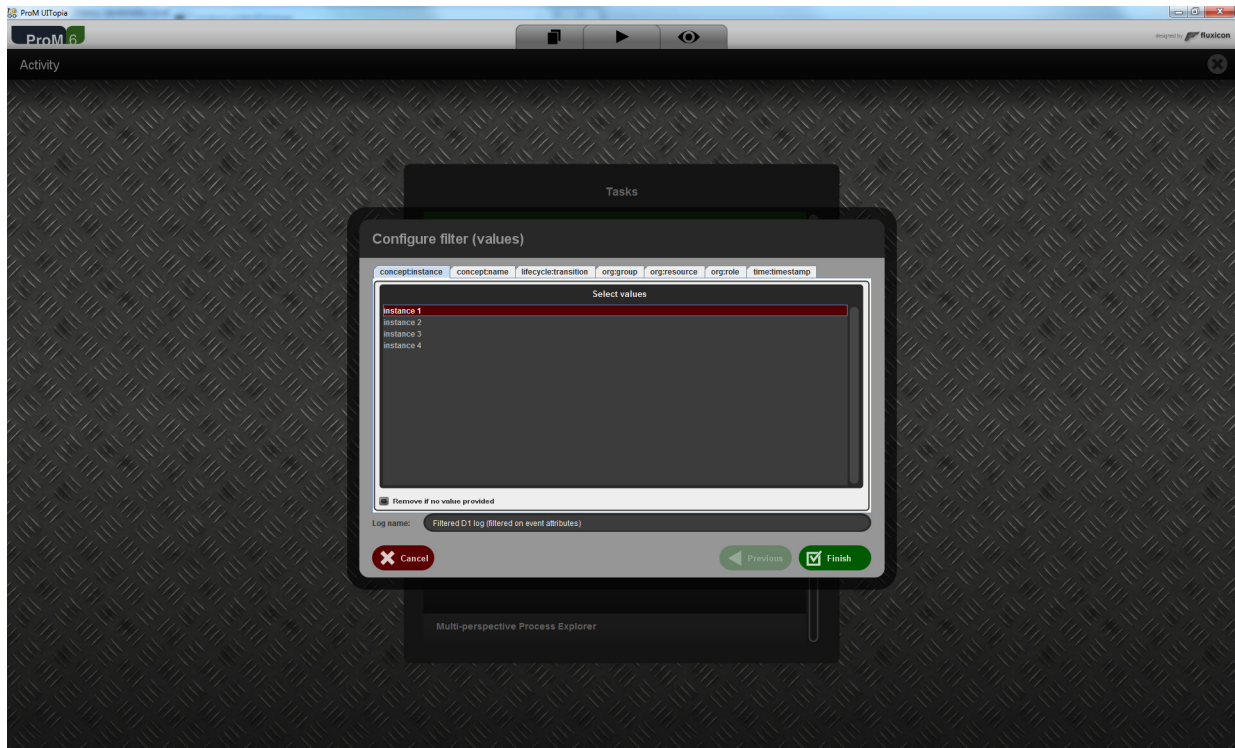


IMPORT

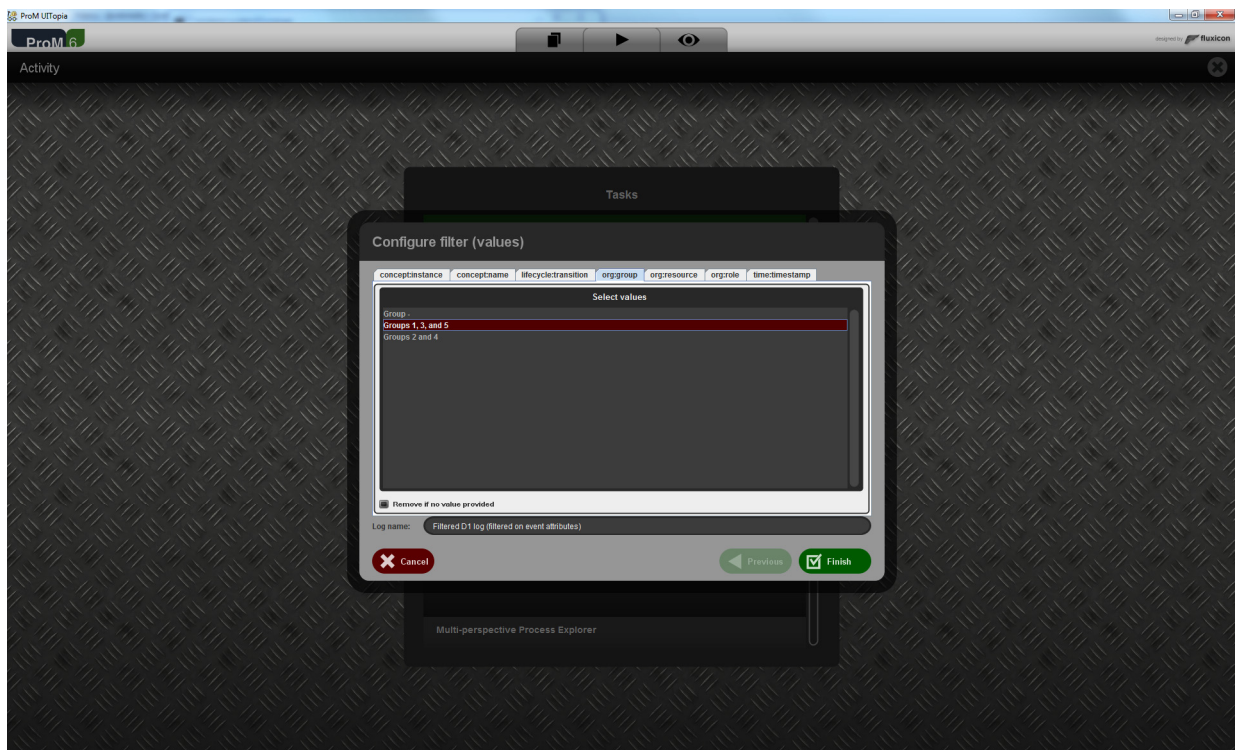
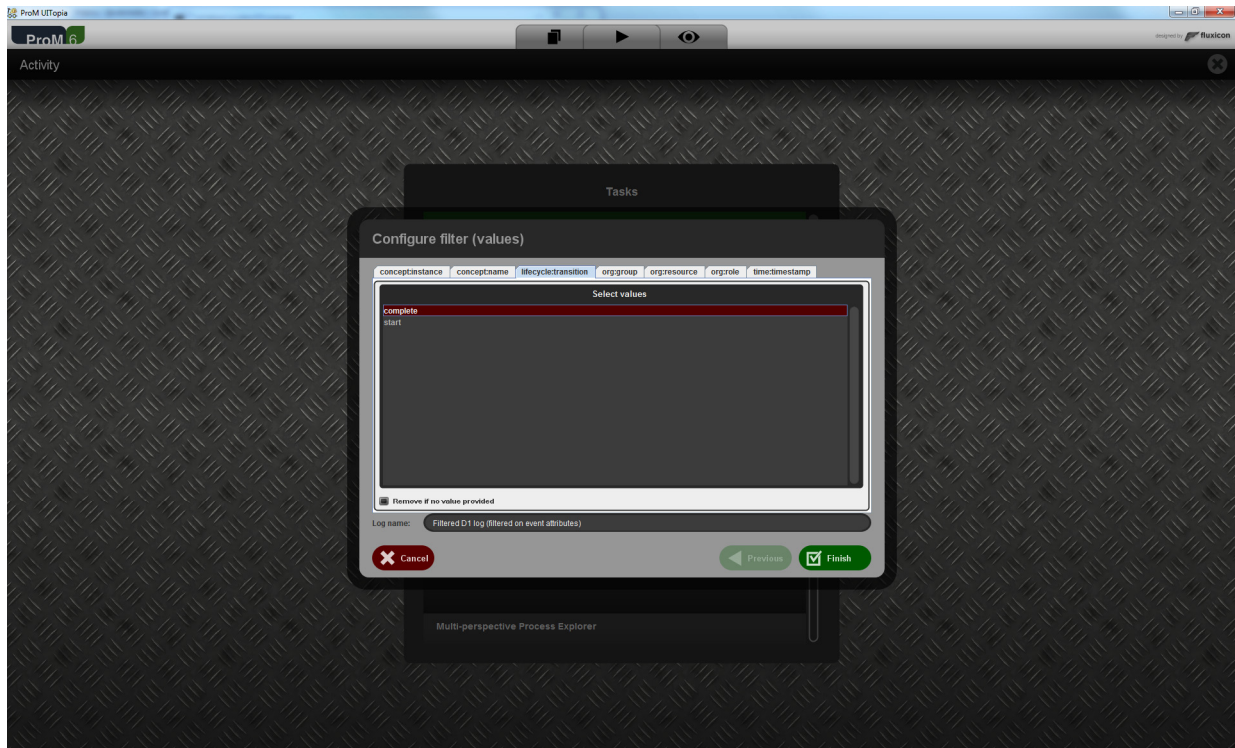


This plug-in shows all possible values found in the log for an attribute key, and allows the user to filter the log on these values. In this report, we will use this plug-in to show that the proper values have been read by filtering in only a single event from the trace with name 1.

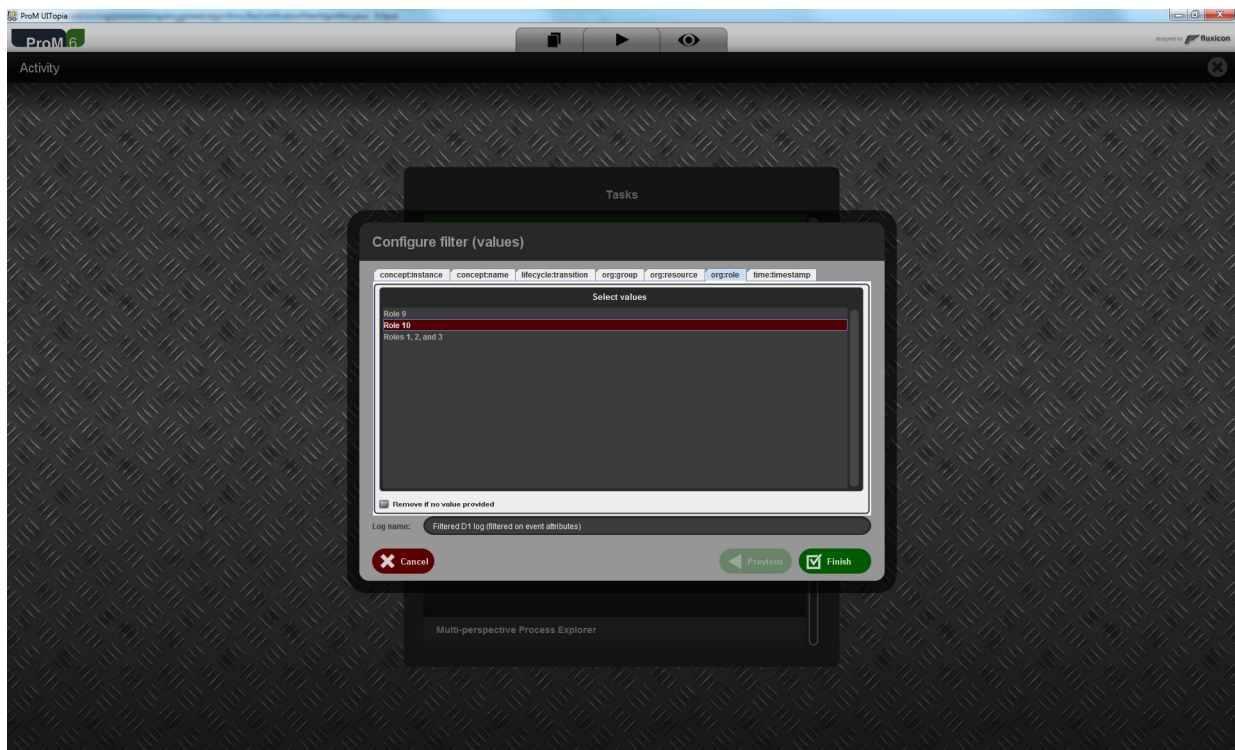
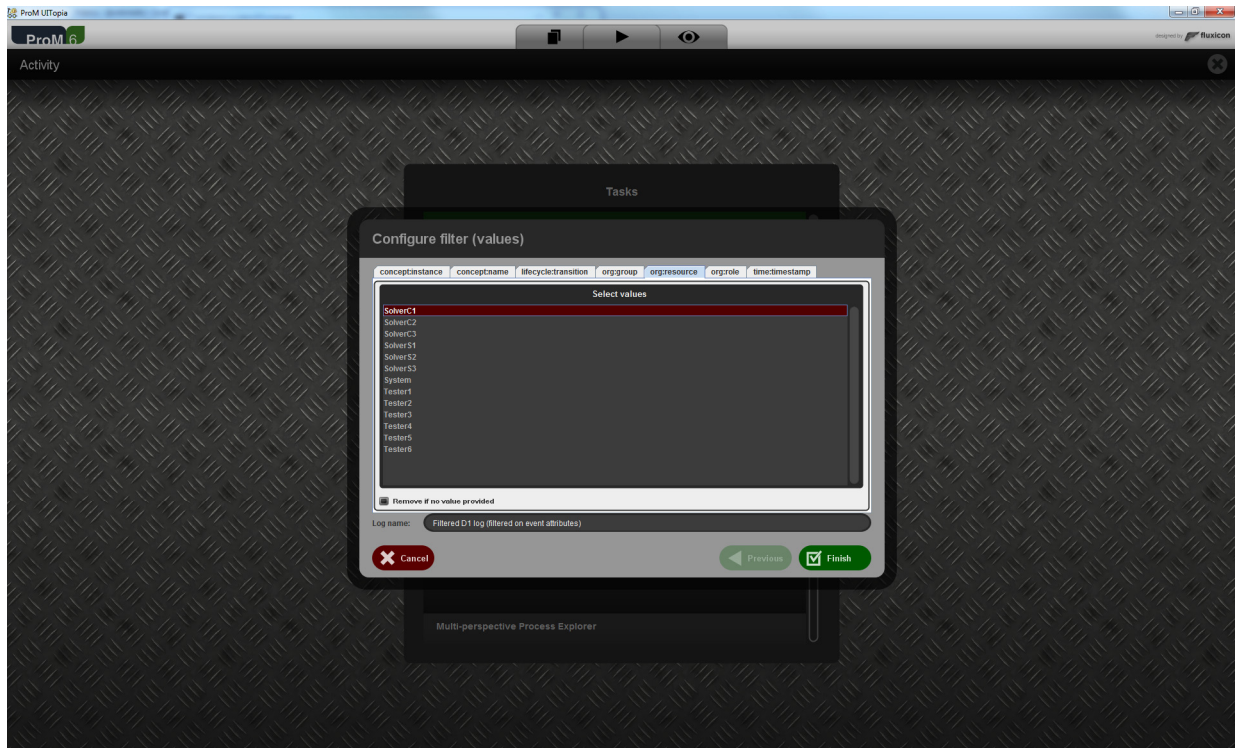
IMPORT



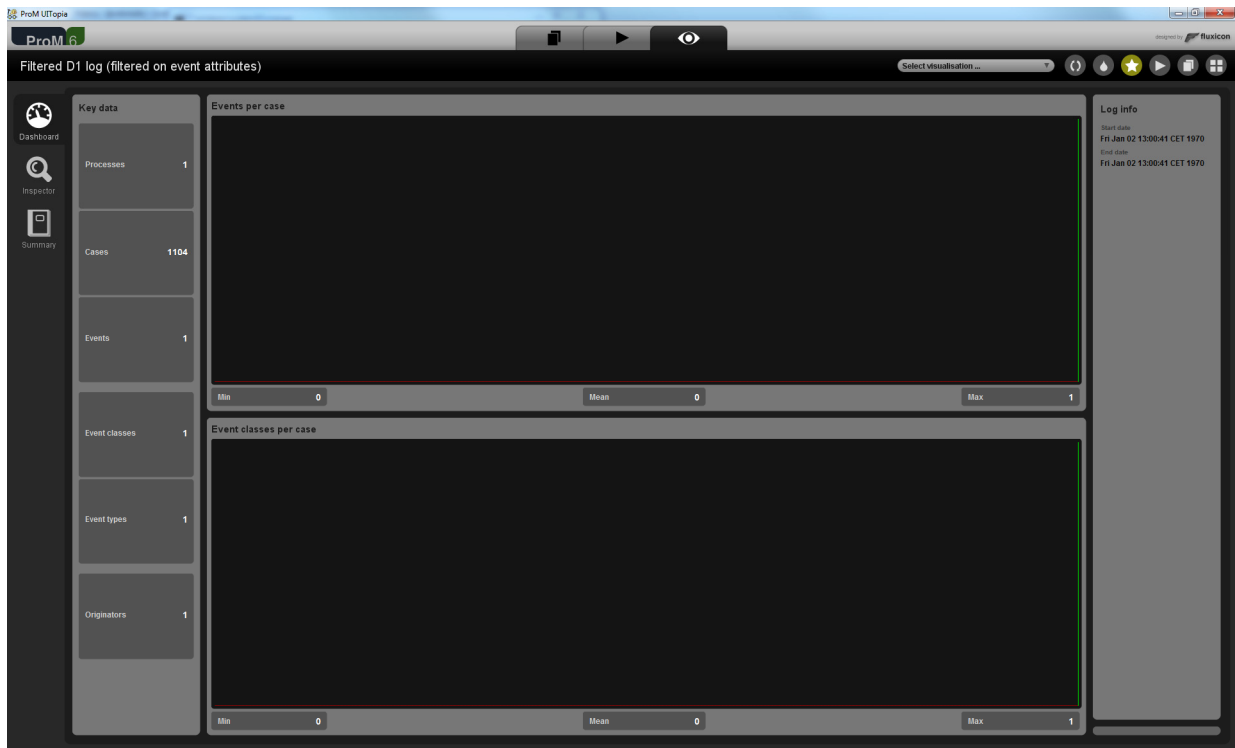
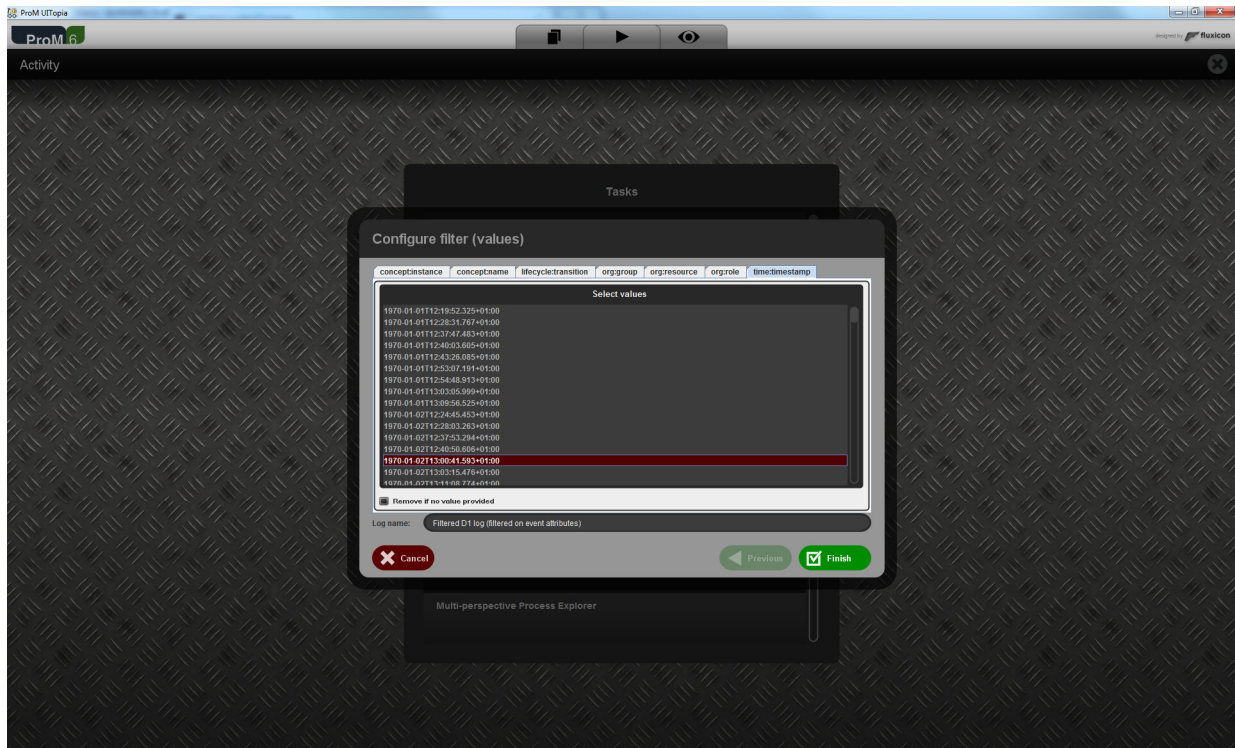
IMPORT



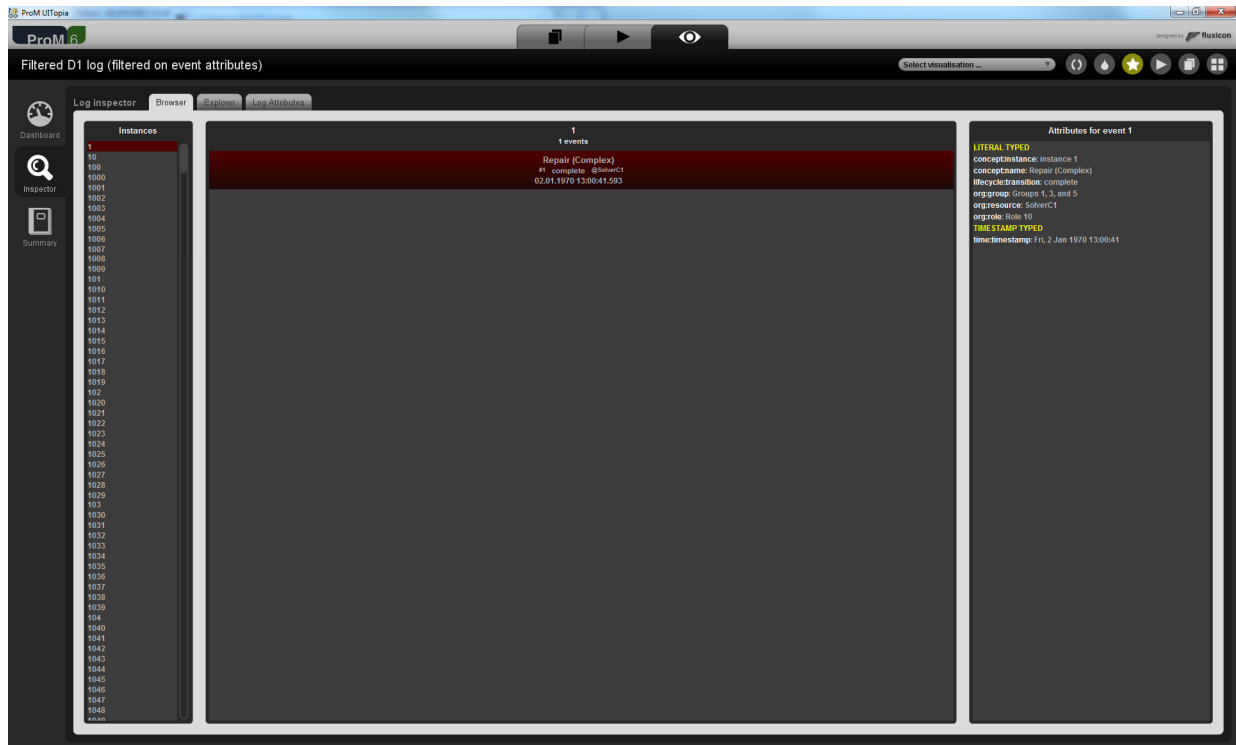
IMPORT



IMPORT



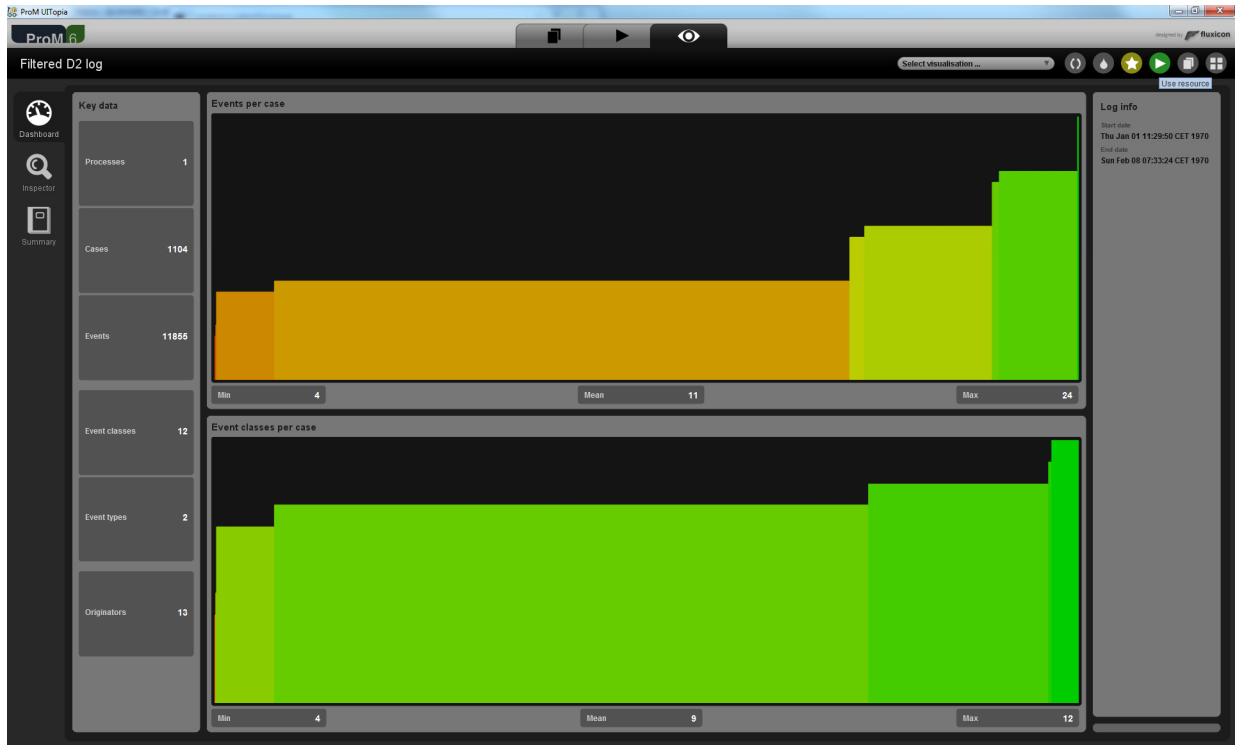
IMPORT



This shows that all (standard) attributes contained in the log were used.

IMPORT

Level D2



IMPORT

The screenshot shows the ProM 6 Actions window. On the left is the 'Input' panel with a file named 'Filtered D2 log'. The central 'Actions' panel lists several plugins, each with a play button icon and the author's name. The 'Discover Graph' plugin is highlighted in green. At the bottom of the Actions panel are 'Reset' and 'Start' buttons. The 'Output' panel on the right shows a 'Causal Activity Graph'.

Actions

- ▶ Add Classifier based on Mapping of Activity Names
Eduardo González López de Murillo (e.gonzalez@tue.nl)
- ▶ Add Classifier based on Mapping of Activity Names (in place)
Eduardo González López de Murillo (e.gonzalez@tue.nl)
- ▶ Add/Change conceptname of event from classifier
Eduardo González López de Murillo (e.gonzalez@tue.nl)
- ▶ Alpha Miner
S.C. van Dongen, B.F. van Dongen, L.M.A. Tolboom (s.j.v.dongen@tue.nl)
- ▶ Classify with DrFurby Classifier
H.M.W. Verbeek (h.m.w.verbeek@tue.nl)
- ▶ Convert to Data Annotated Log
Bai Lu (b.lu@tue.nl)
PartialOrderReplayer
- ▶ Create new events based on timestamp attributes
F. Maenhout (f.maenhout@tue.nl)
- ▶ Discover Graph
H.M.W. Verbeek (h.m.w.verbeek@tue.nl)
- ▶ Mine Causal Graph (Heuristic Miner, Event Classifier Aware)
F. Maenhout, S.C. van Dongen (f.maenhout@tue.nl)
- ▶ Repair Log: Globals, Classifiers, Extensions
F. Maenhout (f.maenhout@tue.nl)
- ▶ Repair Log: Globals, Classifiers, Extensions (in Place)
F. Maenhout (f.maenhout@tue.nl)

Input

Filtered D2 log

Output

Causal Activity Graph
Causal activity graph

Plugin action info

Discover Graph
Author: H.M.W. Verbeek
Categories: Analytics

Discovers a causal activity graph from a log, provided a classifier, a miner, a zero value, a concurrency ratio, and an include threshold. First, a matrix is discovered from the log using the parameters. Second, a causal activity graph is created by from that matrix using the parameters.

The screenshot shows the ProM 6 Activity window. A 'Tasks' panel is visible at the top. The main area is dominated by a 'Configure discoverer' dialog box. This dialog has two sections: 'Select classifier' with '(Name AND) Transition' selected, and 'Select miner' with 'Fuzzy' selected. Below these are sliders for 'Zero Value' and 'Concurrency Ratio', and a checkbox for 'Use dot to preview graph'. A flowchart on the right side of the dialog shows a sequence of steps: Repair-complete, Analyze Defect-risen, Analyze Defect-complete, Repair (Simple)-risen, Repair (Complex)-risen, Repair (Simple)-complete, Repair (Complex)-complete, Test Repair-risen, Inform User-complete, Test Repair-complete, and Active Repair-complete. At the bottom of the dialog are 'Cancel', 'Previous', and 'Finish' buttons.

Activity

Tasks

Configure discoverer

Select classifier
(Name AND) Transition

Select miner
Fuzzy
Heuristics
Max
Mini
Random
Standard

Zero Value: [slider]
Concurrency Ratio: [slider]

Use dot to preview graph

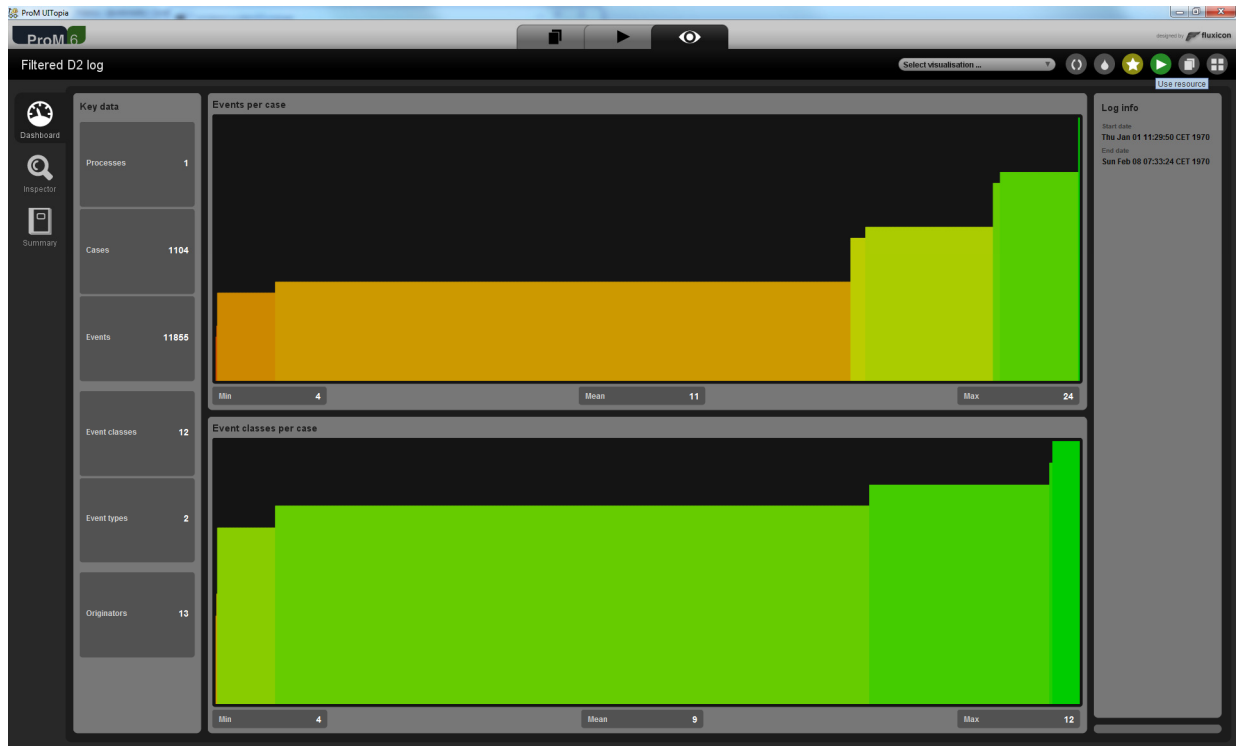
Cancel Previous Finish

Mine Transition System
Considering initial transition system
Converting transition system

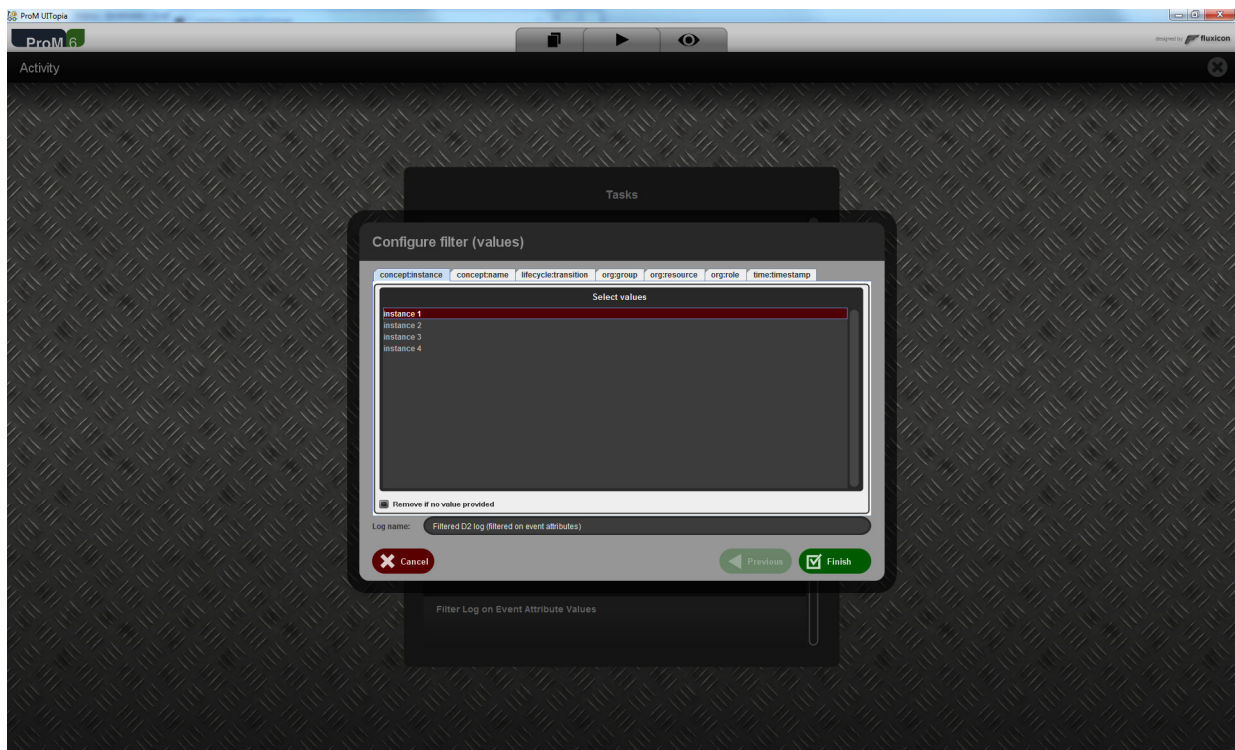
```
graph TD
    A[Repair-complete] --> B[Analyze Defect-risen]
    B --> C[Analyze Defect-complete]
    C --> D[Repair (Simple)-risen]
    C --> E[Repair (Complex)-risen]
    D --> F[Repair (Simple)-complete]
    E --> G[Repair (Complex)-complete]
    F --> H[Test Repair-risen]
    G --> I[Inform User-complete]
    H --> J[Test Repair-complete]
    I --> K[Active Repair-complete]
```

IMPORT

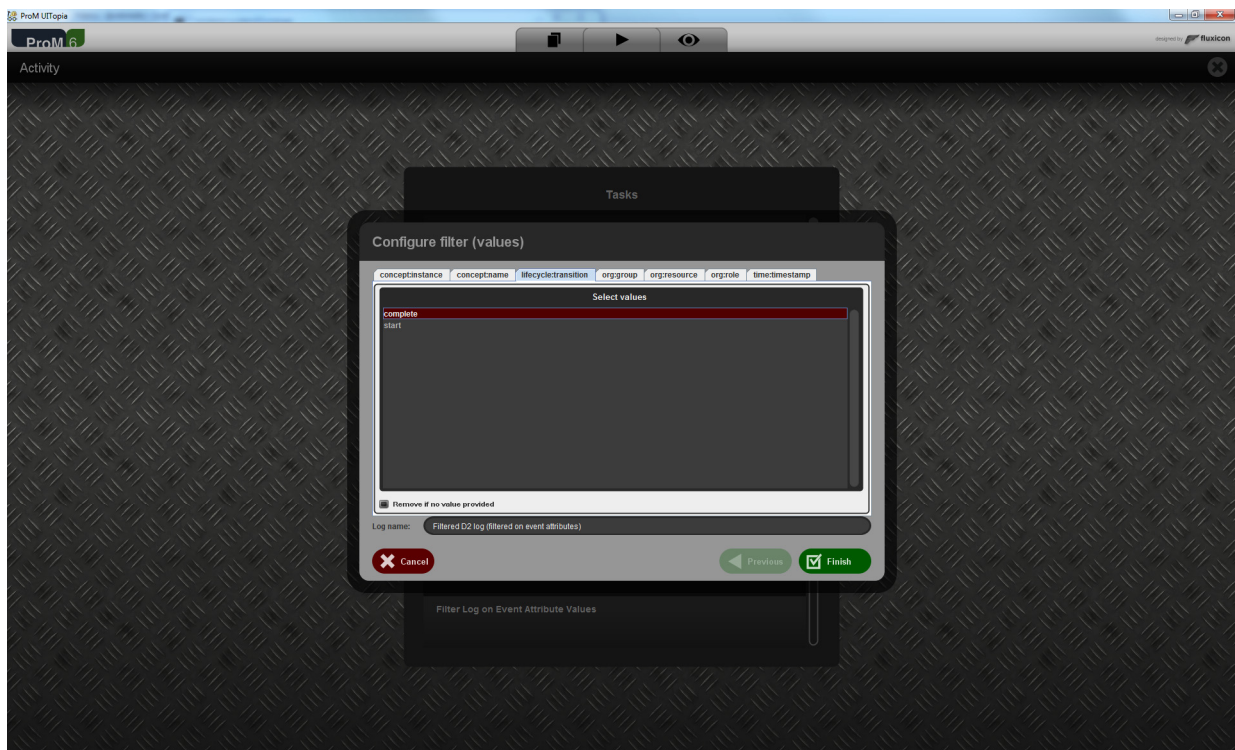
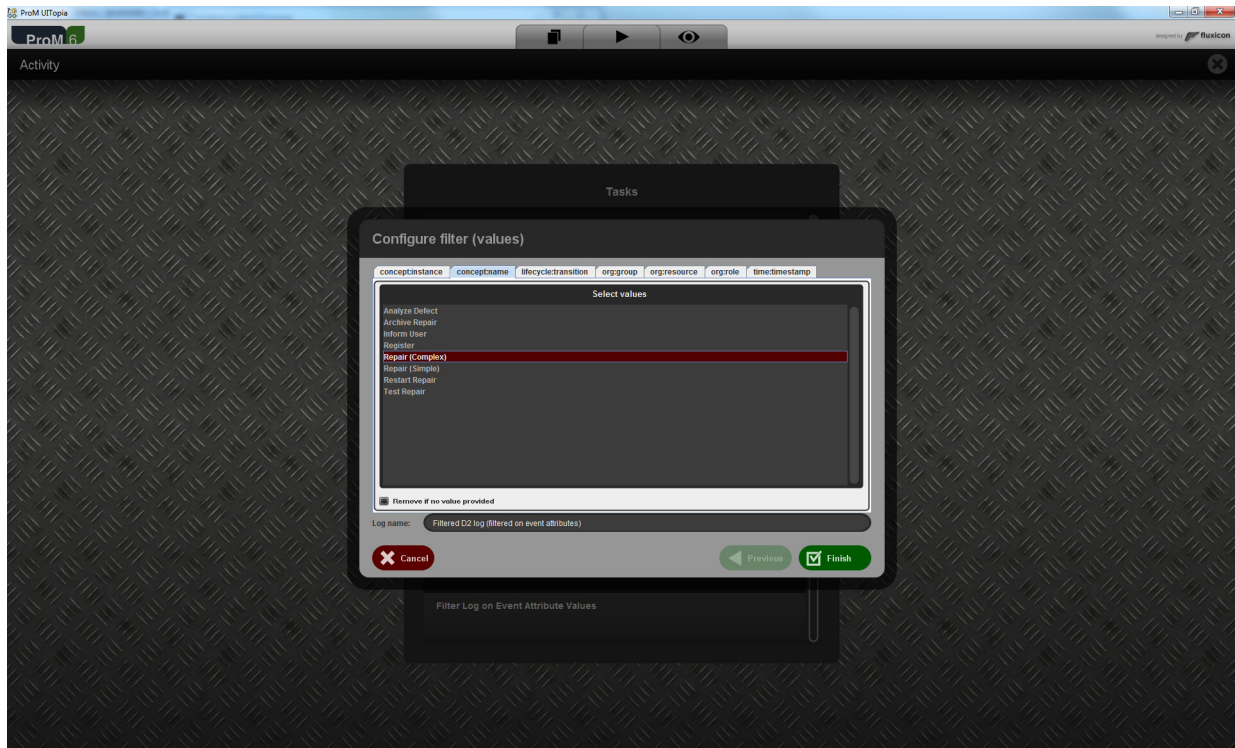
This shows that the classifier and the classified attributes contained in the log were used. To show that all standard attributes were used, we use the same filter as before.



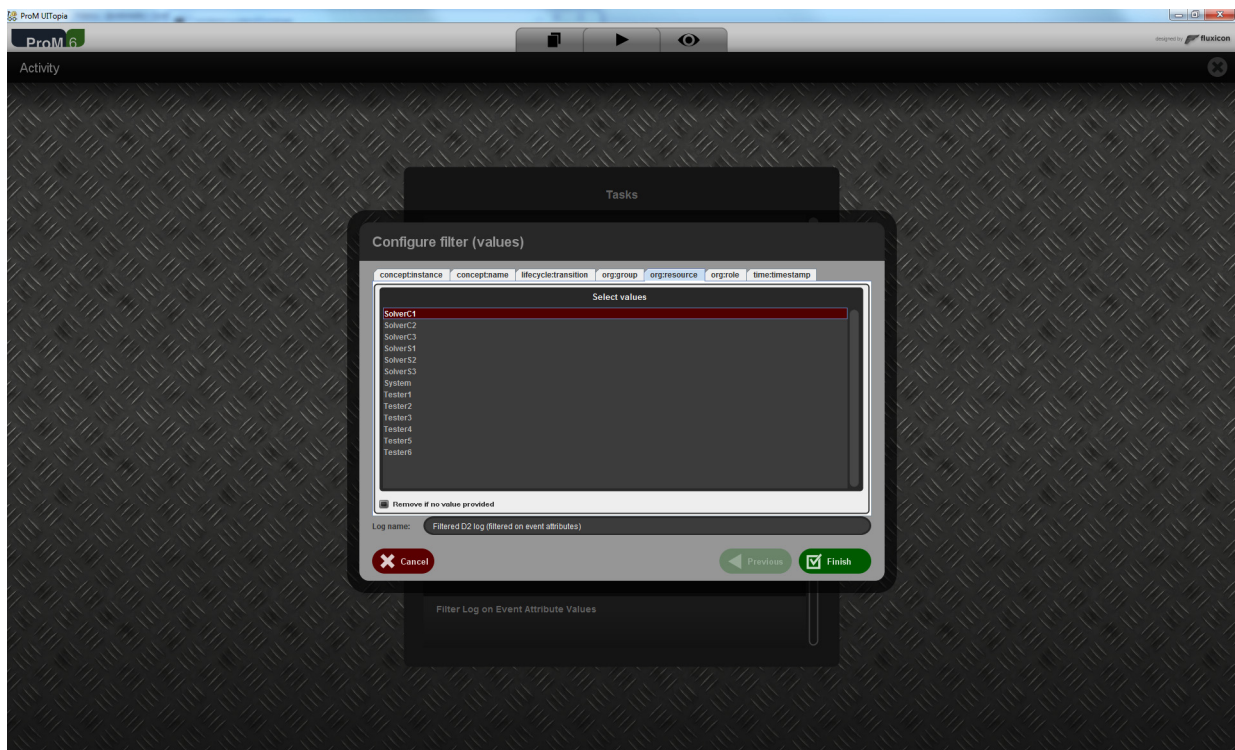
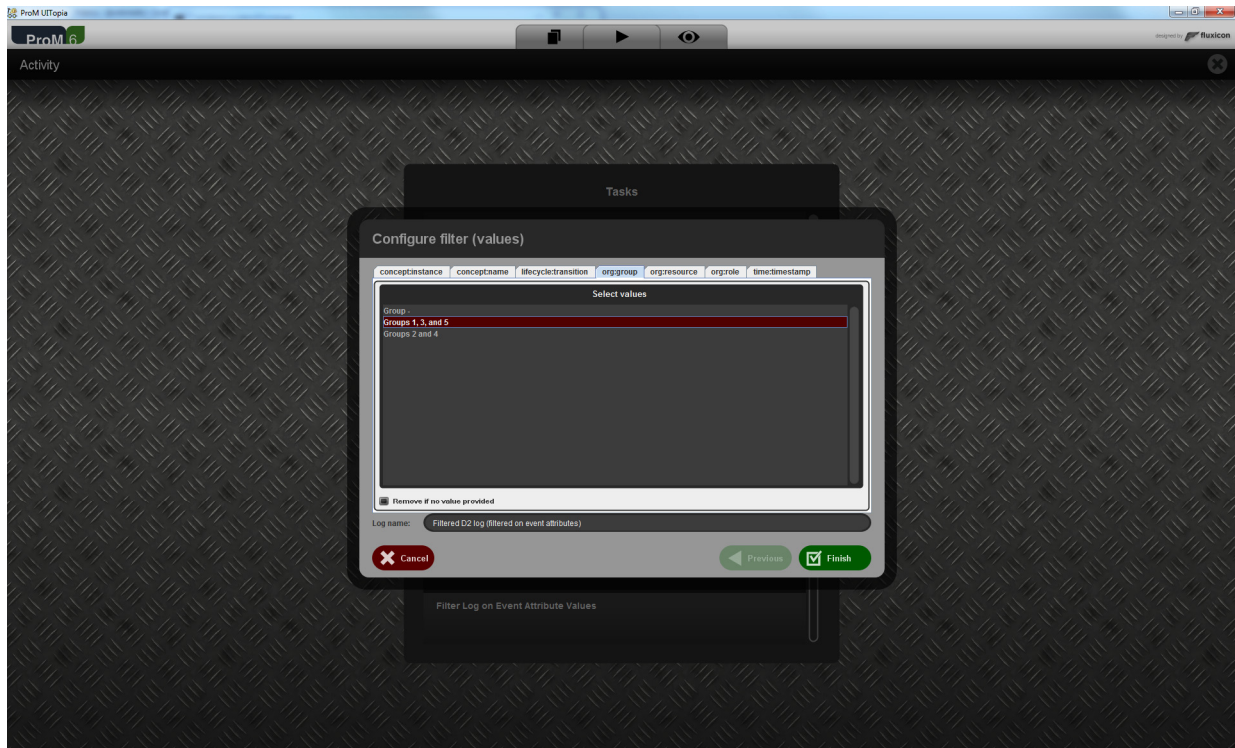
IMPORT



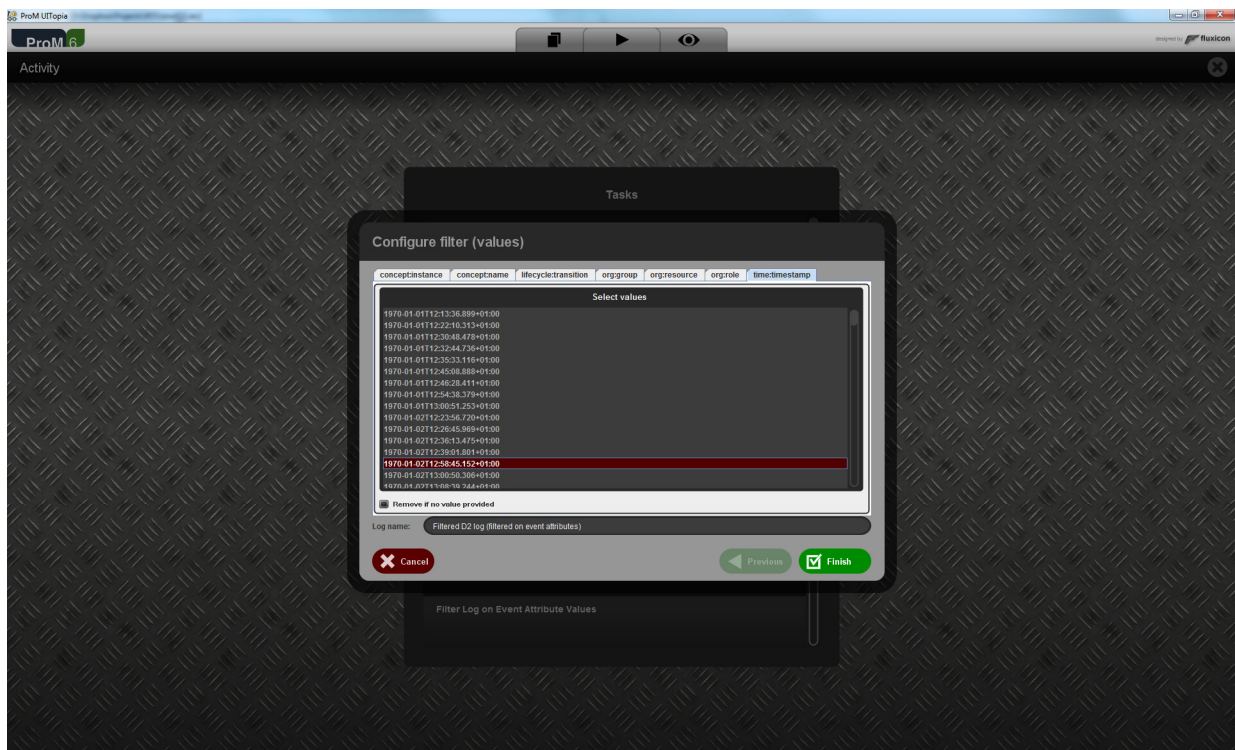
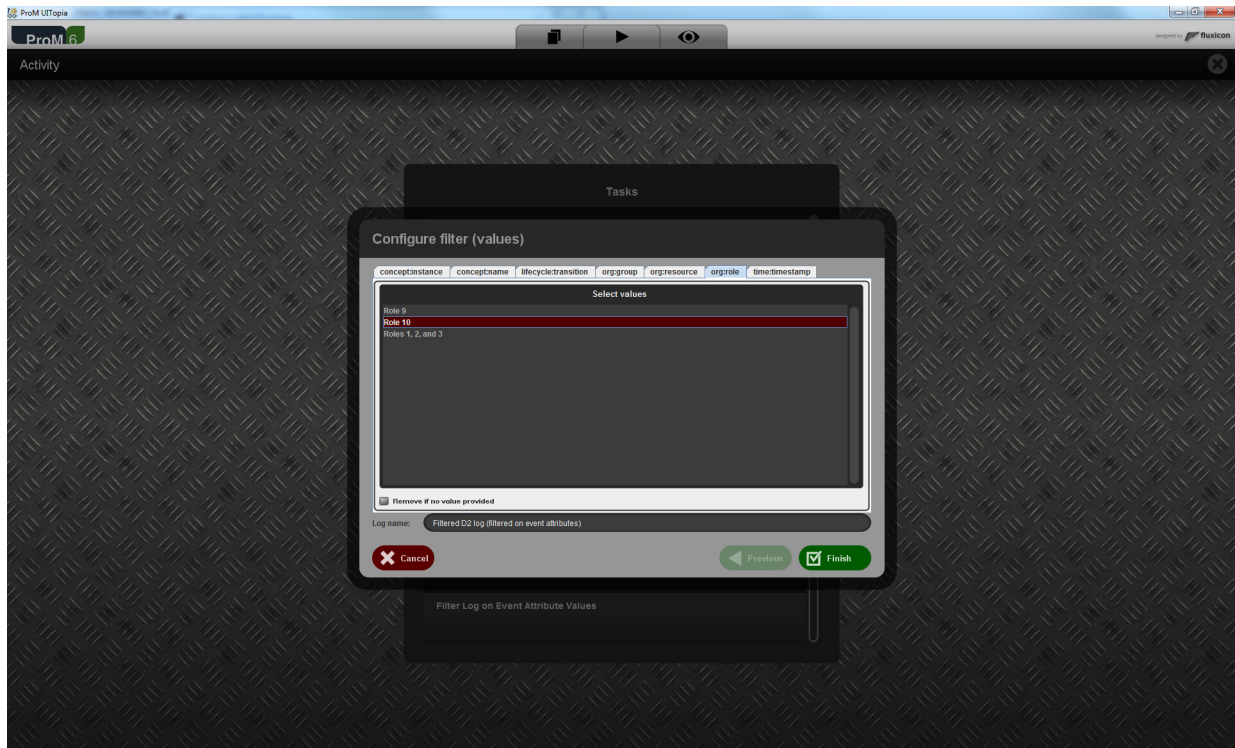
IMPORT



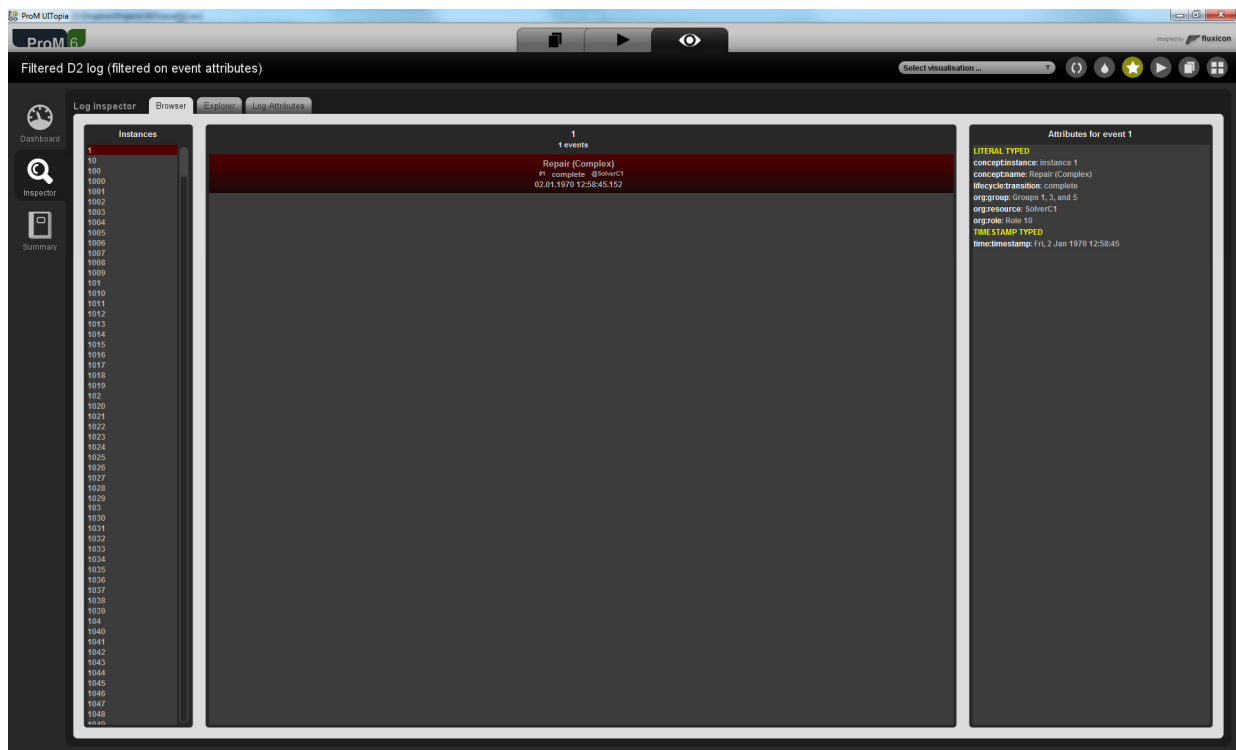
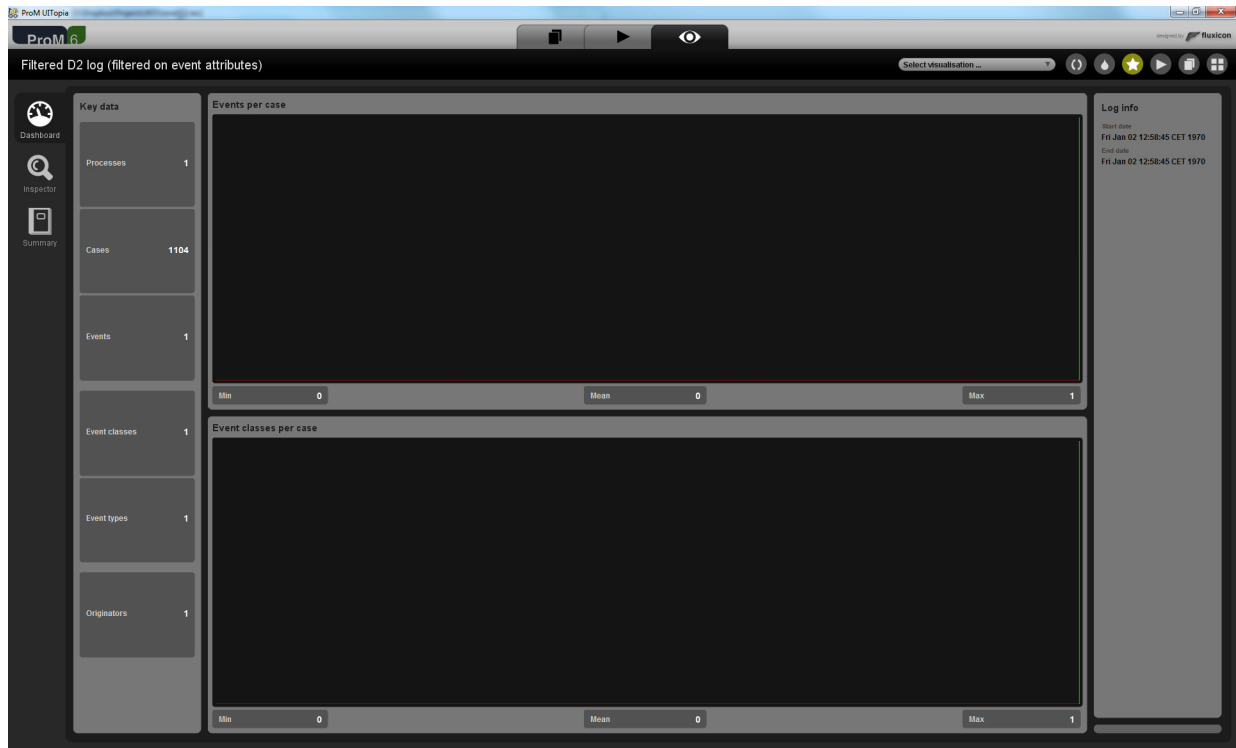
IMPORT



IMPORT



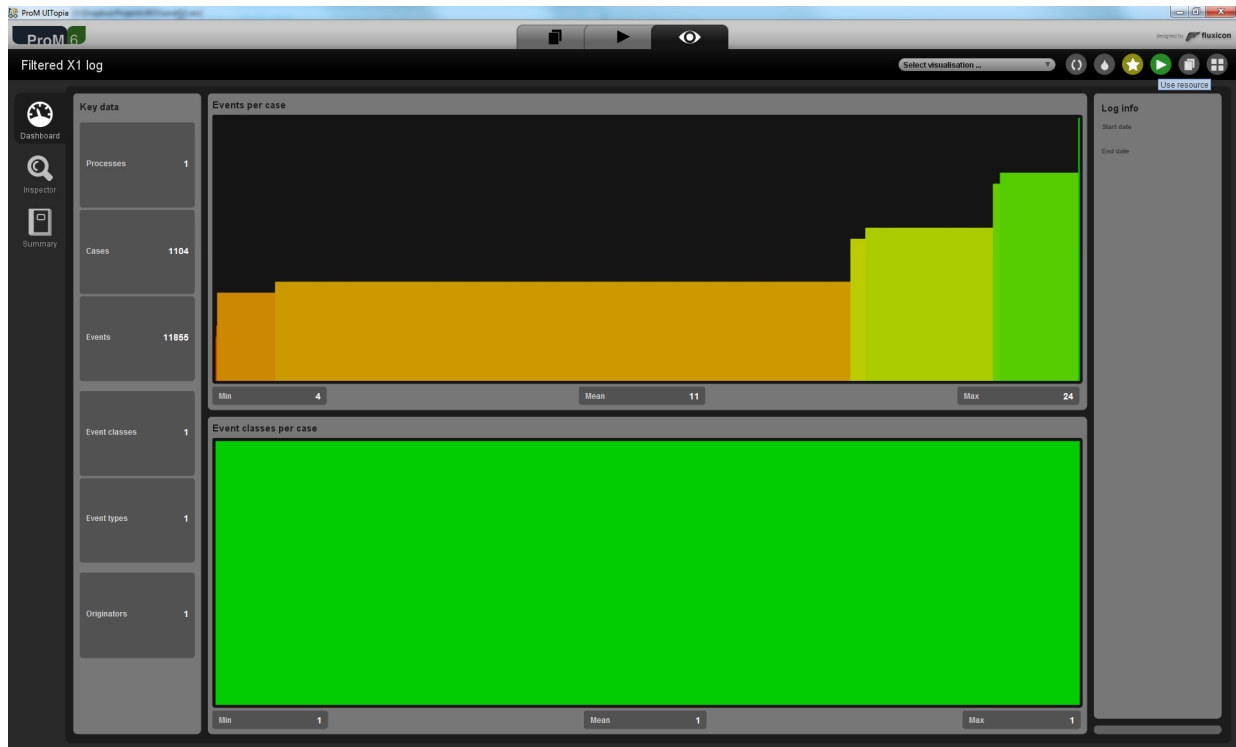
IMPORT



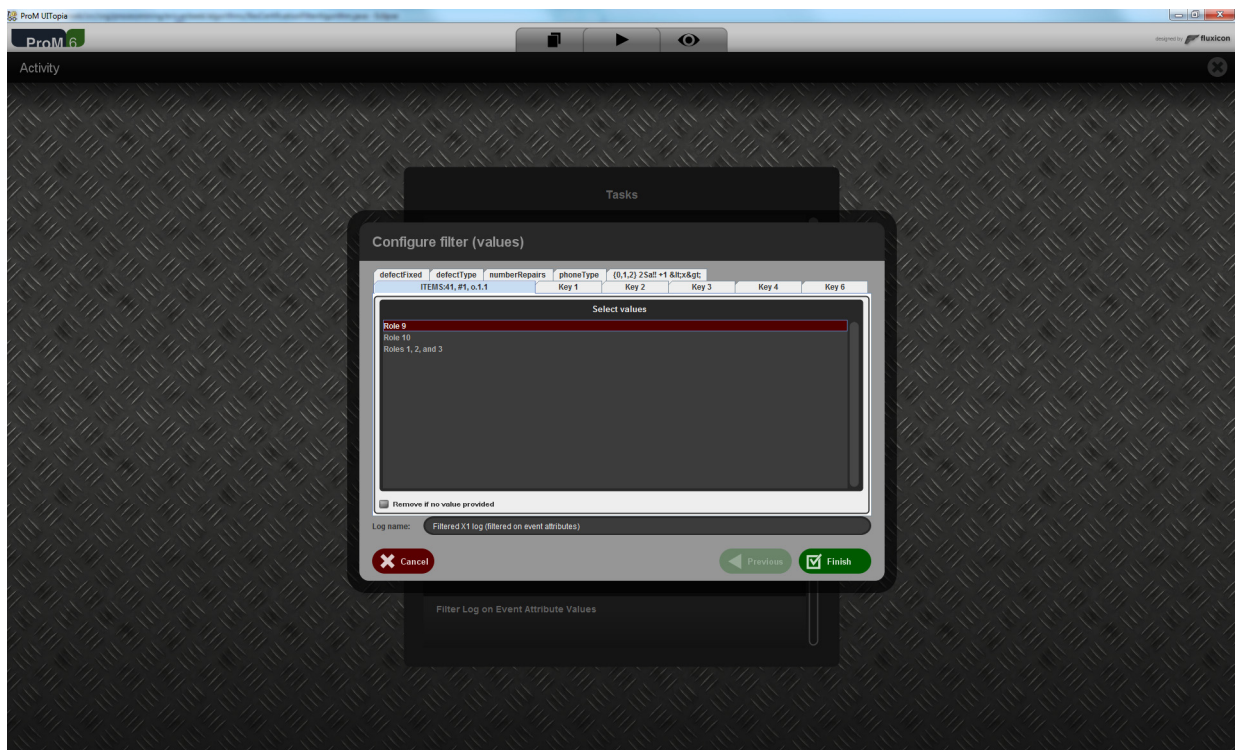
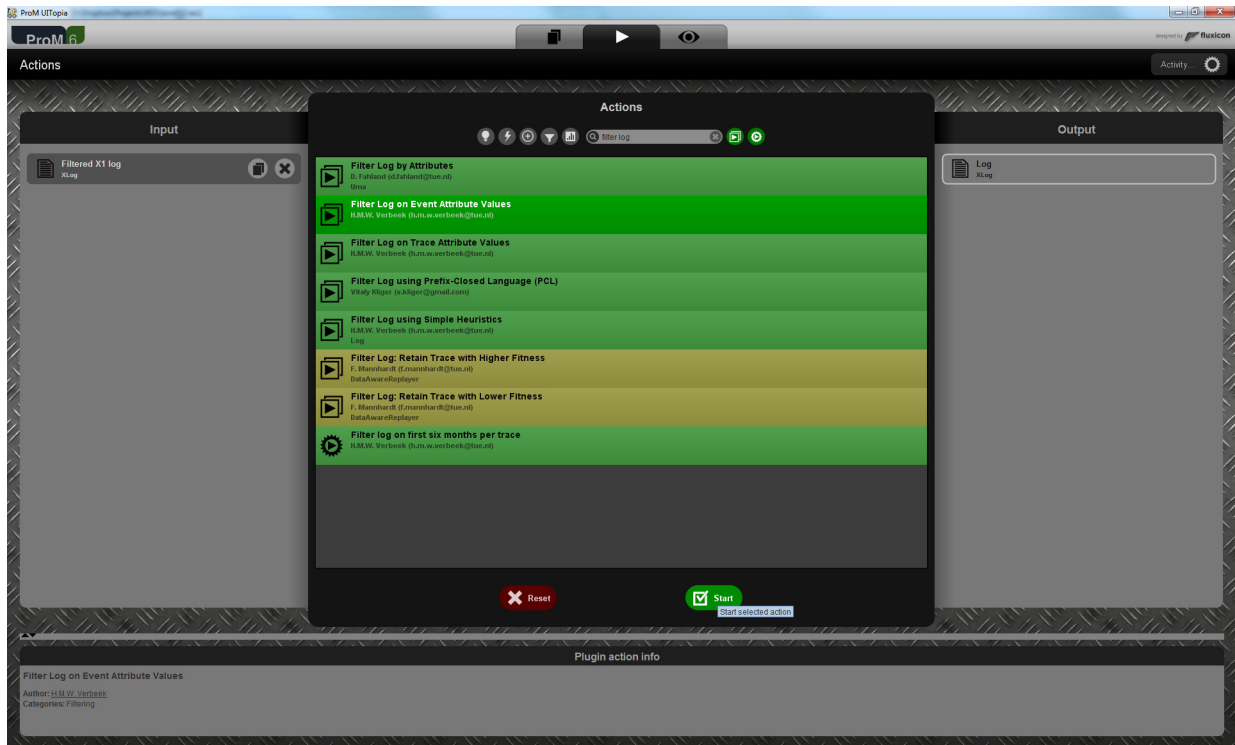
IMPORT

This shows that the classifier and all (standard) attributes contained in the log were used.

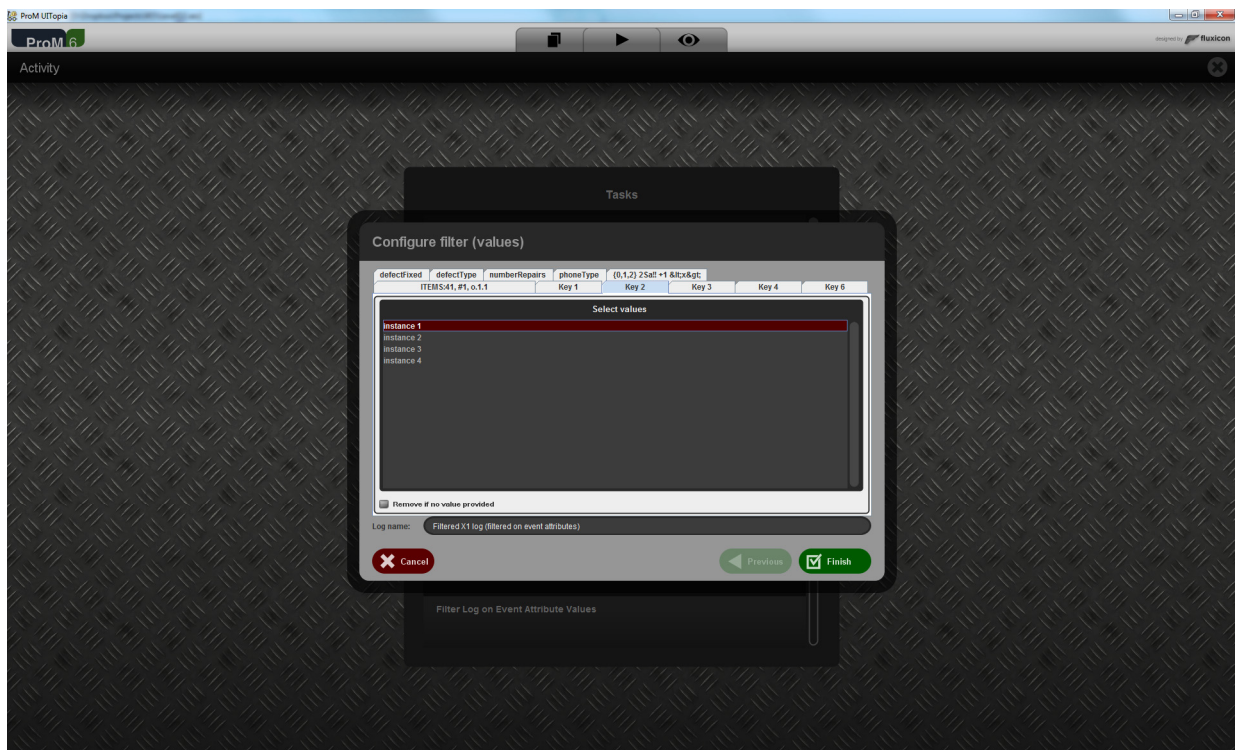
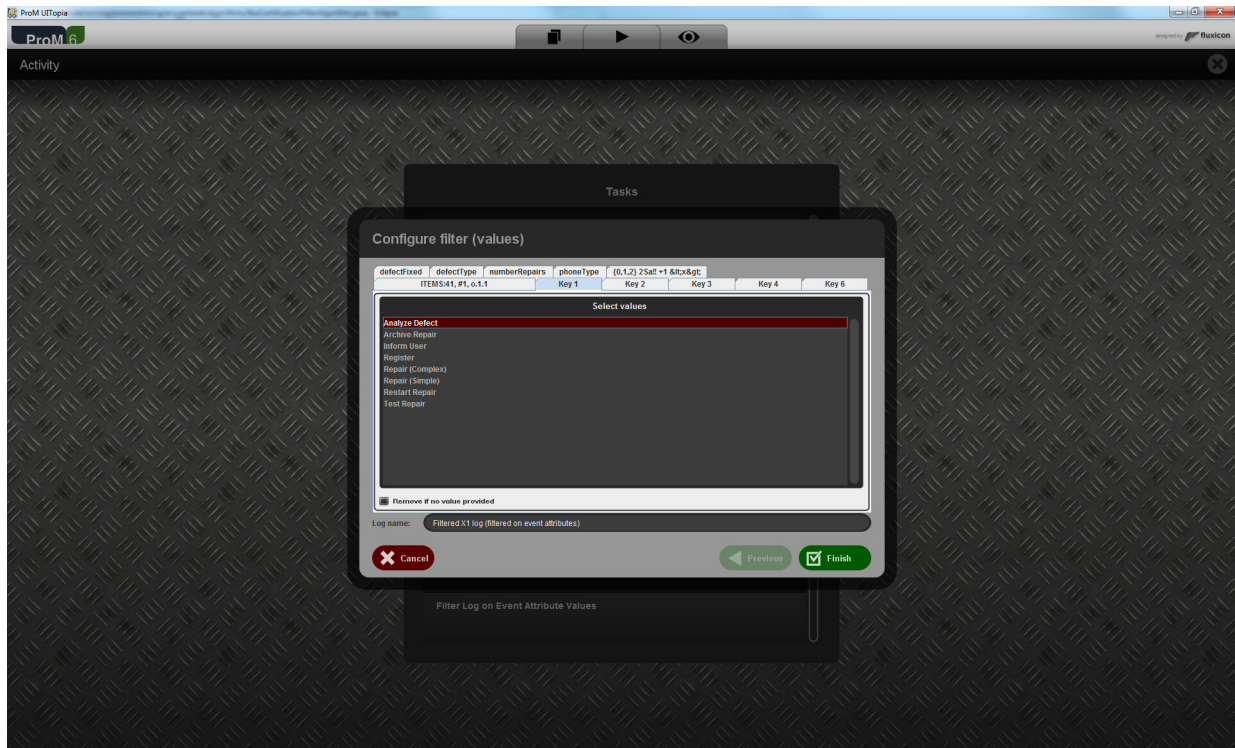
Flag X1



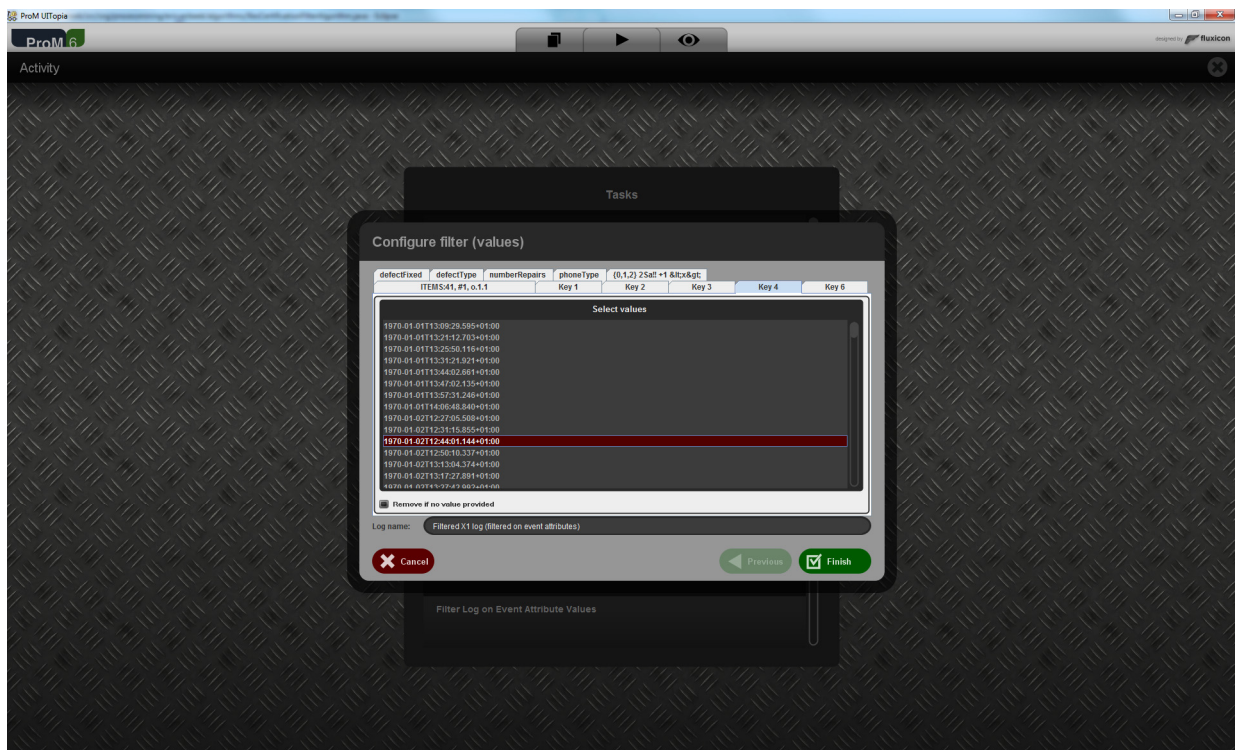
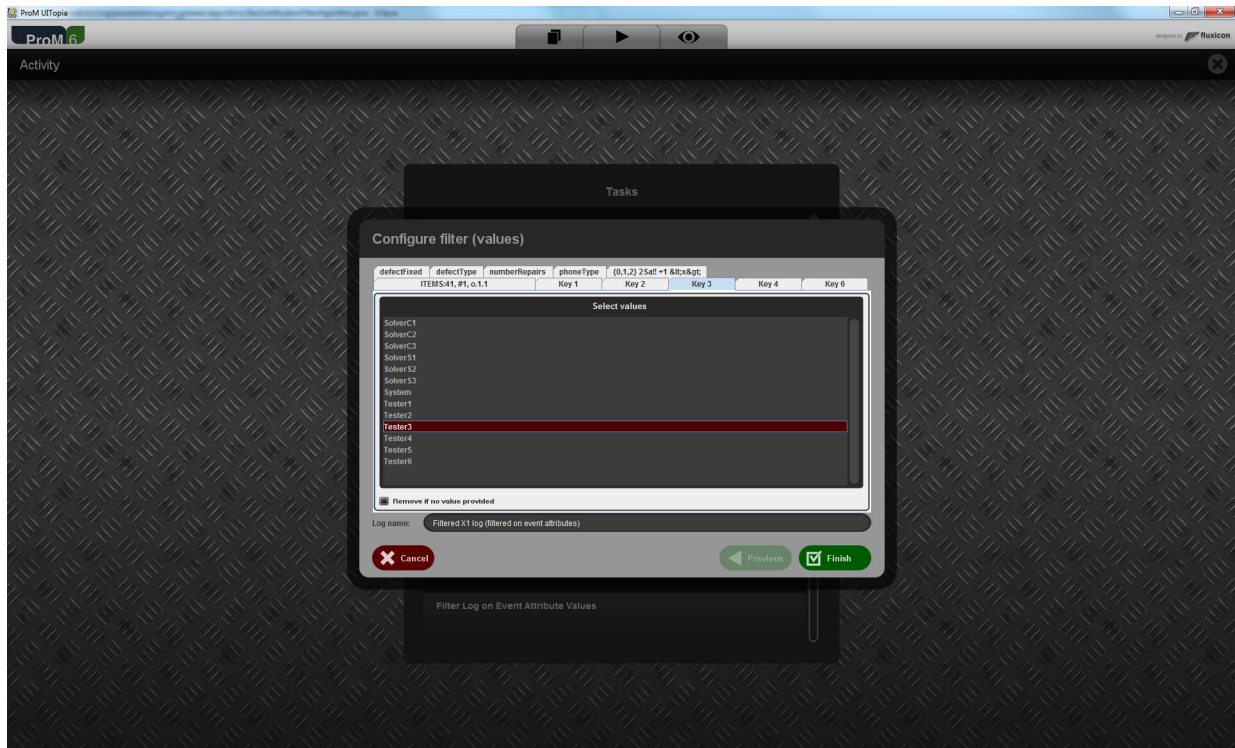
IMPORT



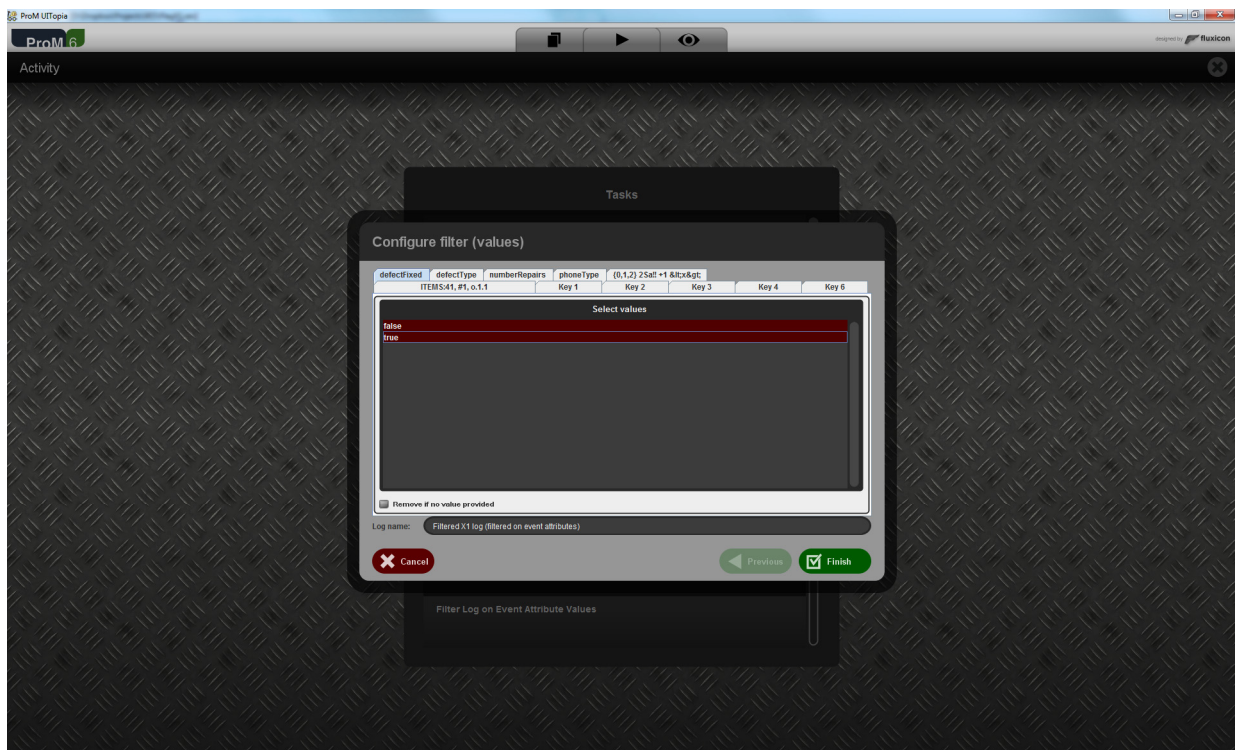
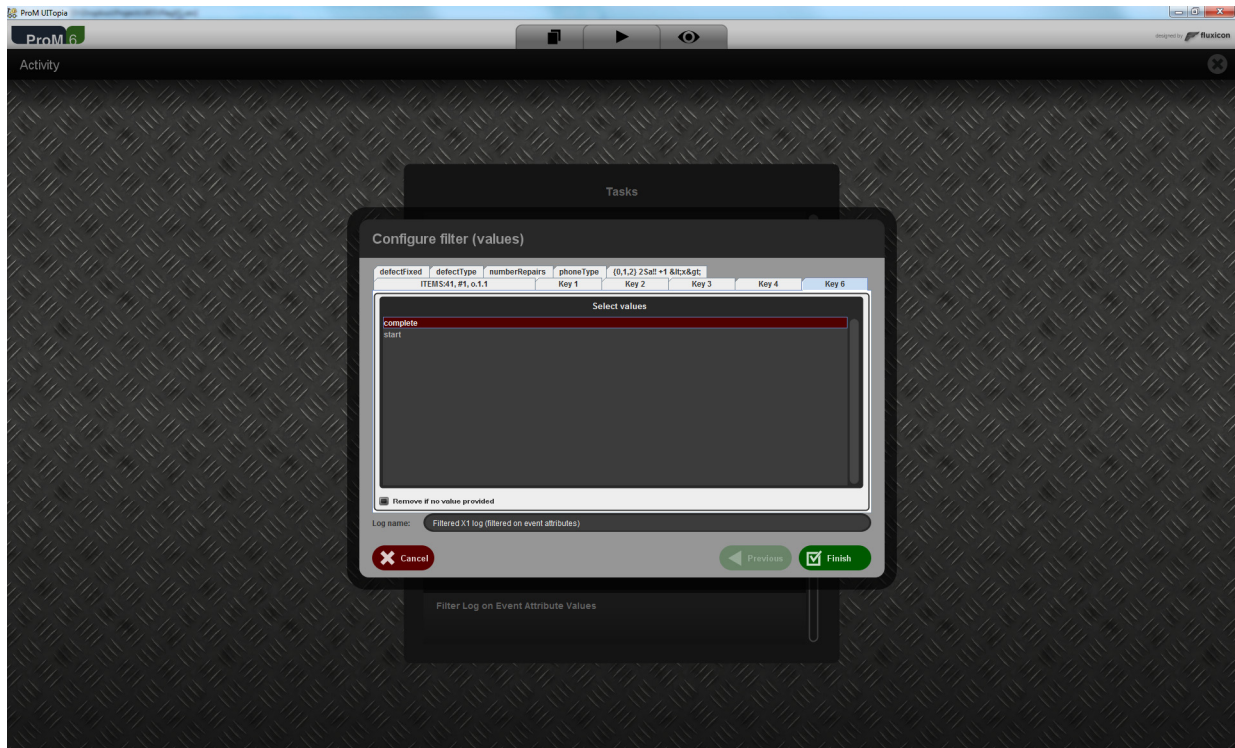
IMPORT



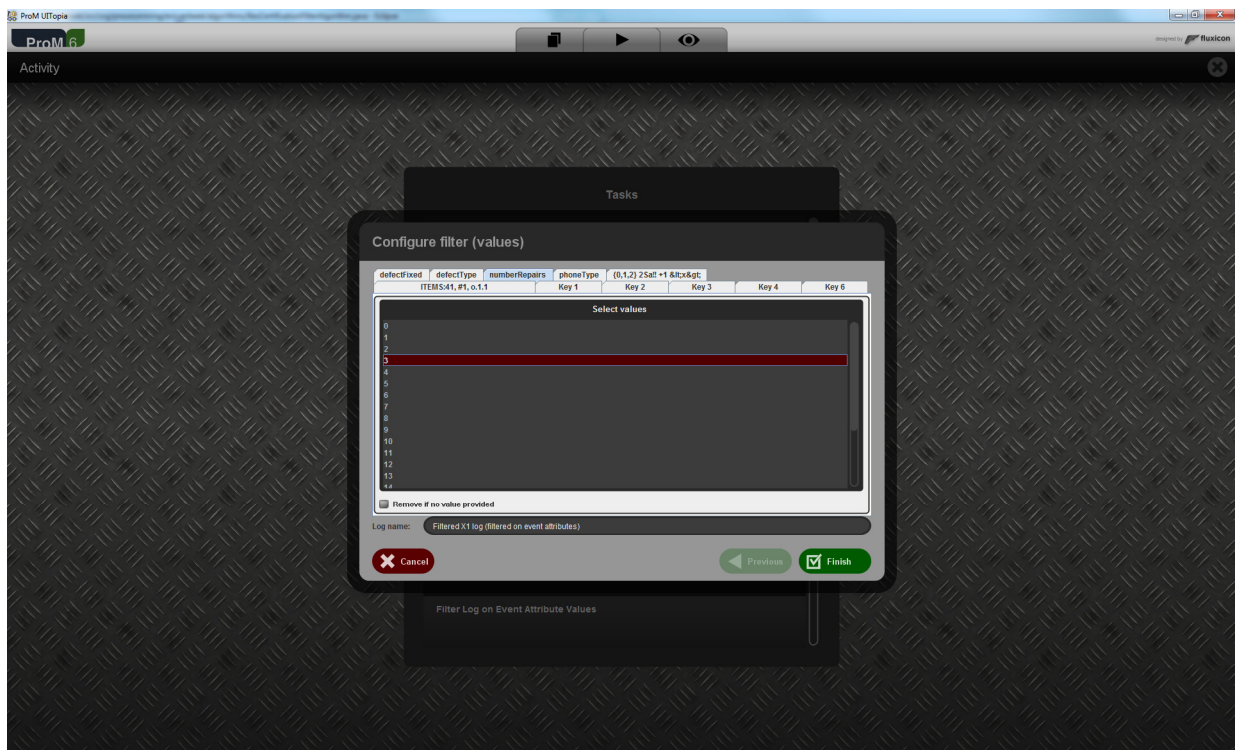
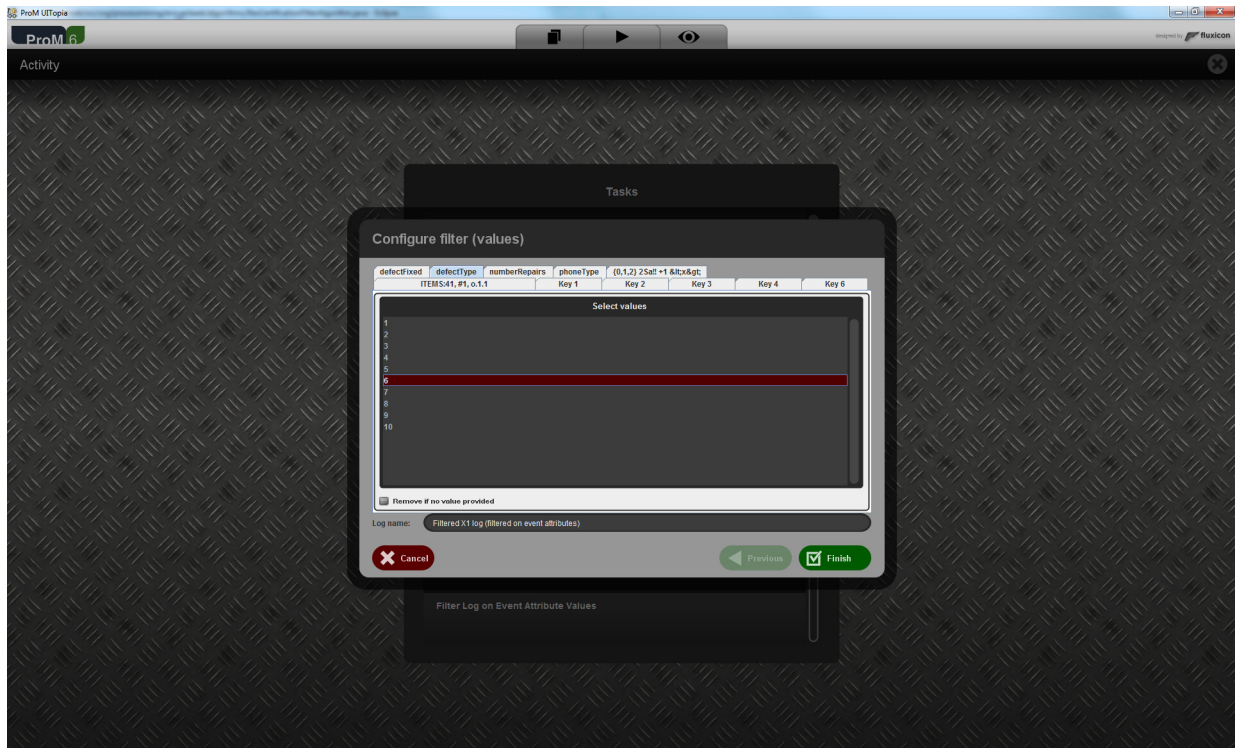
IMPORT



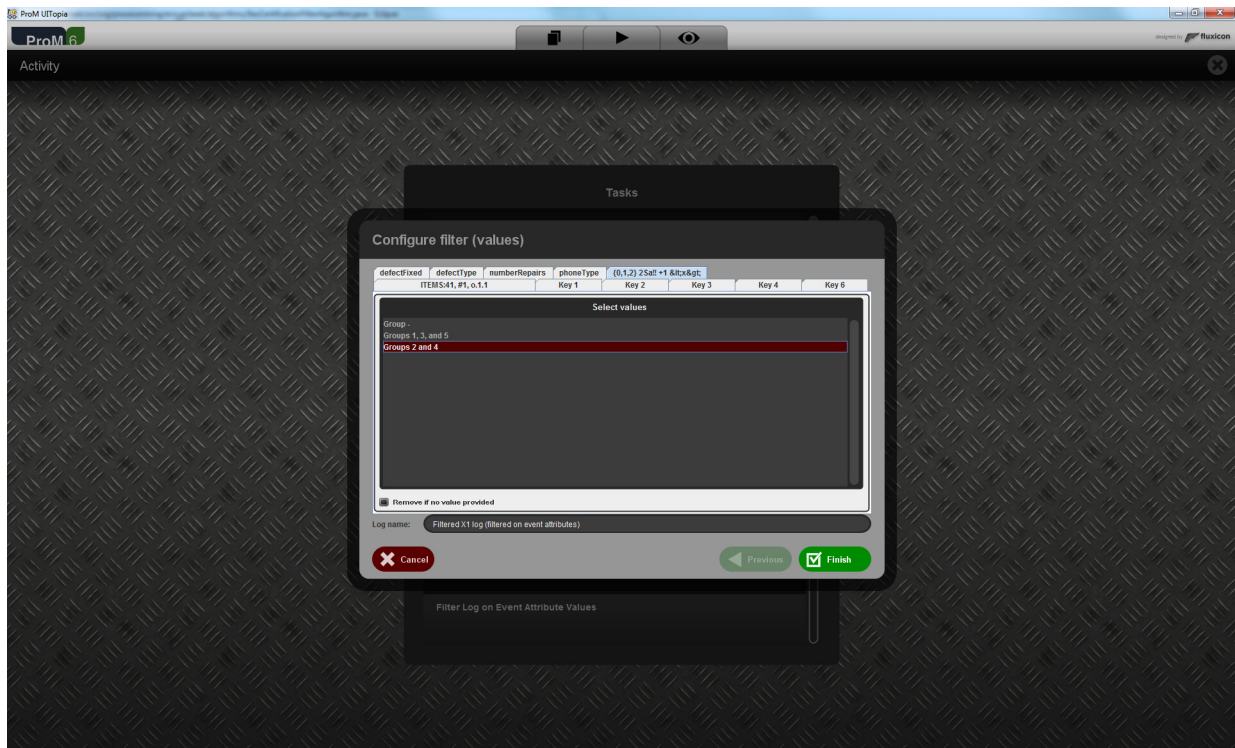
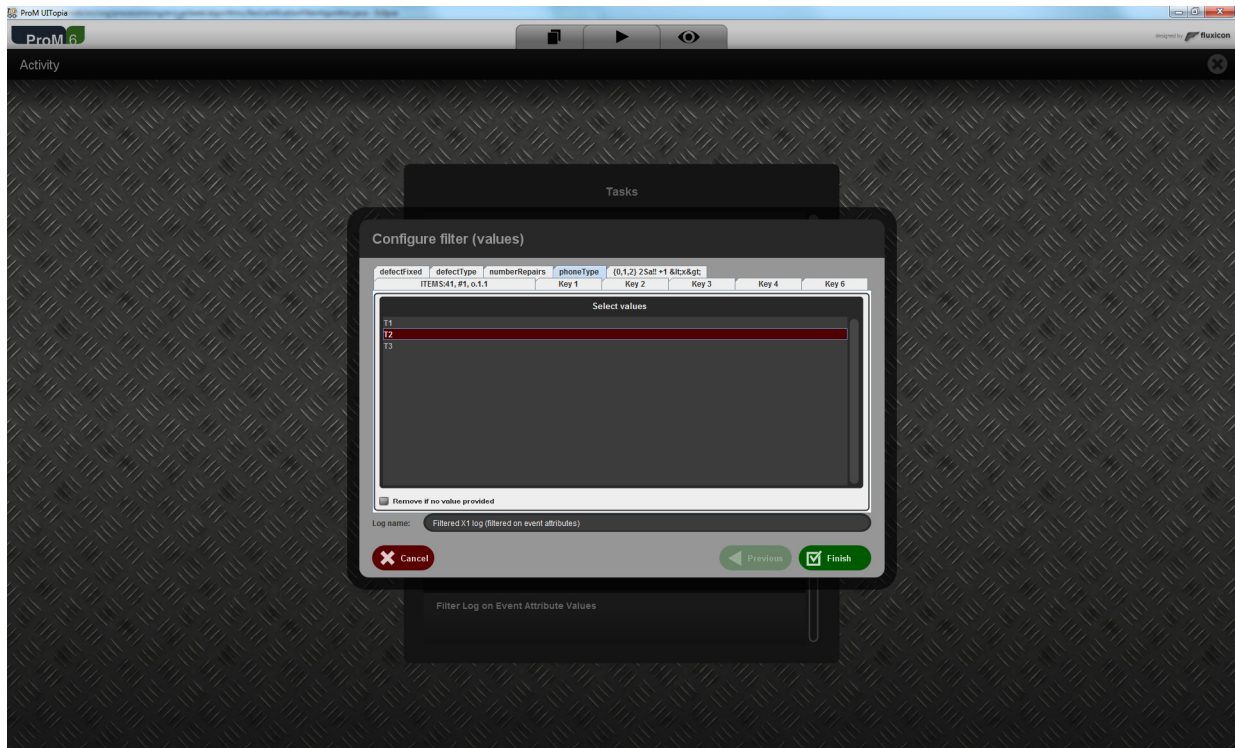
IMPORT



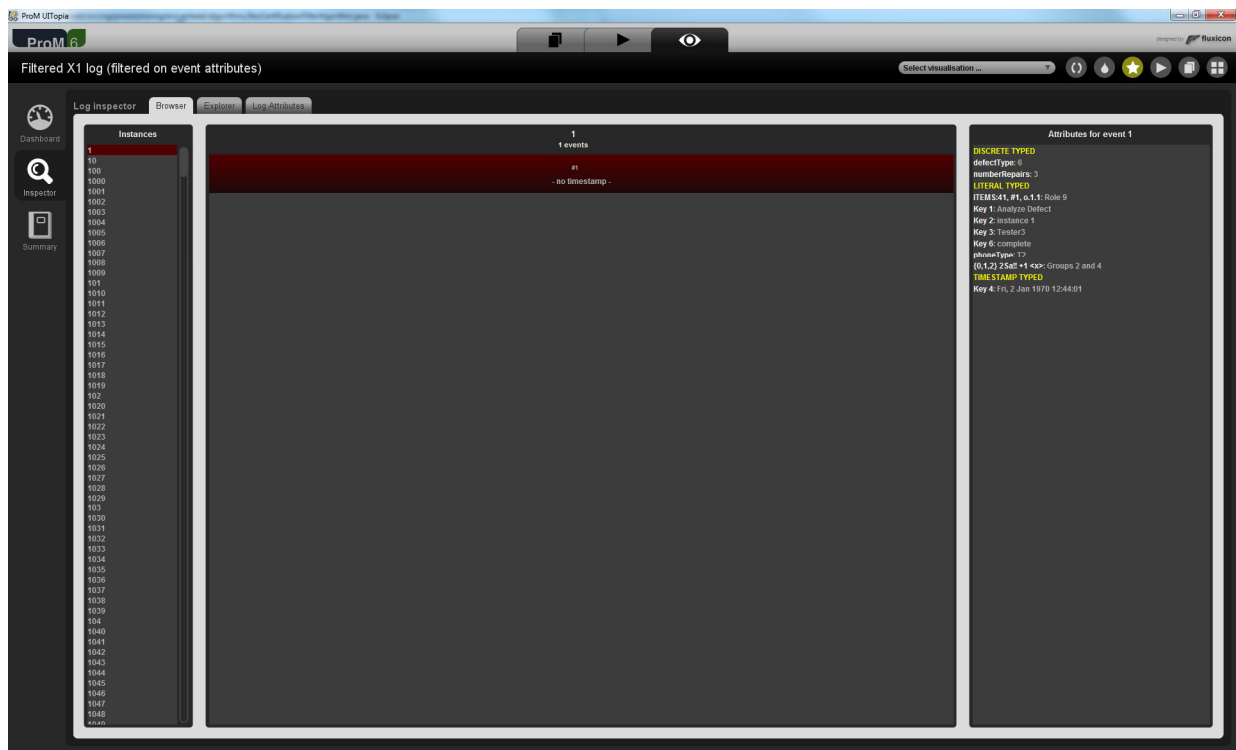
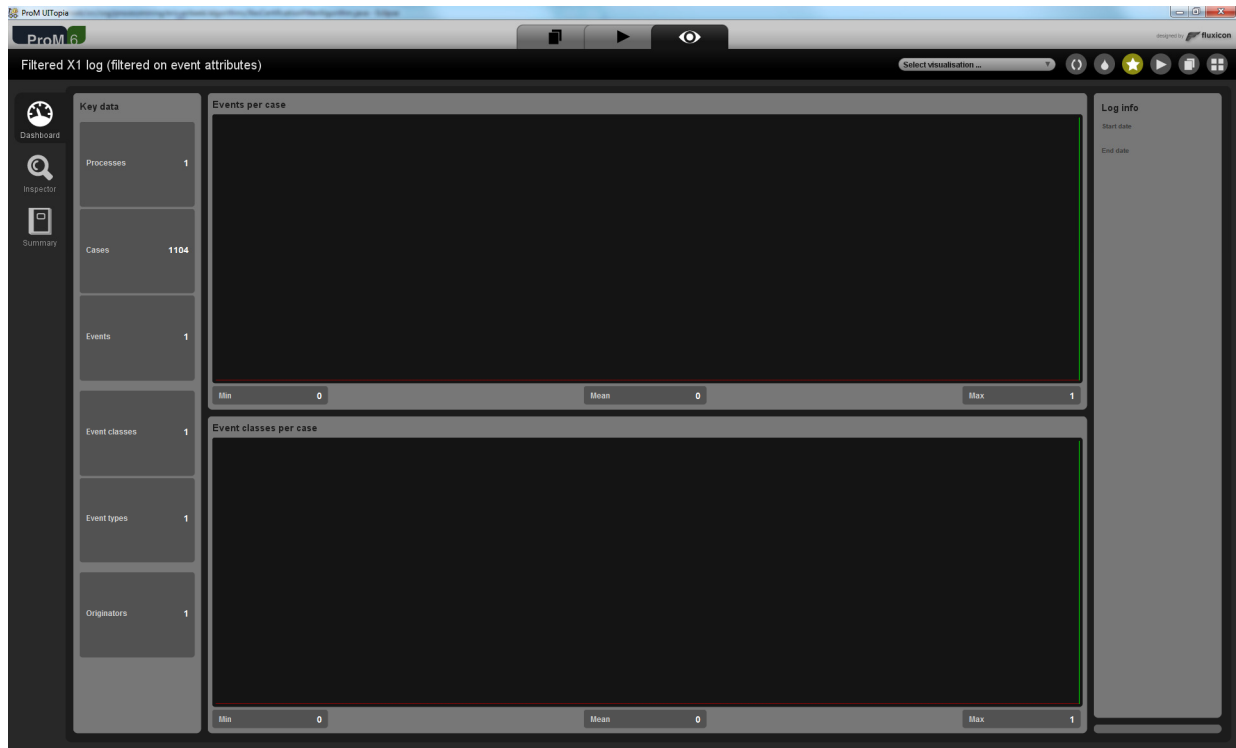
IMPORT



IMPORT



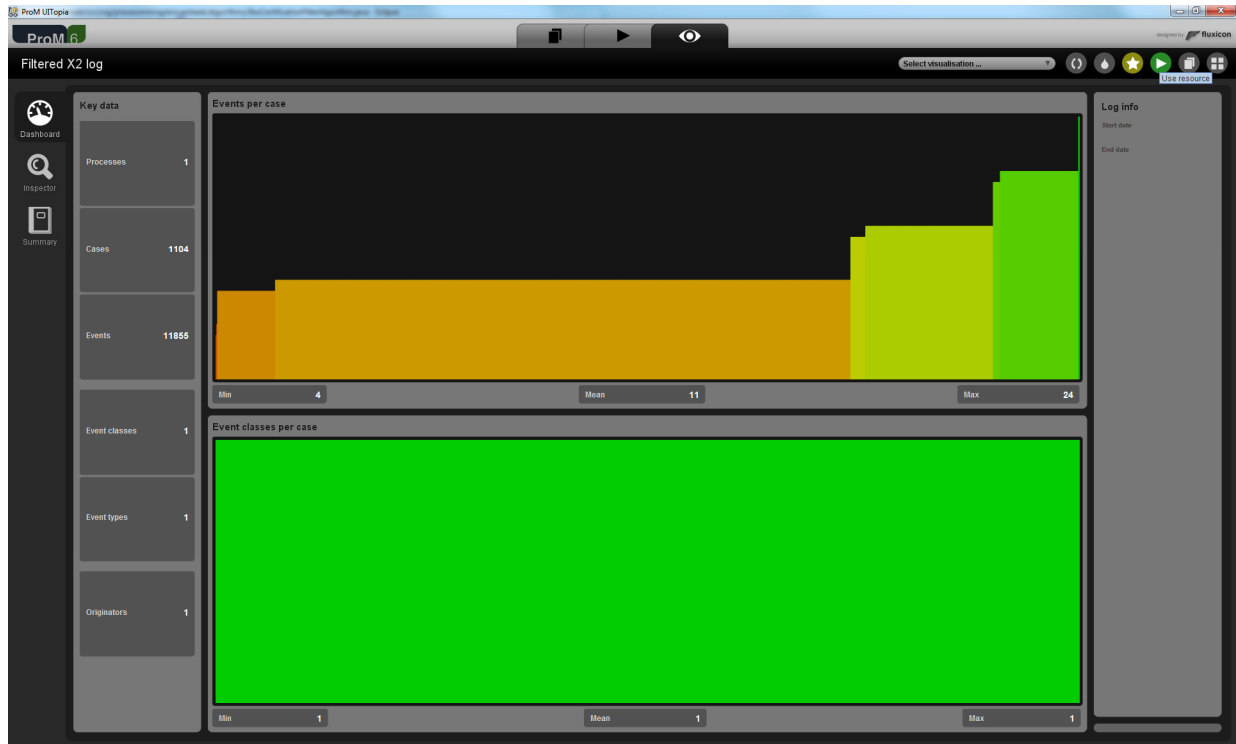
IMPORT



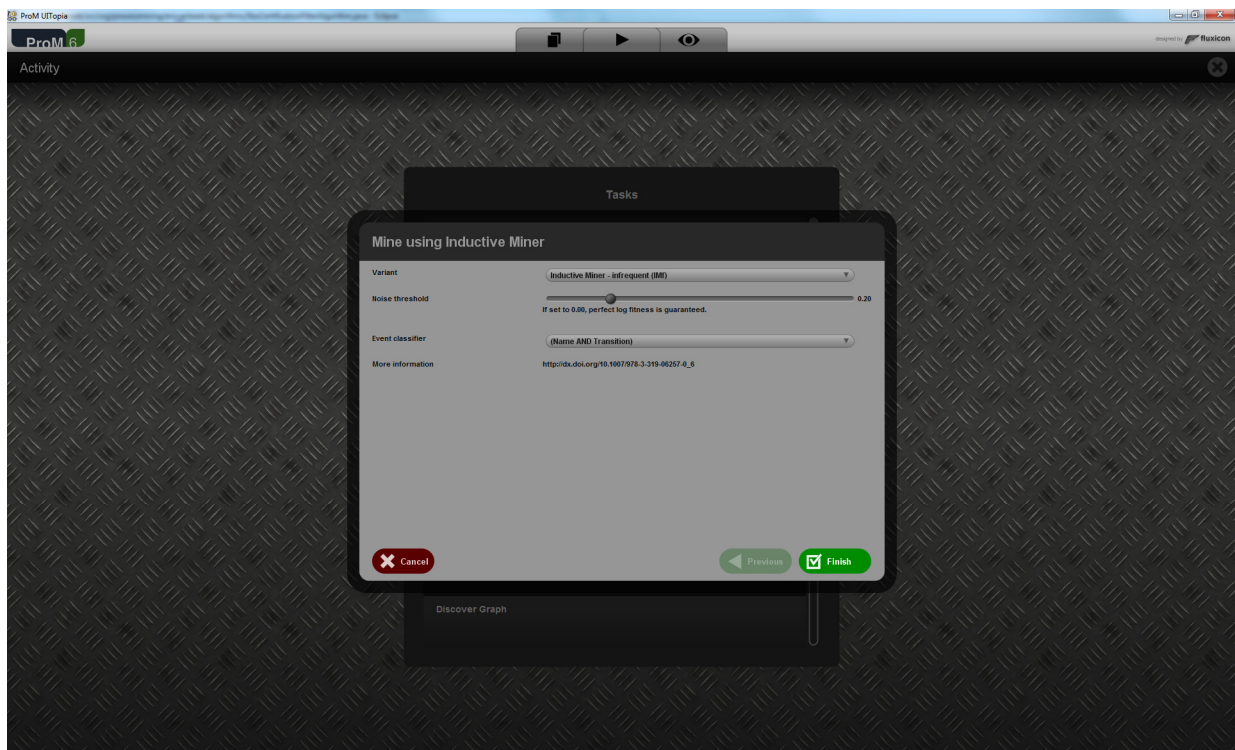
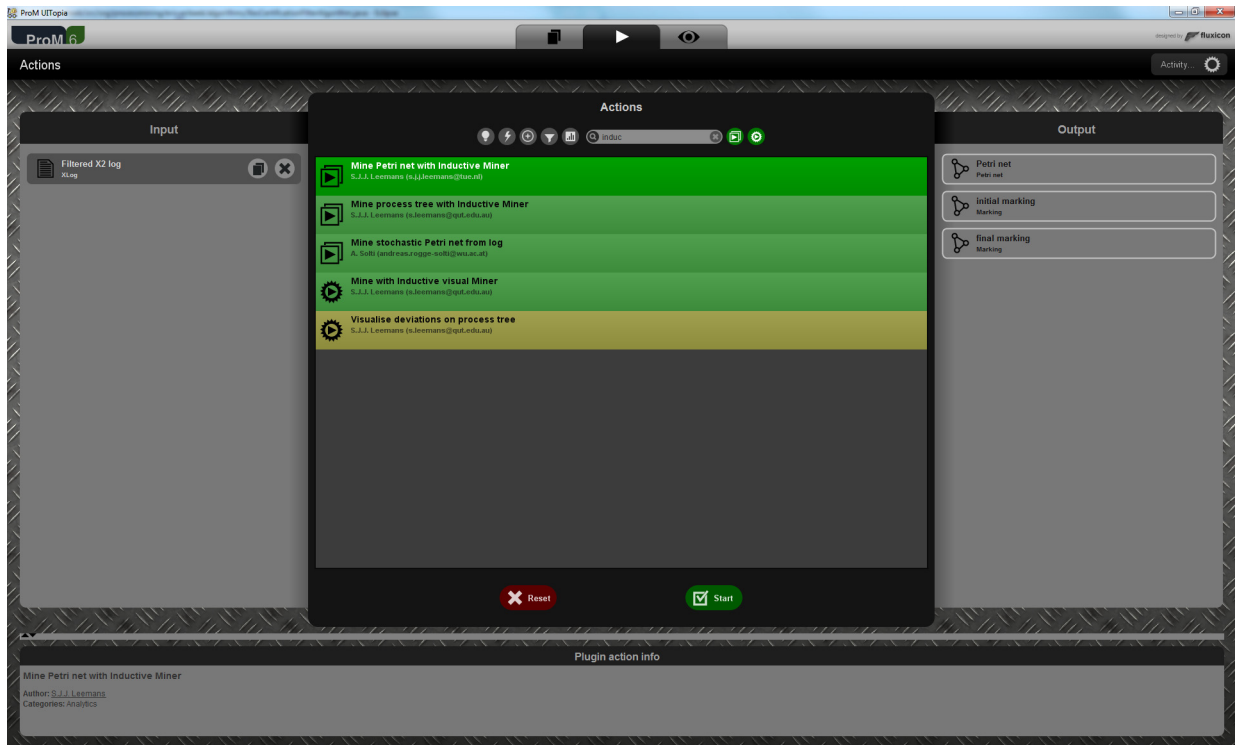
IMPORT

This shows that all (non-standard) attributes contained in the log were used.

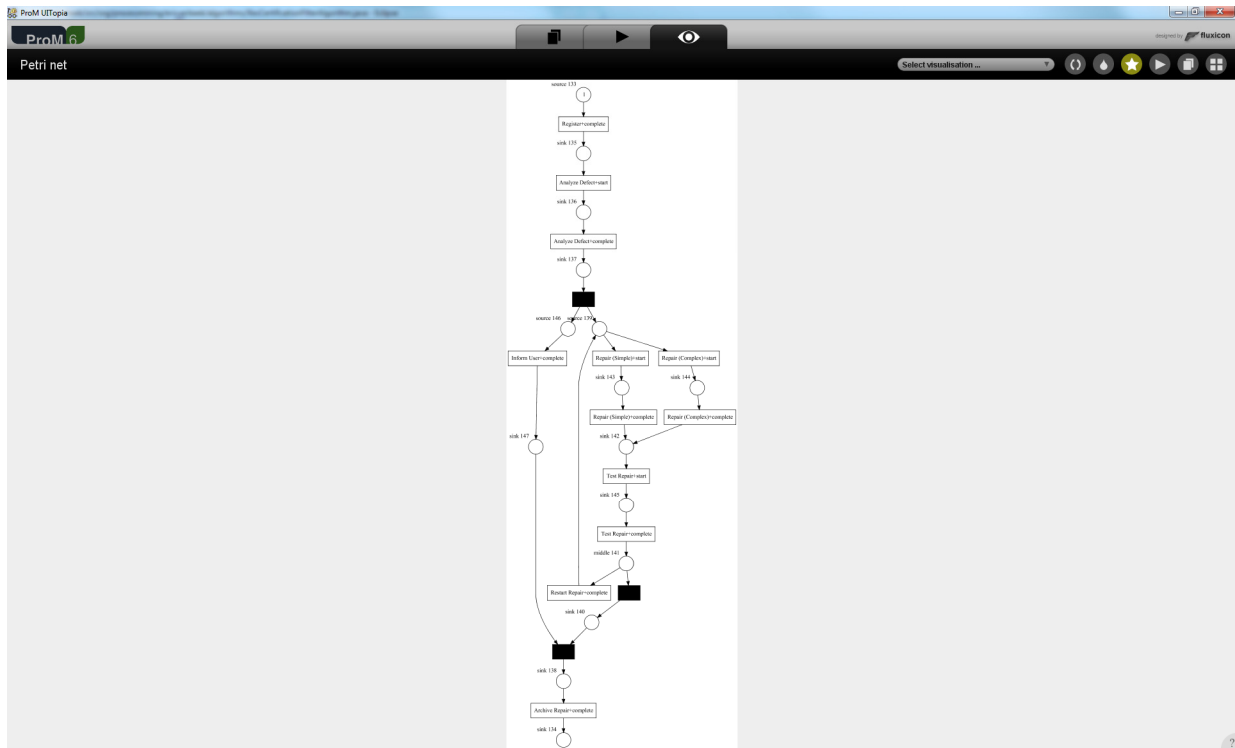
Flag X2



IMPORT



IMPORT



This shows that the classifier and classified attributes (Key 1 AND Key 6) contained in the log were used.

To show that all other attributes can also be used, we can again use the log filter.

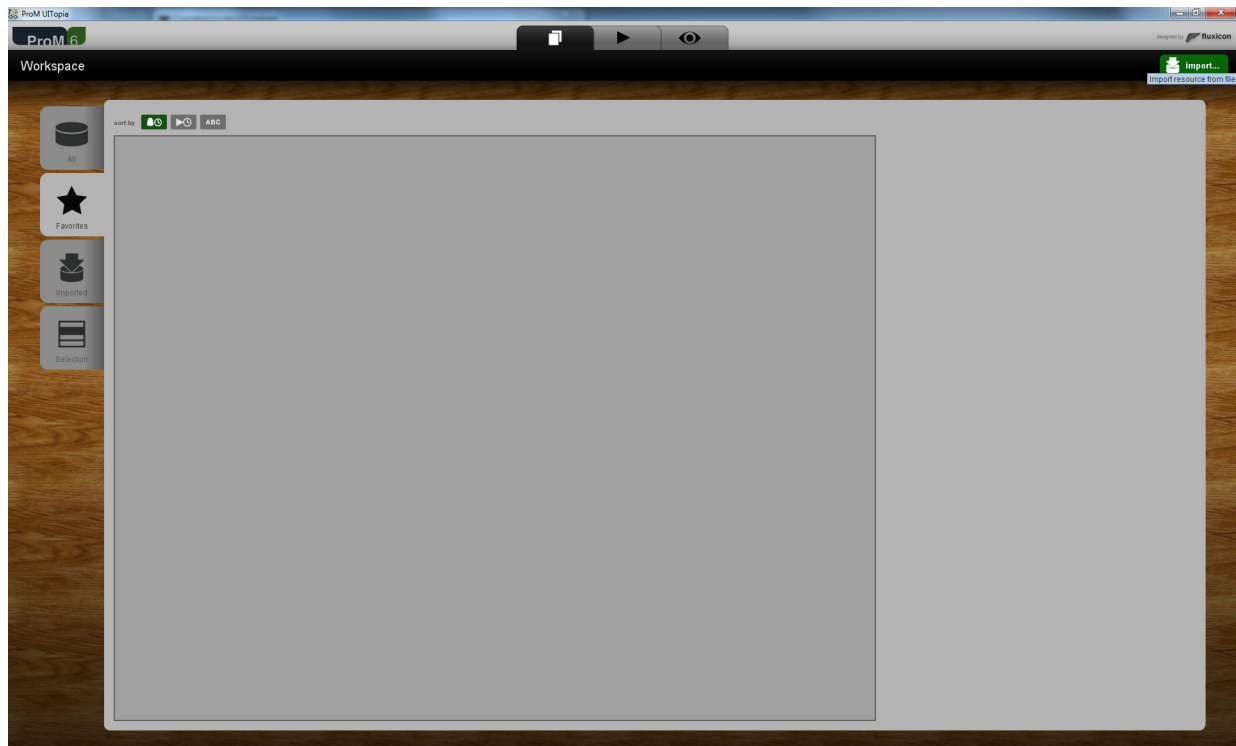
This shows that the classifier and all (non-standard) attributes contained in the log were used.

EXPORT

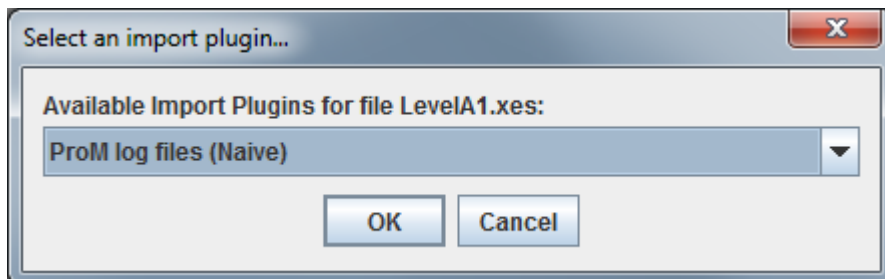
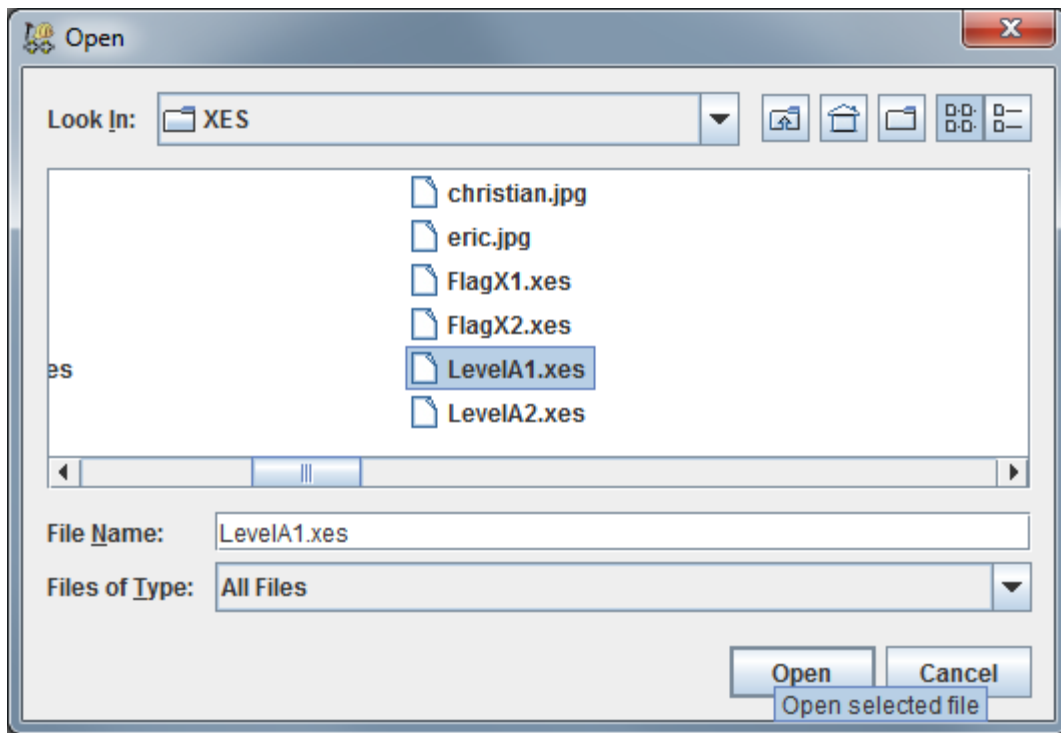
Export

Now we know that the import is working on all levels, we can use it to test the export. We do this by first importing the log for the given level, export that log to a file, import the log from that file again, and show that the result are the same as with the import as shown in the previous section. For sake of brevity, we only show the final screenshot, and only show the import-export-import sequence for the first (A1) log.

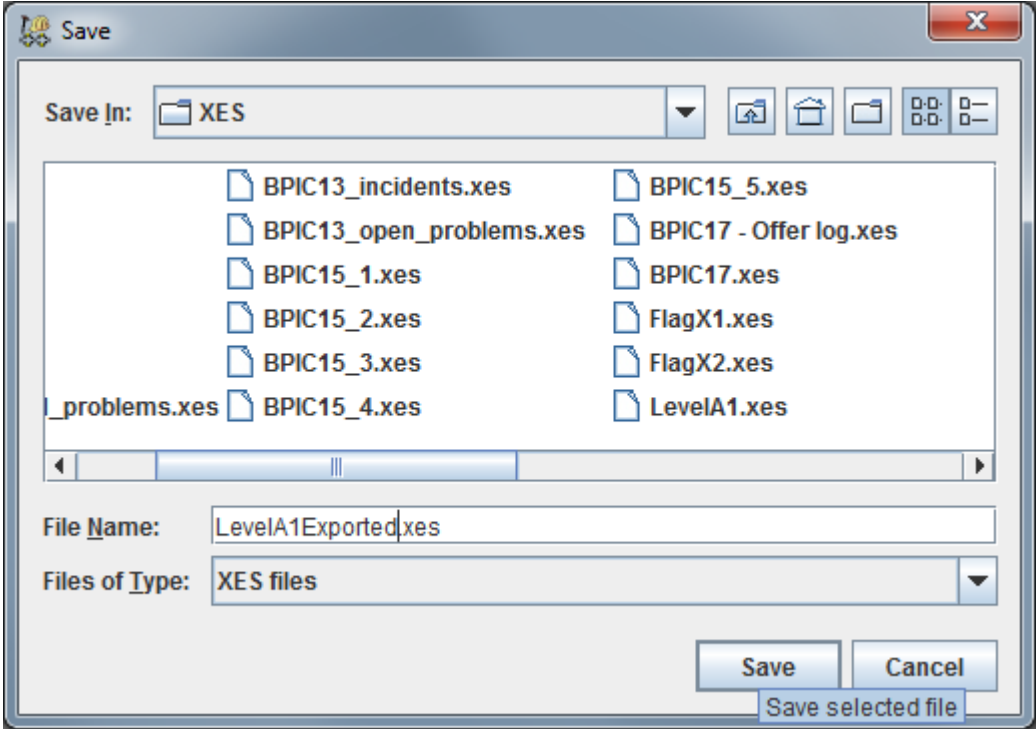
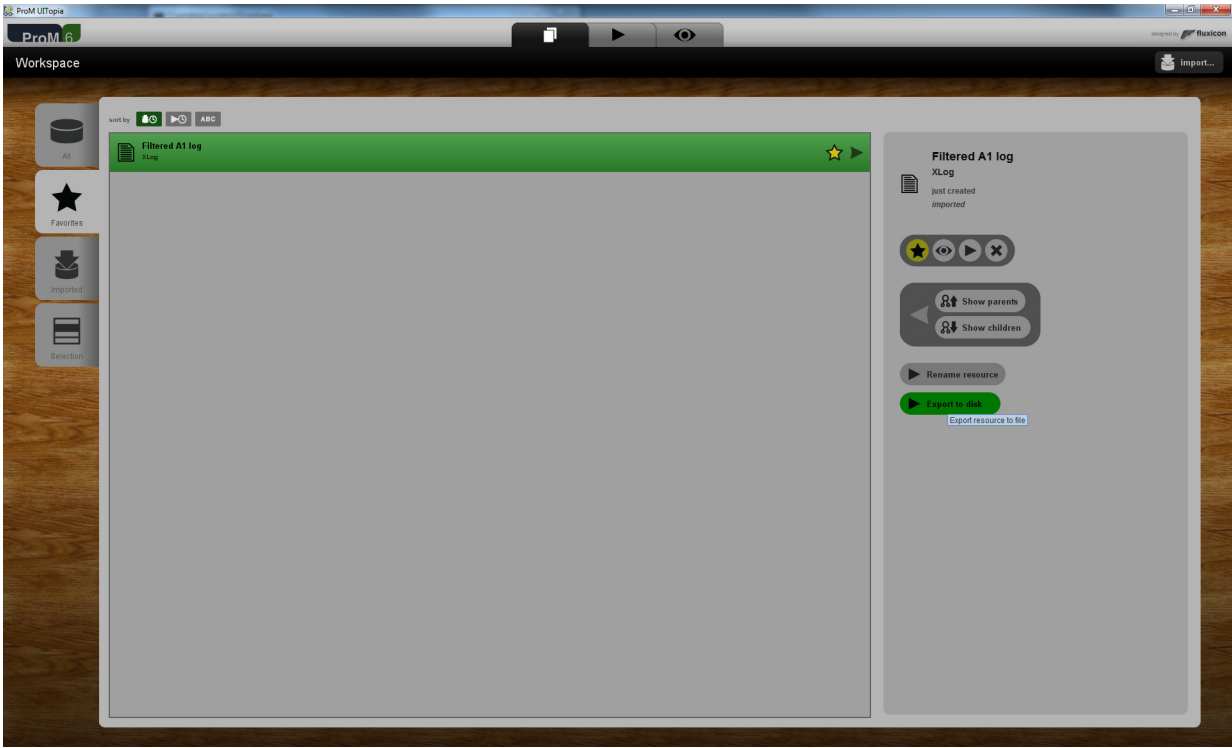
Level A1



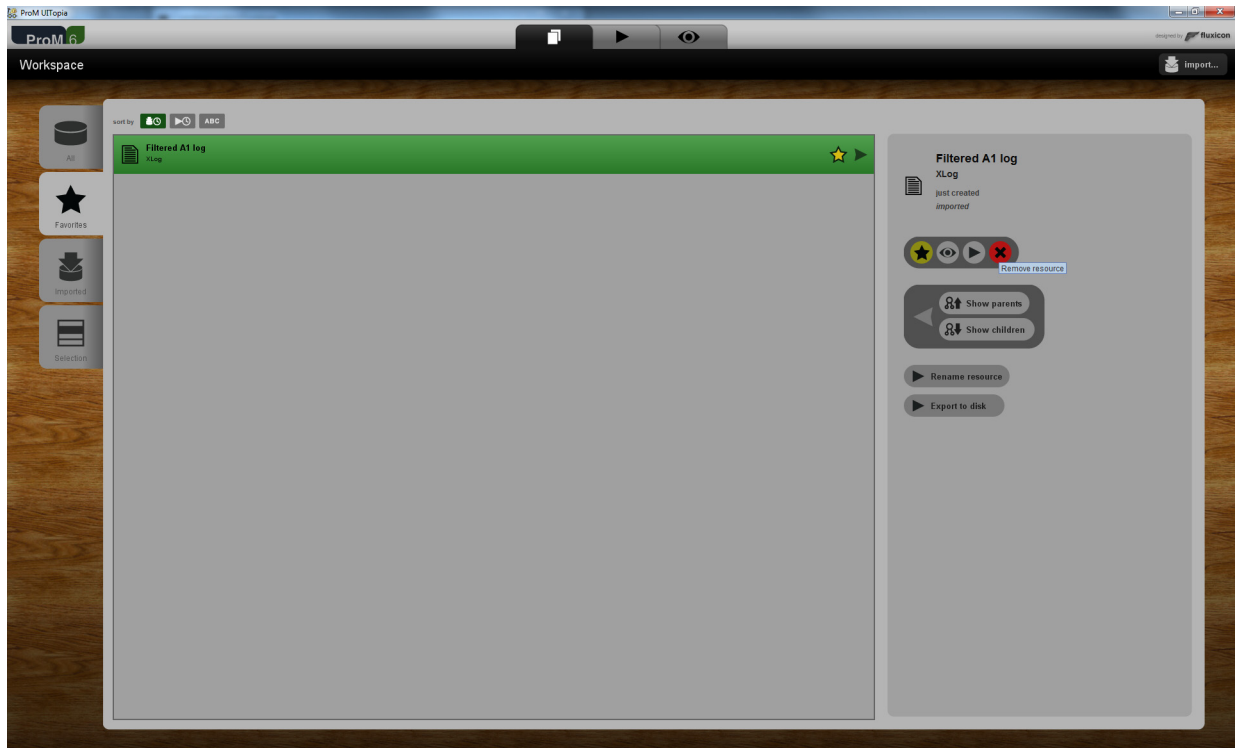
EXPORT



EXPORT

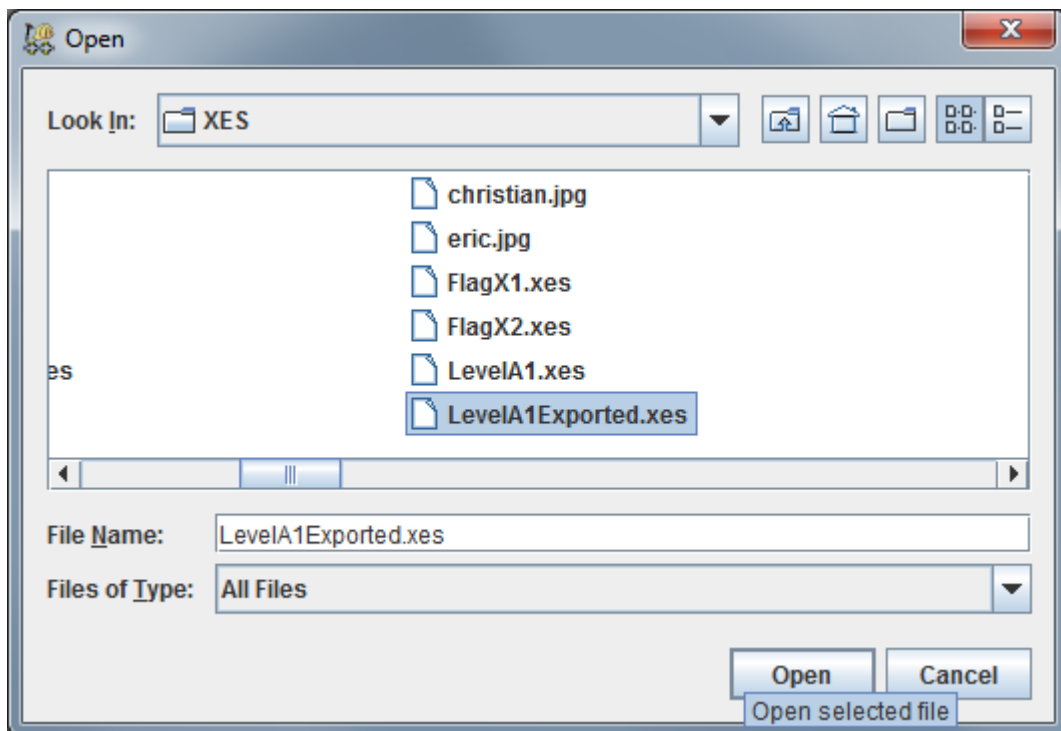
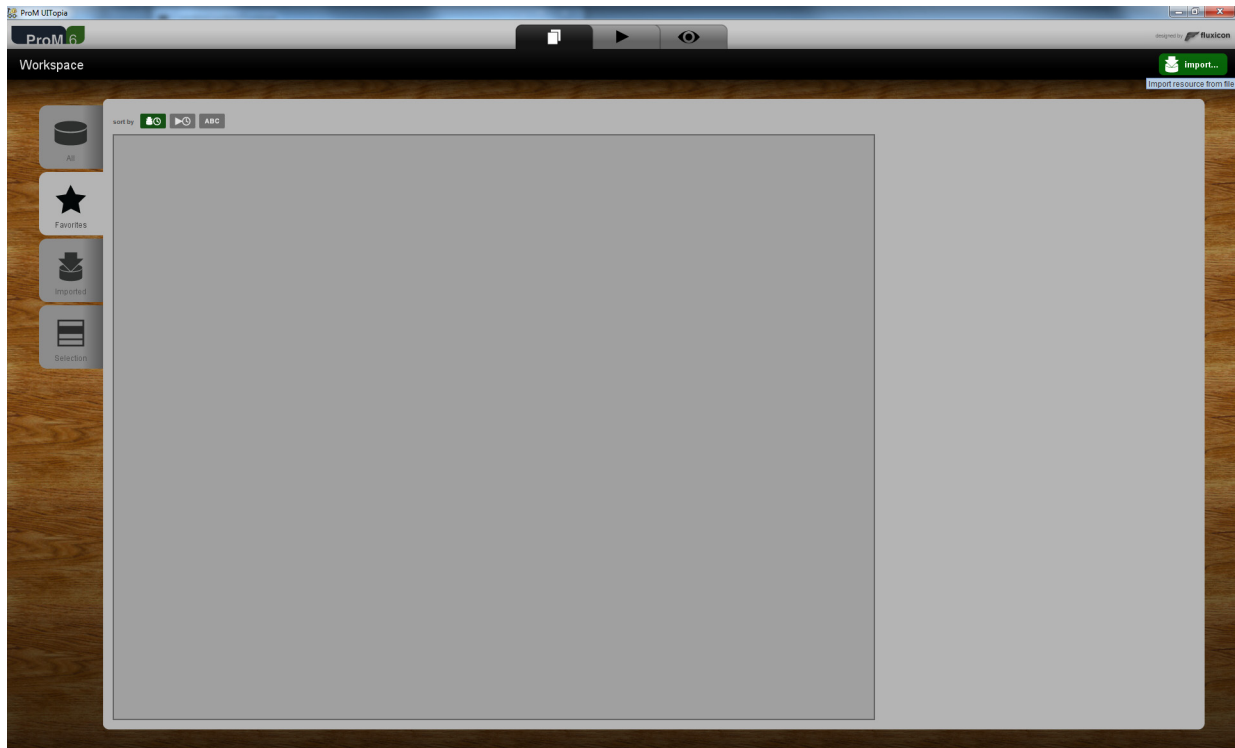


EXPORT

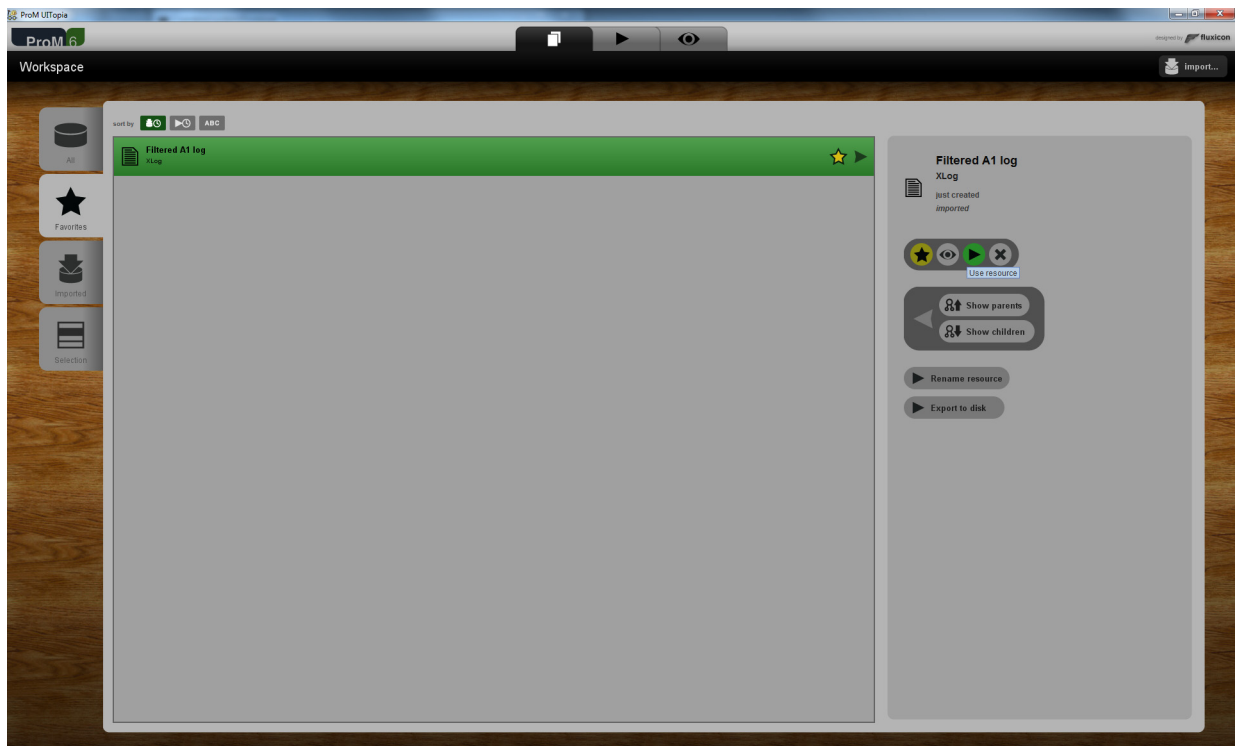
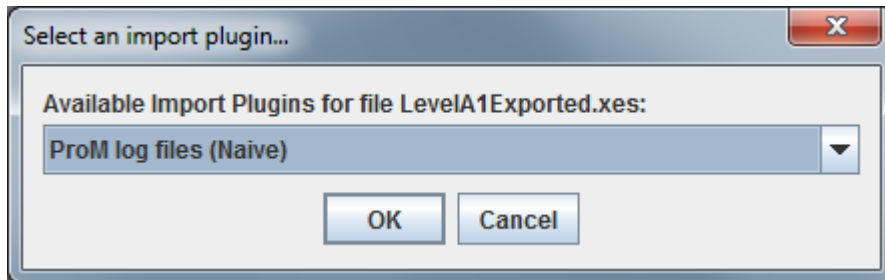


Remove the imported log to make sure we cannot use it in the next steps.

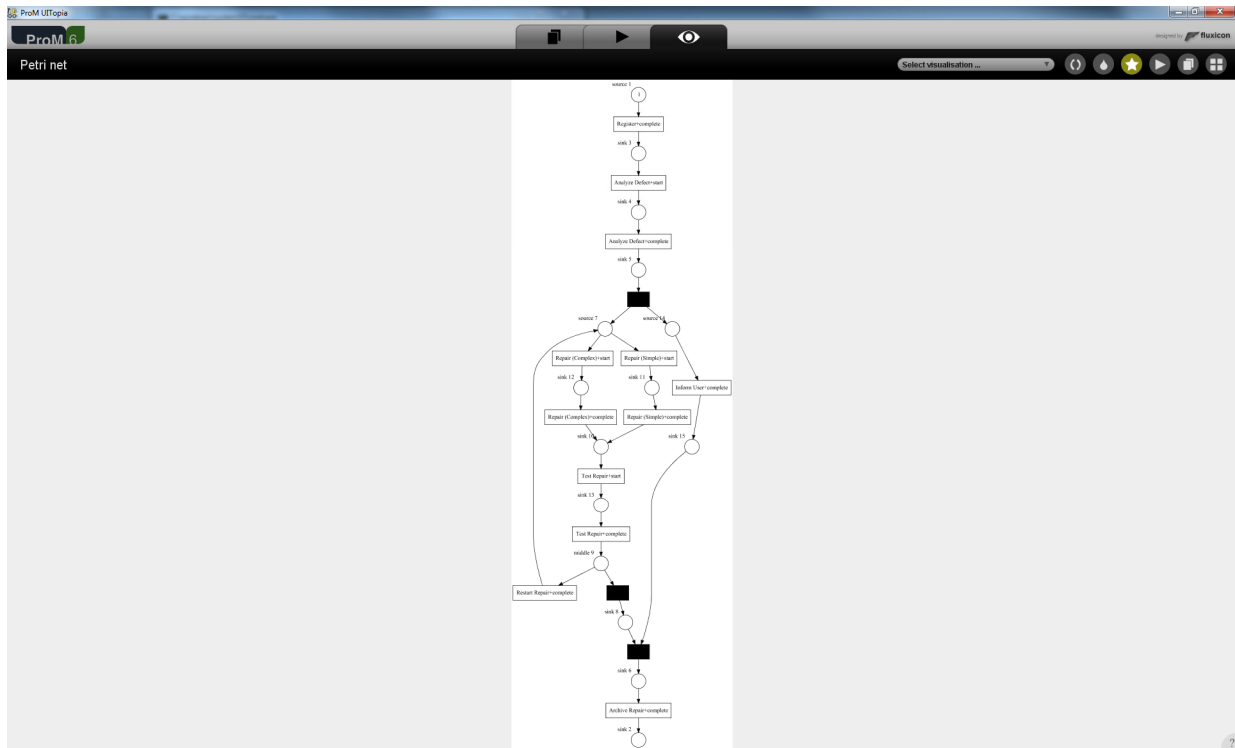
EXPORT



EXPORT



EXPORT

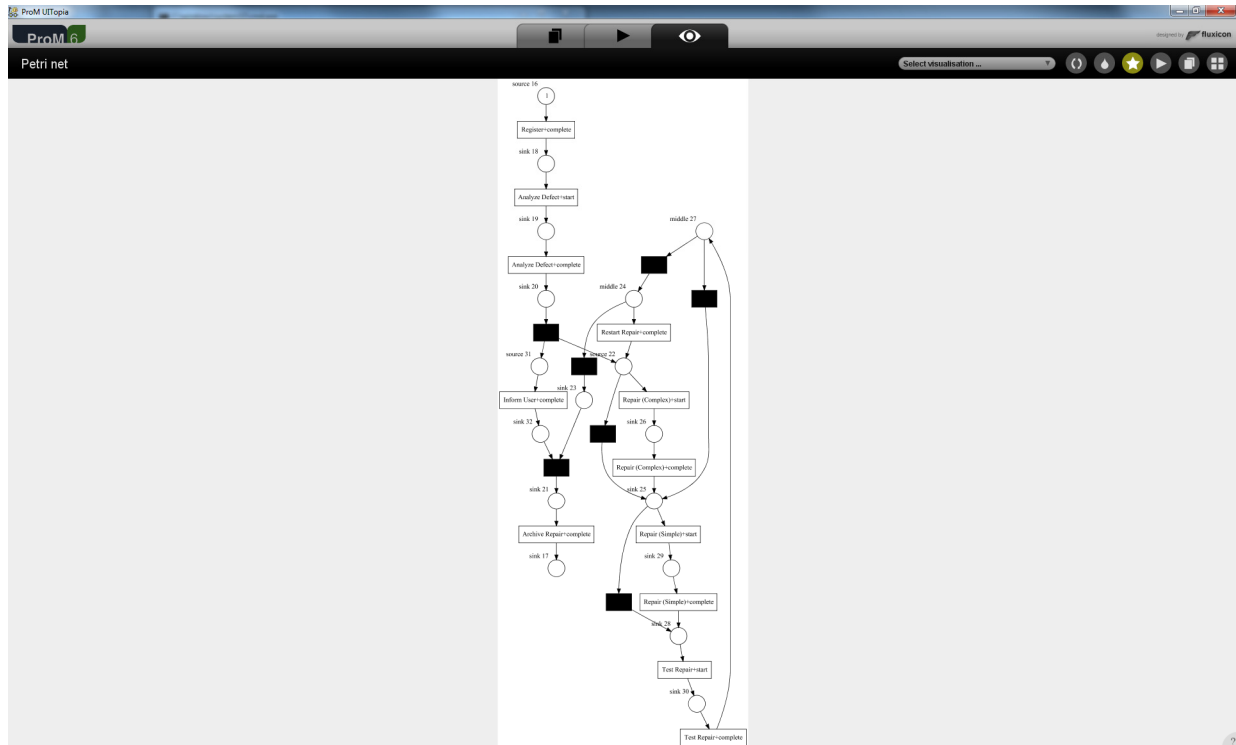


This net is (except for the layout) identical to the net as discovered when testing the import for level A1.

This shows that the current data as stored by the tool is exported successfully to a log, and that the concept:name attributes as contained in the log match the current data as stored by the tool

EXPORT

Level A2

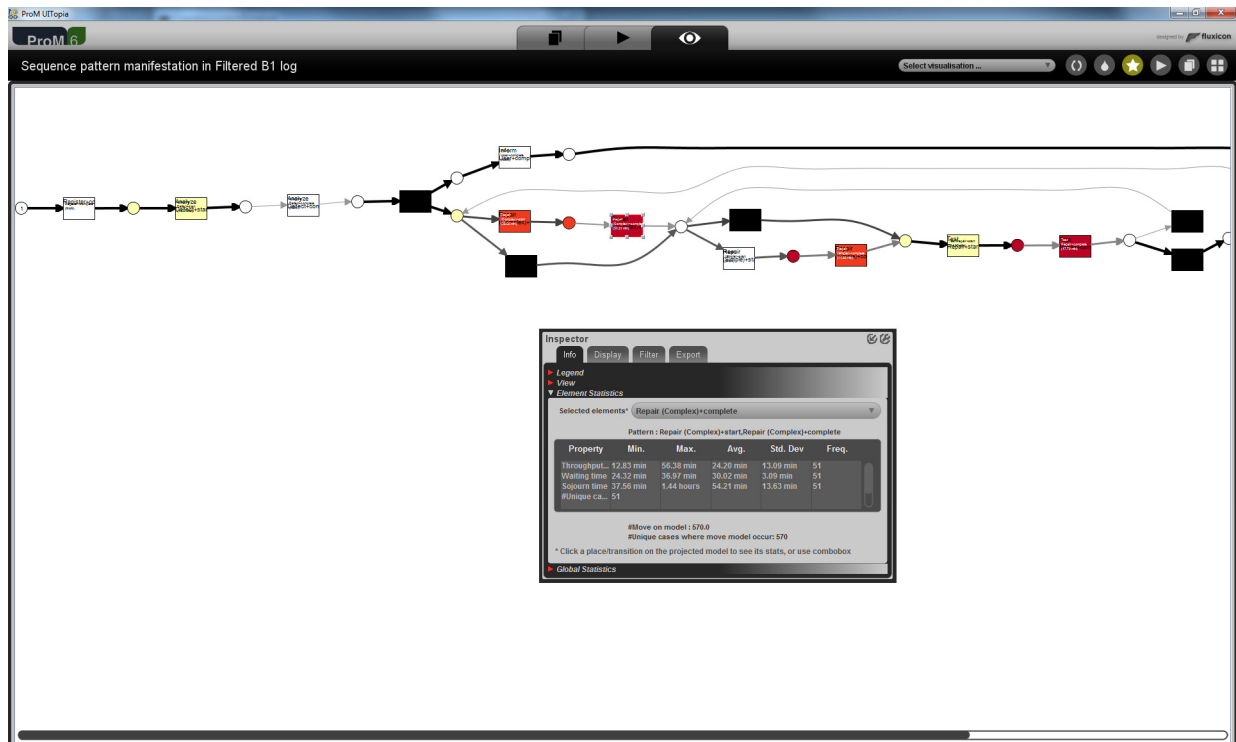


This net is (except for the layout) identical to the net as discovered when testing the import for level A1.

This shows that the current data as stored by the tool is exported successfully to a log, and that the classifier as contained in the log matches the current data as stored by the tool

EXPORT

Level B1

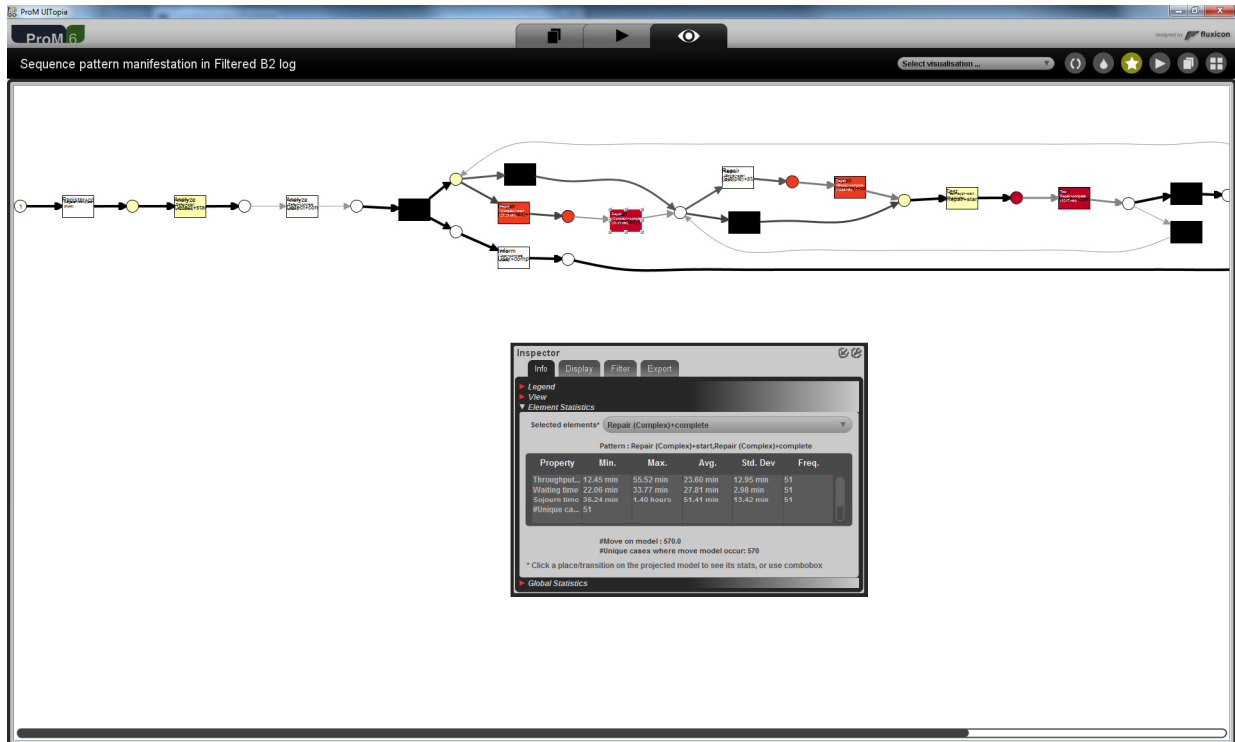


The same (except for the layout of the net) results as with the imported log.

This shows that the current data as stored by the tool is exported successfully to a log, and that the concept:name, lifecycle:transition, and time:timestamp attributes as contained in the log match the current data as stored by the tool

EXPORT

Level B2

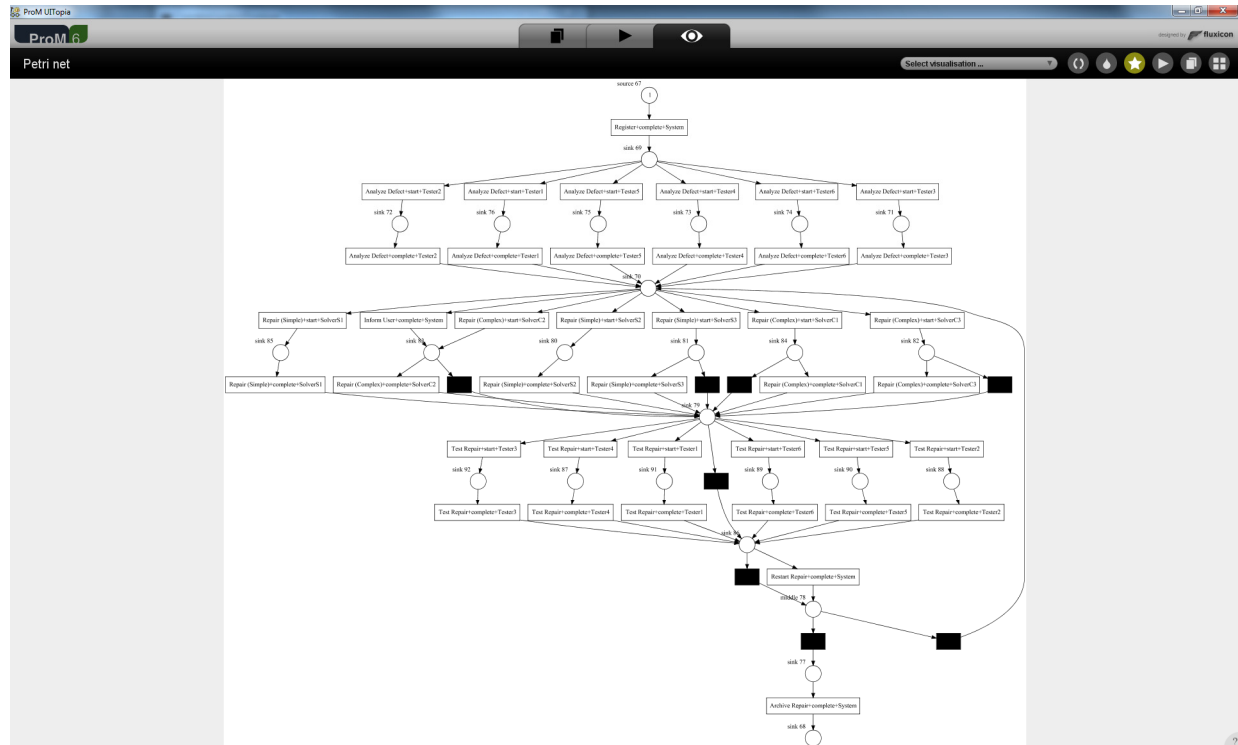


The same (except for the layout of the net) results as with the imported log.

This shows that the current data as stored by the tool is exported successfully to a log, and that the classifier and the (lifecycle:transition and) time:timestamp attributes as contained in the log matches the current data as stored by the tool

EXPORT

Level C1

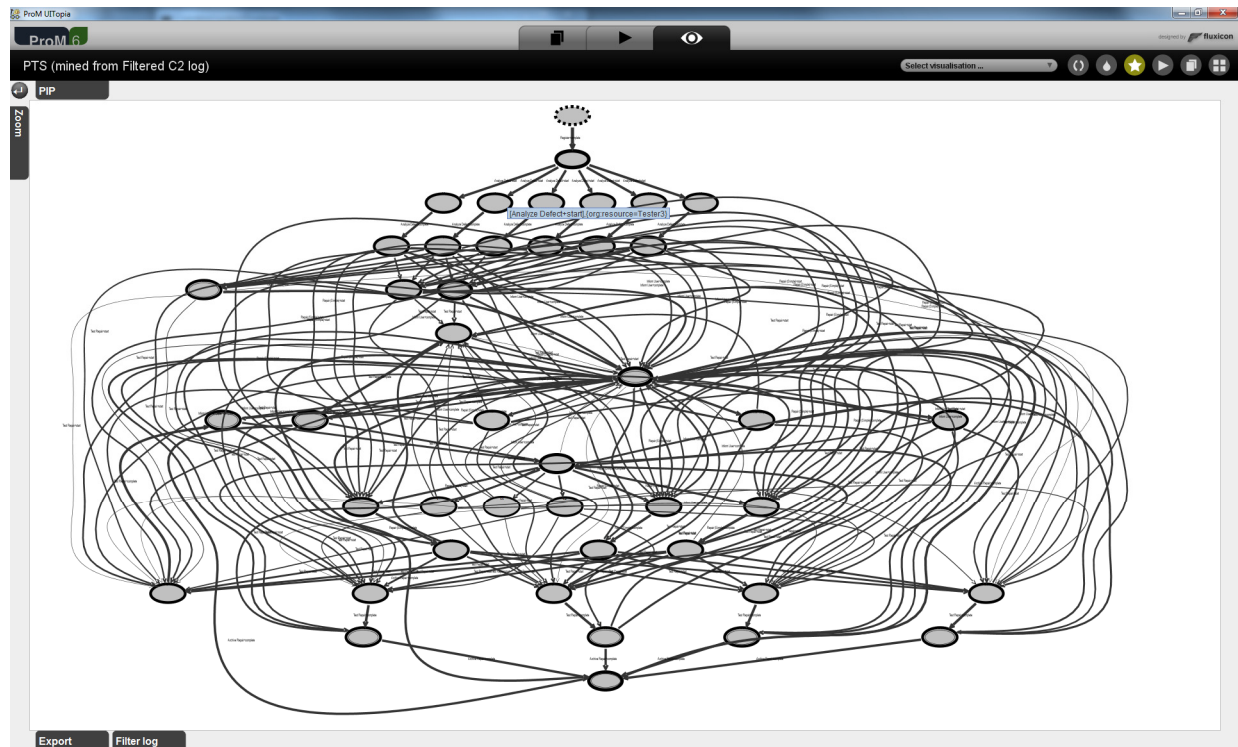


The same (except for the layout of the net) results as with the imported log.

This shows that the current data as stored by the tool is exported successfully to a log, and that the concept:name and org:resource attributes as contained in the log match the current data as stored by the tool

EXPORT

Level C2

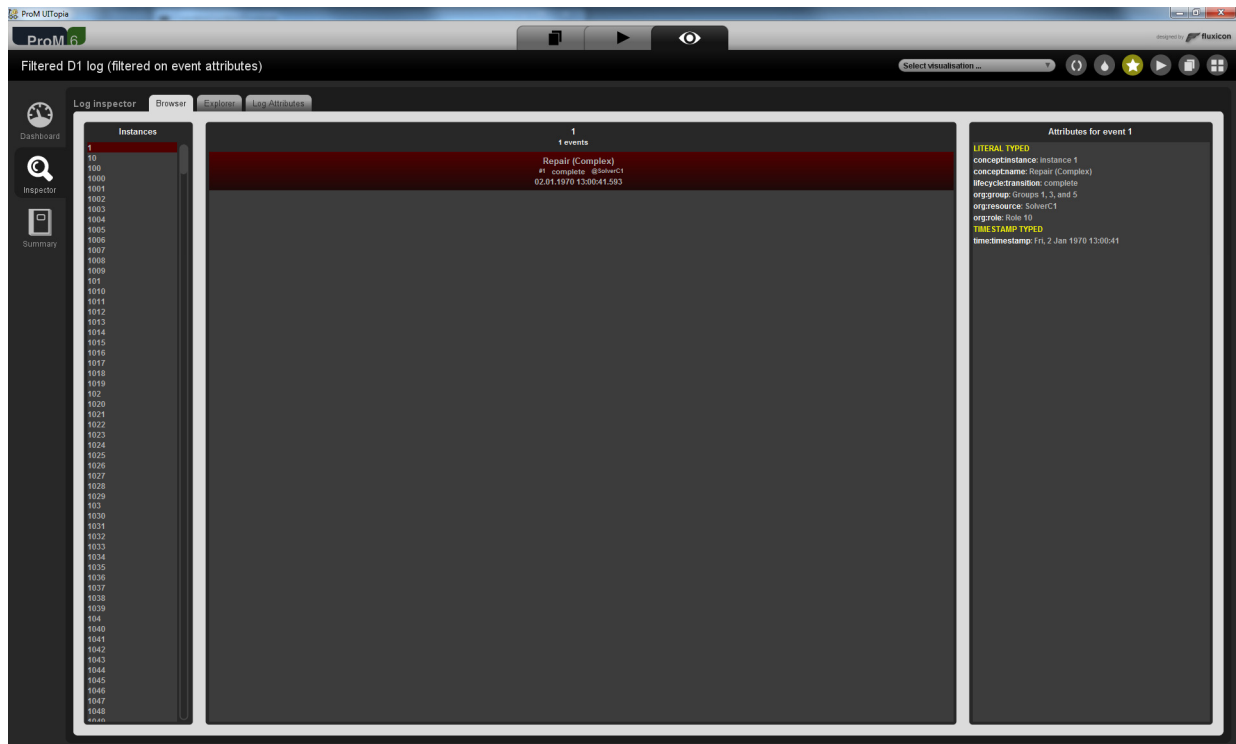


The same (except for the layout of the transition system) results as with the imported log.

This shows that the current data as stored by the tool is exported successfully to a log, and that the classifier and the org:resource attributes as contained in the log matches the current data as stored by the tool

EXPORT

Level D1



The same results as with the imported log.

This shows that the current data as stored by the tool is exported successfully to a log, and that all standard attributes as contained in the log match the current data as stored by the tool

Level D2

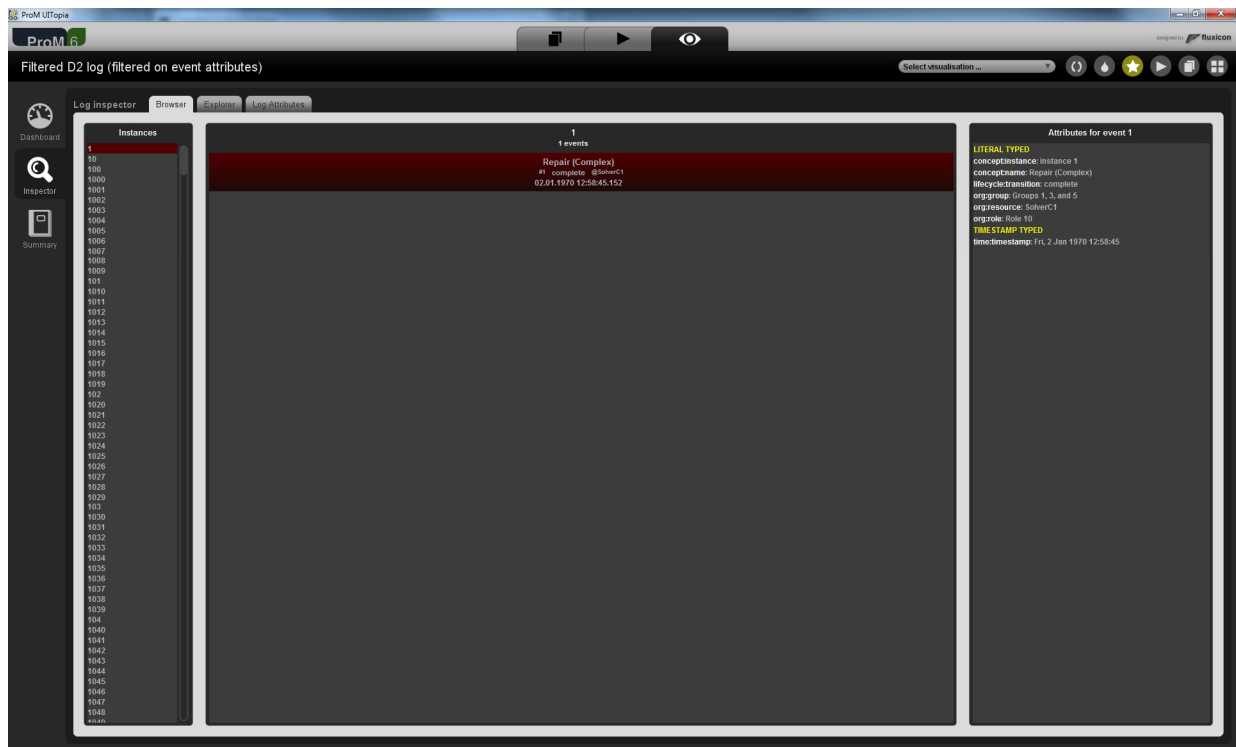
EXPORT

The screenshot displays the ProM 6 software interface. At the top, a blue banner contains the word "EXPORT". Below it, the ProM 6 window is visible, showing a Petri net diagram titled "Tasks". The diagram consists of several nodes representing tasks, such as "Register+complete", "Analyze Defect+start", "Test Repair+complete", "Analyze Defect+complete", "Restart Repair+complete", "Inform User+complete", "Repair (Complex)+start", "Repair (Simple)+start", "Archive Repair+complete", "Repair (Complex)+complete", "Repair (Simple)+complete", and "Test Repair+start".

In the foreground, a "Configure discoverer" dialog box is open. It features a "Select classifier" section with "(Name AND) Transition" selected, and a "Select miner" section with "Midi" selected. Below these sections are sliders for "Zero Value" and "Concurrency Ratio", and a checkbox for "Use dot to preview graph". The dialog box includes "Cancel", "Previous", and "Finish" buttons.

At the bottom of the dialog box, the text "Mine Petri net with Inductive Miner" and "Mining" is visible.

EXPORT

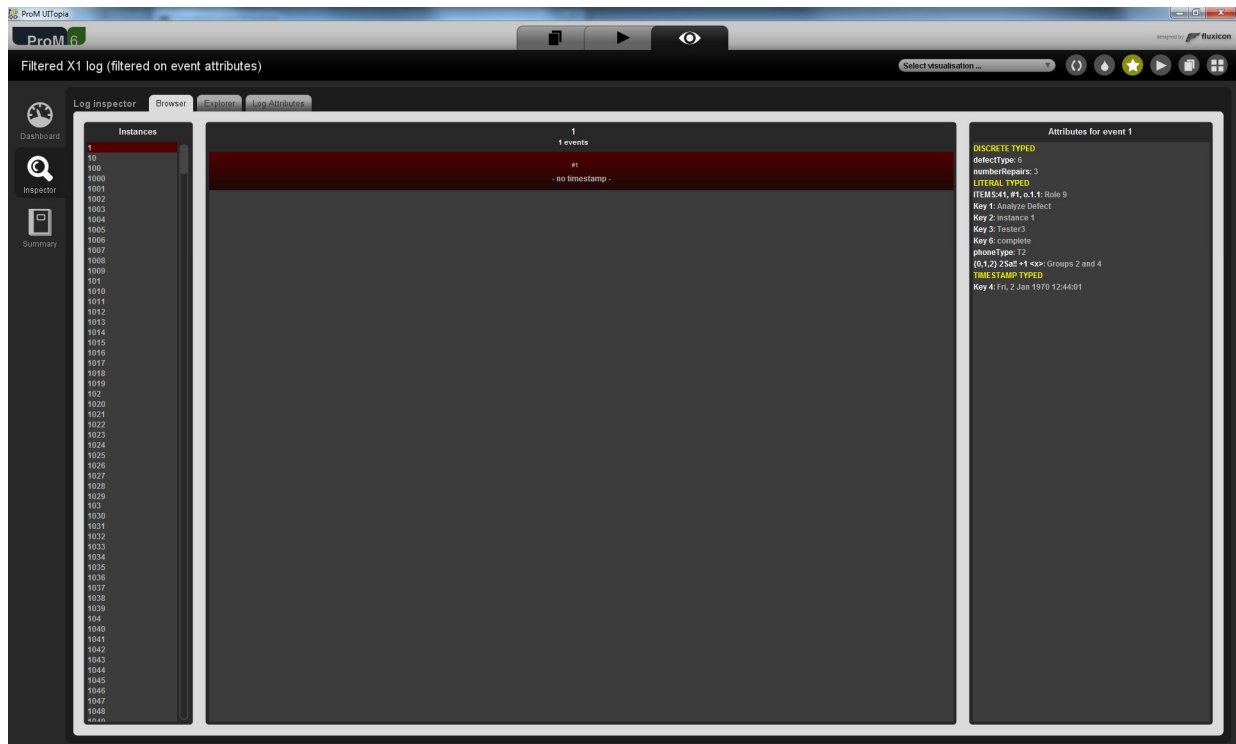


The same results (except for layout) as with the imported log.

This shows that the current data as stored by the tool is exported successfully to a log, and that the classifier and all standard attributes as contained in the log matches the current data as stored by the tool

EXPORT

Flag X1

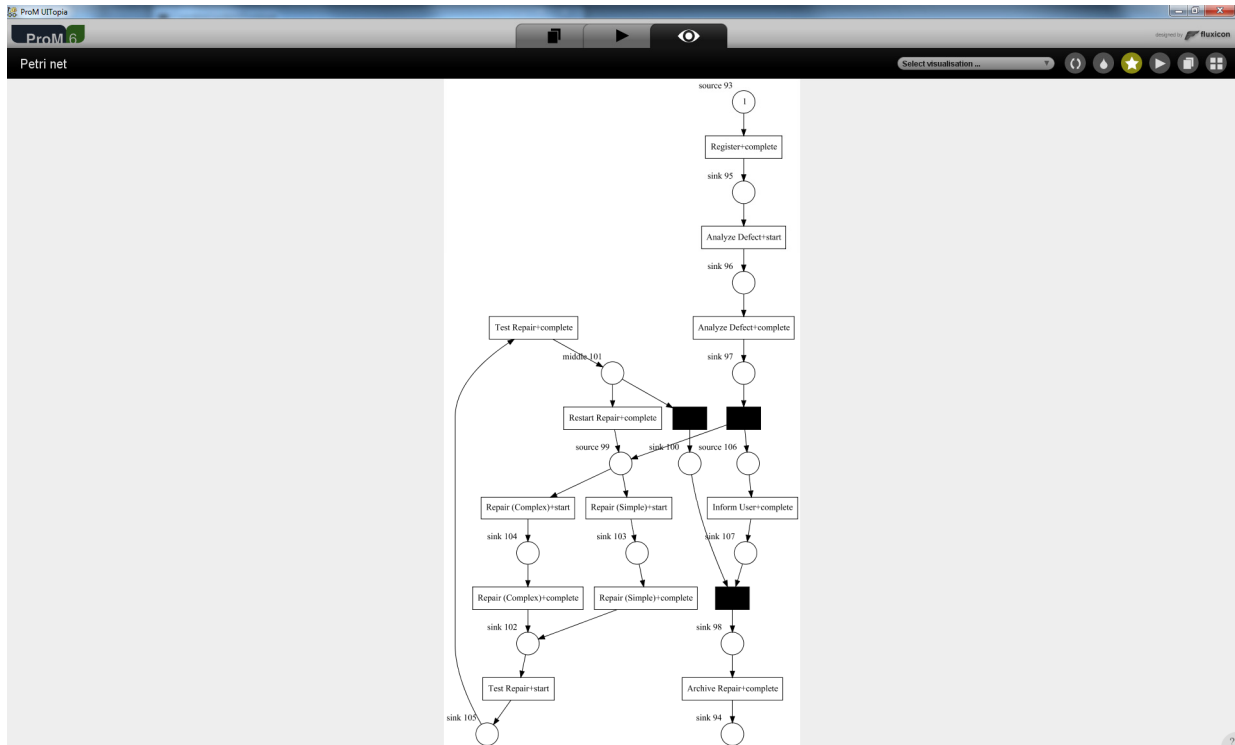


The same results as with the imported log.

This shows that the current data as stored by the tool is exported successfully to a log, and that all (standard or non-standard) attributes as contained in the log match the current data as stored by the tool

EXPORT

Flag X2



This shows that the classifier and classified attributes (Key 1 AND Key 6) contained in the log were exported correctly.

To show that all other attributes are also exported correctly, we can again use the log filter.

This shows that the current data as stored by the tool is exported successfully to a log, and that the classifier and all (standard or non-standard) attributes as contained in the log matches the current data as stored by the tool

CONTACT INFORMATION

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