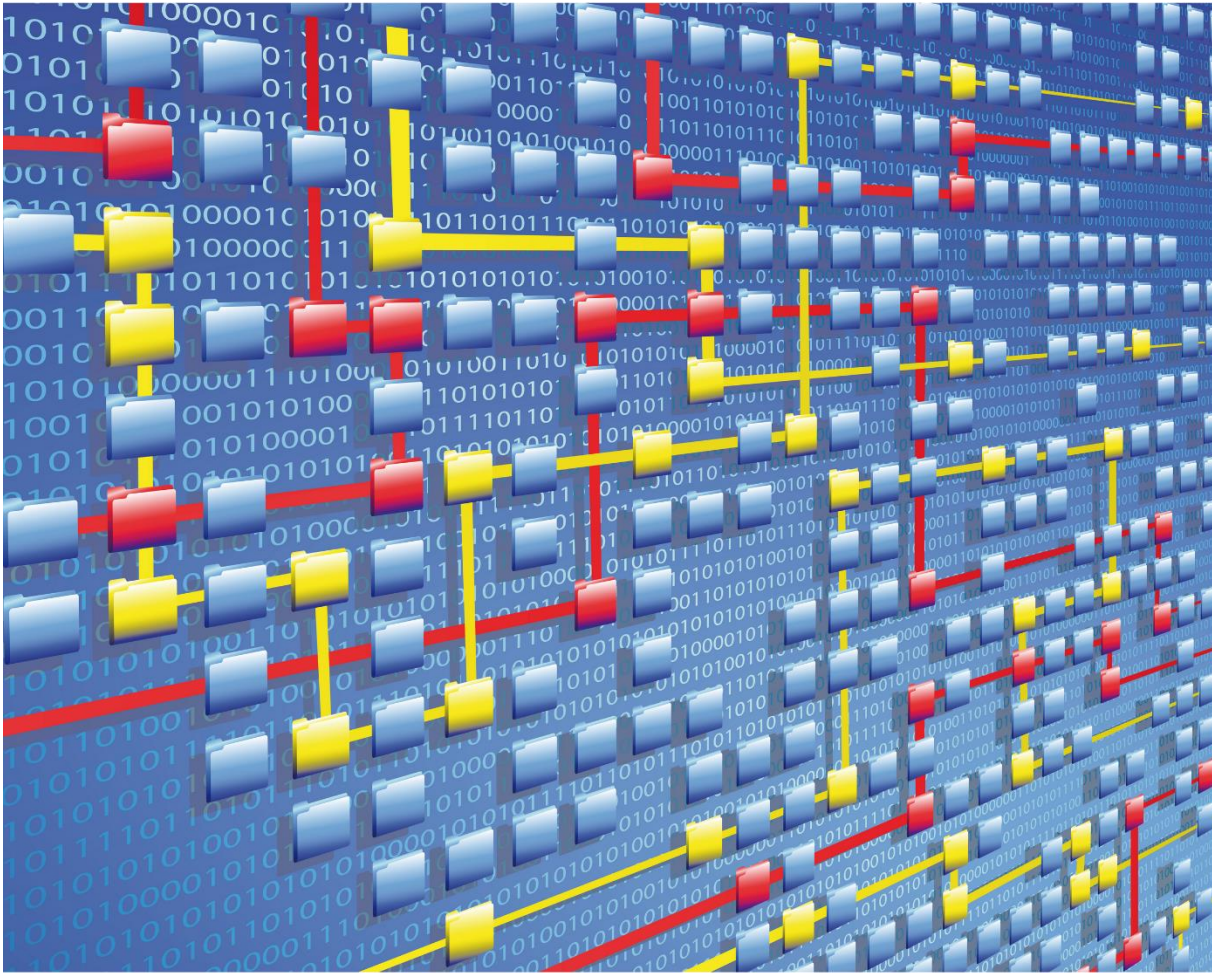


IEEE Task Force on



Process Mining

XES CERTIFICATION FOR
PMLAB LITE

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TOOL

Tool

NAME

pmlab-lite

VENDOR

Community, including:

Polytechnic University of Catalonia, Technical University of Denmark, Humboldt-Universität zu Berlin

VERSION

0.4.4.4 - <https://github.com/pmlab/pmlab-lite>

REQUESTED CERTIFICATION LEVELS

Import

A-D, X

Export

A-D, X

META

Meta

AUTHORS

Matthias Weidlich, Glenn Dittmann

DATE

03/02/2021

HISTORY

CHANGES

AUTHOR(S)	DATE	DESCRIPTION
Glenn Dittmann	03/02/2021	Initial submission (Note: leaving out DFG's for very large real-life logs)

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

BPIC12

Number of traces in the log: 13087
Number of events in the log: 262200
Classifiers in the log: {'Activity classifier': ['concept:name', 'lifecycle:transition']}

Exporting and reimporting the log...

27502it [00:00, 275015.67it/s]Processing log...
3215154it [00:11, 275995.62it/s]

Number of traces in the reimported log: 13087
Number of events in the reimported log: 262200
Classifiers in the reimported log: {'Activity classifier': ['concept:name', 'lifecycle:transition']}

BPIC13_closed_problems

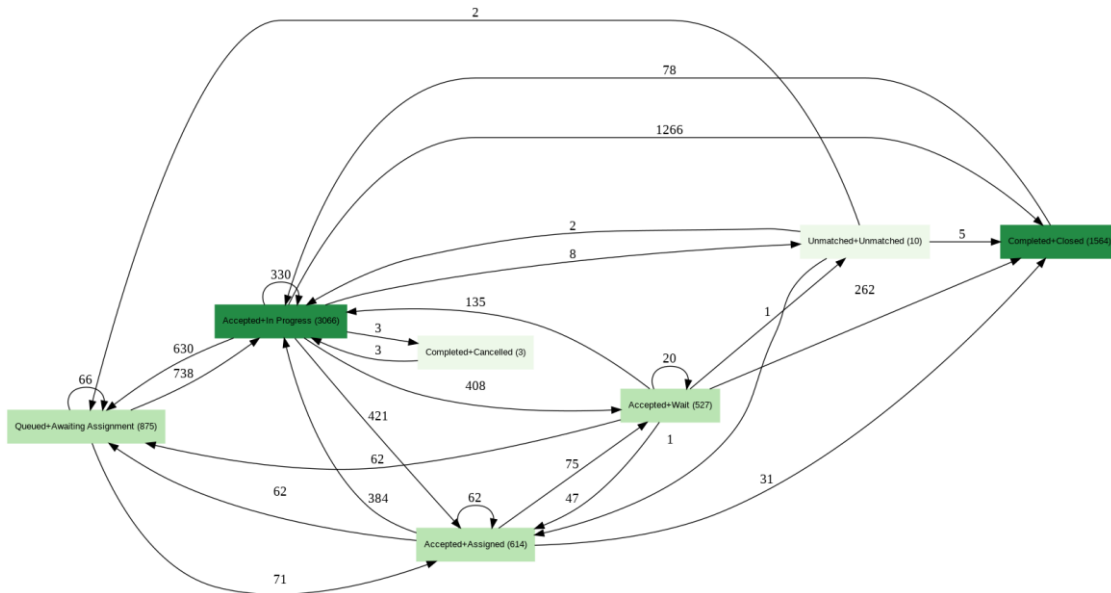
Number of traces in the log: 1487
Number of events in the log: 6660
Classifiers in the log: {'Activity classifier': ['concept:name', 'lifecycle:transition'], 'Resource classifier': ['org:resource']}

Exporting and reimporting the log...

23551it [00:00, 235509.66it/s]Processing log...
175042it [00:00, 199773.87it/s]

Number of traces in the reimported log: 1487
Number of events in the reimported log: 6660
Classifiers in the reimported log: {'Activity classifier': ['concept:name', 'lifecycle:transition'], 'Resource classifier': ['org:resource']}

IMPORT



BPIC13_incidents

Number of traces in the log: 7554
Number of events in the log: 65533
Classifiers in the log: {'Activity classifier': ['concept:name', 'lifecycle:transition'], 'Resource classifier': ['org:resource']}

Exporting and reimporting the log...

32648it [00:00, 326476.42it/s] Processing log...
1720264it [00:05, 307724.87it/s]

Number of traces in the reimported log: 7554
Number of events in the reimported log: 65533
Classifiers in the reimported log: {'Activity classifier': ['concept:name', 'lifecycle:transition'], 'Resource classifier': ['org:resource']}

BPIC13_open_problems

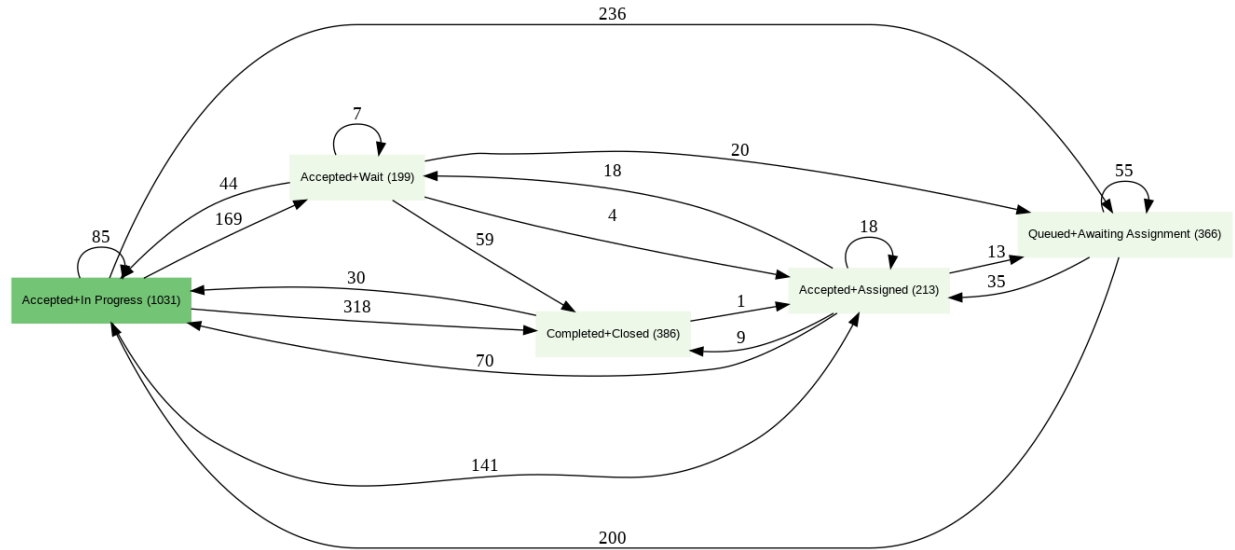
Number of traces in the log: 819
Number of events in the log: 2351
Classifiers in the log: {'Activity classifier': ['concept:name', 'lifecycle:transition'], 'Resource classifier': ['org:resource']}

Exporting and reimporting the log...

Processing log...
58772it [00:00, 309049.33it/s]

Number of traces in the reimported log: 819
Number of events in the reimported log: 2351
Classifiers in the reimported log: {'Activity classifier': ['concept:name', 'lifecycle:transition'], 'Resource classifier': ['org:resource']}

IMPORT



BPIC15_1

Number of traces in the log: 1199
Number of events in the log: 52217
Classifiers in the log:
{'Activity classifier': ['concept:name', 'lifecycle:transition'],
'Activity classifier activityNameEN': ['activityNameEN',
'lifecycle:transition'],
'Activity classifier activityNameNL': ['activityNameNL',
'lifecycle:transition'],
'Resource': ['org:resource']}

Exporting and reimporting the log...

2033lit [00:00, 203304.38it/s]Processing log...
1381966it [00:07, 184246.86it/s]

Number of traces in the reimported log: 1199
Number of events in the reimported log: 52217
Classifiers in the log:
{'Activity classifier': ['concept:name', 'lifecycle:transition'],
'Activity classifier activityNameEN': ['activityNameEN',
'lifecycle:transition'],
'Activity classifier activityNameNL': ['activityNameNL',
'lifecycle:transition'],
'Resource': ['org:resource']}

IMPORT

BPIC15_2

```
Number of traces in the log: 832
Number of events in the log: 44354
Classifiers in the log:
{'Activity classifier': ['concept:name', 'lifecycle:transition'],
 'Activity classifier activityNameEN': ['activityNameEN',
 'lifecycle:transition'],
 'Activity classifier activityNameNL': ['activityNameNL',
 'lifecycle:transition'],
 'Resource': ['org:resource']}
```

Exporting and reimporting the log...

```
17196it [00:00, 171958.93it/s]Processing log...
1155576it [00:07, 160772.18it/s]
```

```
Number of traces in the reimported log: 832
Number of events in the reimported log: 44354
Classifiers in the log:
{'Activity classifier': ['concept:name', 'lifecycle:transition'],
 'Activity classifier activityNameEN': ['activityNameEN',
 'lifecycle:transition'],
 'Activity classifier activityNameNL': ['activityNameNL',
 'lifecycle:transition'],
 'Resource': ['org:resource']}
```

BPIC15_3

```
Number of traces in the log: 1409
Number of events in the log: 59681
Classifiers in the log:
{'Activity classifier': ['concept:name', 'lifecycle:transition'],
 'Activity classifier activityNameEN': ['activityNameEN',
 'lifecycle:transition'],
 'Activity classifier activityNameNL': ['activityNameNL',
 'lifecycle:transition'],
 'Resource': ['org:resource']}
```

Exporting and reimporting the log...

```
20380it [00:00, 203798.74it/s]Processing log...
1576754it [00:07, 210799.99it/s]
```

```
Number of traces in the reimported log: 1409
Number of events in the reimported log: 59681
Classifiers in the log:
{'Activity classifier': ['concept:name', 'lifecycle:transition'],
 'Activity classifier activityNameEN': ['activityNameEN',
 'lifecycle:transition'],
 'Activity classifier activityNameNL': ['activityNameNL',
 'lifecycle:transition'],
 'Resource': ['org:resource']}
```


IMPORT

BPIC15_4

```
Number of traces in the log: 1053
Number of events in the log: 47293
Classifiers in the log:
{'Activity classifier': ['concept:name', 'lifecycle:transition'],
 'Activity classifier activityNameEN': ['activityNameEN',
   'lifecycle:transition'],
 'Activity classifier activityNameNL': ['activityNameNL',
   'lifecycle:transition'],
 'Resource': ['org:resource']}
```

Exporting and reimporting the log...

```
27684it [00:00, 276135.16it/s]Processing log...
1243132it [00:05, 222349.48it/s]
```

```
Number of traces in the reimported log: 1053
Number of events in the reimported log: 47293
Classifiers in the log:
{'Activity classifier': ['concept:name', 'lifecycle:transition'],
 'Activity classifier activityNameEN': ['activityNameEN',
   'lifecycle:transition'],
 'Activity classifier activityNameNL': ['activityNameNL',
   'lifecycle:transition'],
 'Resource': ['org:resource']}
```

BPIC15_5

```
Number of traces in the log: 1156
Number of events in the log: 59083
Classifiers in the log:
{'Activity classifier': ['concept:name', 'lifecycle:transition'],
 'Activity classifier activityNameEN': ['activityNameEN',
   'lifecycle:transition'],
 'Activity classifier activityNameNL': ['activityNameNL',
   'lifecycle:transition'],
 'Resource': ['org:resource']}
```

Exporting and reimporting the log...

```
26154it [00:00, 261539.63it/s]Processing log...
1551272it [00:06, 228488.60it/s]
```

```
Number of traces in the reimported log: 1156
Number of events in the reimported log: 59083
Classifiers in the log:
{'Activity classifier': ['concept:name', 'lifecycle:transition'],
 'Activity classifier activityNameEN': ['activityNameEN',
   'lifecycle:transition'],
 'Activity classifier activityNameNL': ['activityNameNL',
   'lifecycle:transition'],
 'Resource': ['org:resource']}
```

IMPORT

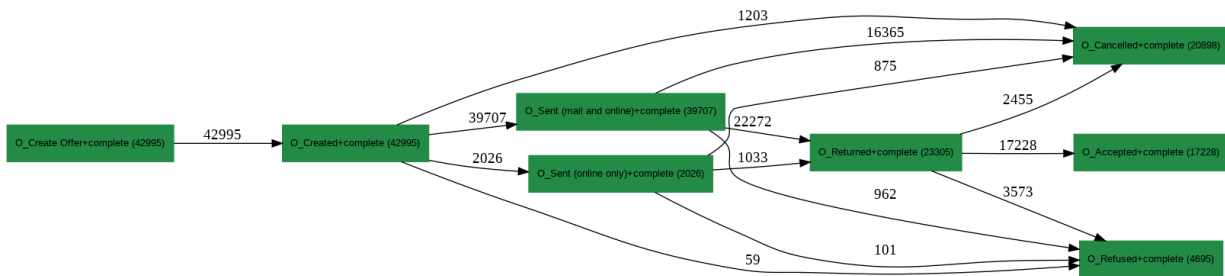
BPIC17 – Offer log

```
Number of traces in the log: 42995
Number of events in the log: 193849
Classifiers in the log:
{'Event Name': ['concept:name'],
'MXML Legacy Classifier': ['concept:name', 'lifecycle:transition'],
'Resource': ['org:resource']}
```

Exporting and reimporting the log...

```
20252it [00:00, 202514.88it/s]Processing log...
4049042it [00:18, 214872.05it/s]
```

```
Number of traces in the reimported log: 42995
Number of events in the reimported log: 193849
Classifiers in the log:
{'Event Name': ['concept:name'],
'MXML Legacy Classifier': ['concept:name', 'lifecycle:transition'],
'Resource': ['org:resource']}
```



BPIC17

```
Number of traces in the log: 31509
Number of events in the log: 1202267
Classifiers in the log:
{'Event Name': ['concept:name'],
'MXML Legacy Classifier': ['concept:name', 'lifecycle:transition'],
'Resource': ['org:resource']}
```

Exporting and reimporting the log...

```
30496it [00:00, 304174.89it/s]Processing log...
22194672it [01:12, 304553.64it/s]
```

```
Number of traces in the reimported log: 31509
Number of events in the reimported log: 1202267
Classifiers in the log:
{'Event Name': ['concept:name'],
'MXML Legacy Classifier': ['concept:name', 'lifecycle:transition'],
'Resource': ['org:resource']}
```

IMPORT

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, 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,

IMPORT

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 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

IMPORT

			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
			1 10 2 3 4 5 6 7 8 9
defectType	int		0 1 2 3
numberRepairs	int		T1 T2 T3
phoneType	String		

Level A1

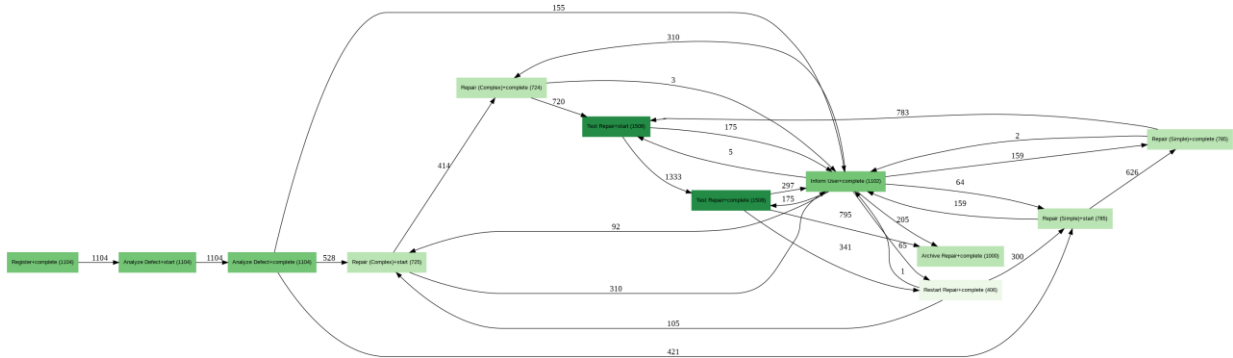
Number of traces in the log: 1104
 Number of events in the log: 11855
 Classifiers in the log: {}

Exporting and reimporting the log...

Processing log...
 75560it [00:00, 323293.73it/s]

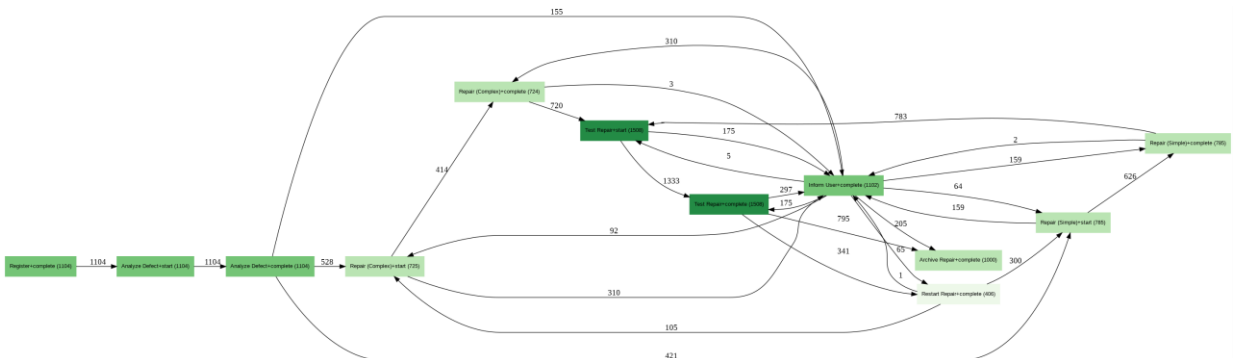
Number of traces in the reimported log: 1104
 Number of events in the reimported log: 11855
 Classifiers in the reimported log: {}

IMPORT



Level A2

```
Number of traces in the log: 1104  
Number of events in the log: 11855  
Classifiers in the log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}  
Exporting and reimporting the log...  
Processing log...  
99276it [00:00, 227501.38it/s]  
Number of traces in the reimported log: 1104  
Number of events in the reimported log: 11855  
Classifiers in the reimported log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}
```



IMPORT

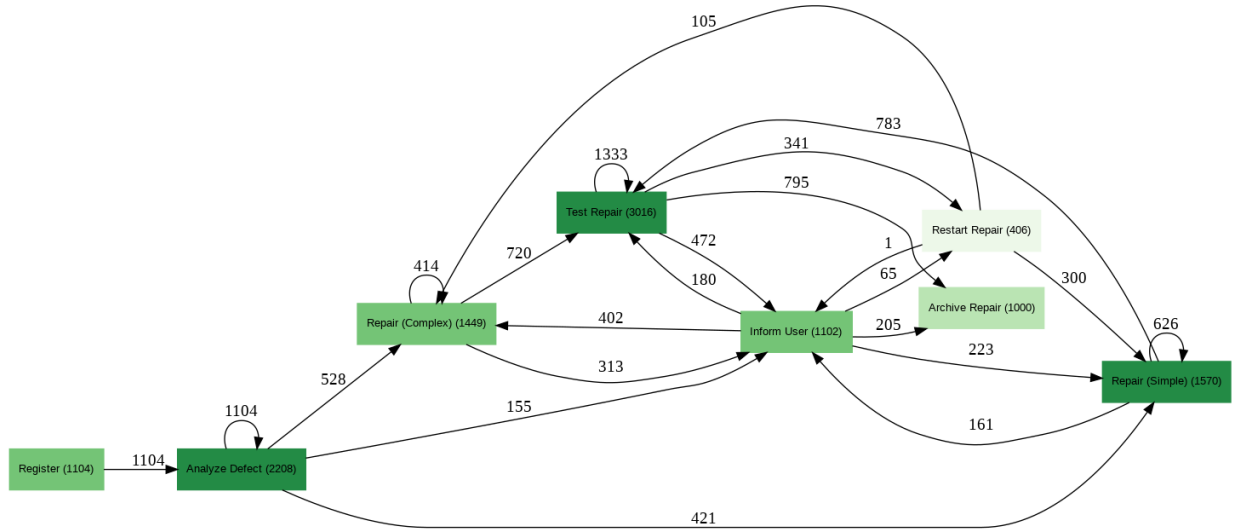
Level B1

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {}

Exporting and reimporting the log...

23676it [00:00, 234683.81it/s]Processing log...
122988it [00:00, 184227.79it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {}



Level B2

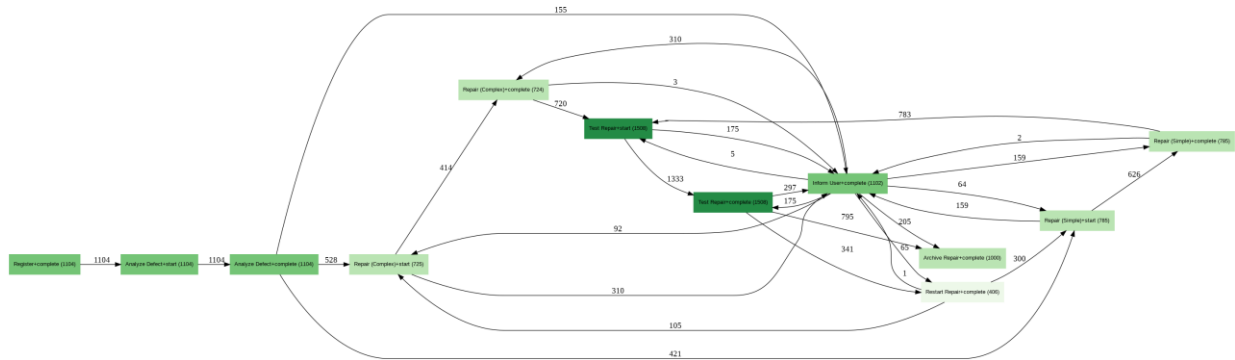
Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Exporting and reimporting the log...

21050it [00:00, 210073.47it/s]Processing log...
122990it [00:00, 262361.05it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

IMPORT



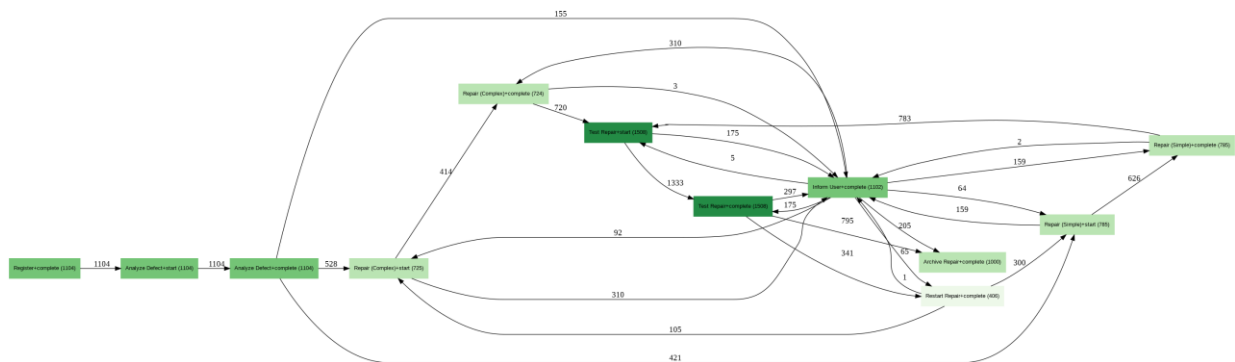
Level C1

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {}

Exporting and reimporting the log...

28745it [00:00, 287448.90it/s]Processing log...
99274it [00:00, 196930.41it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {}



IMPORT

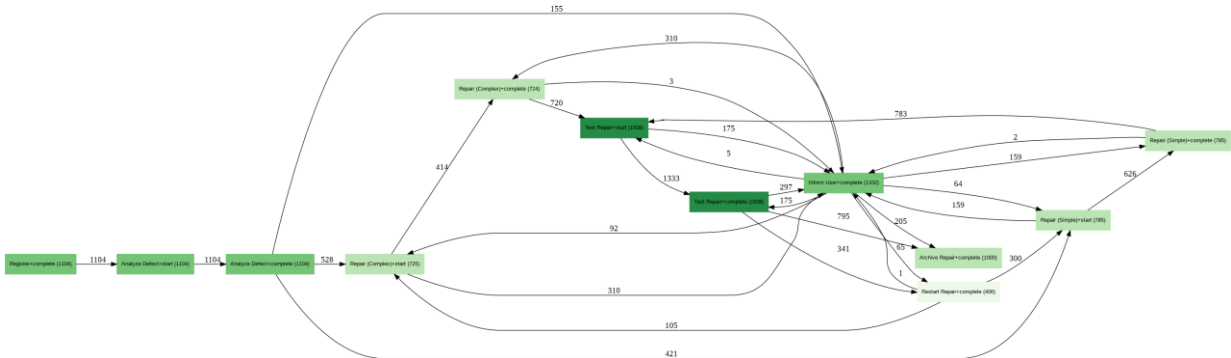
Level C2

```
Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Exporting and reimporting the log...

25755it [00:00, 257549.02it/s]Processing log...
122990it [00:00, 189975.80it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}
```



Level D1

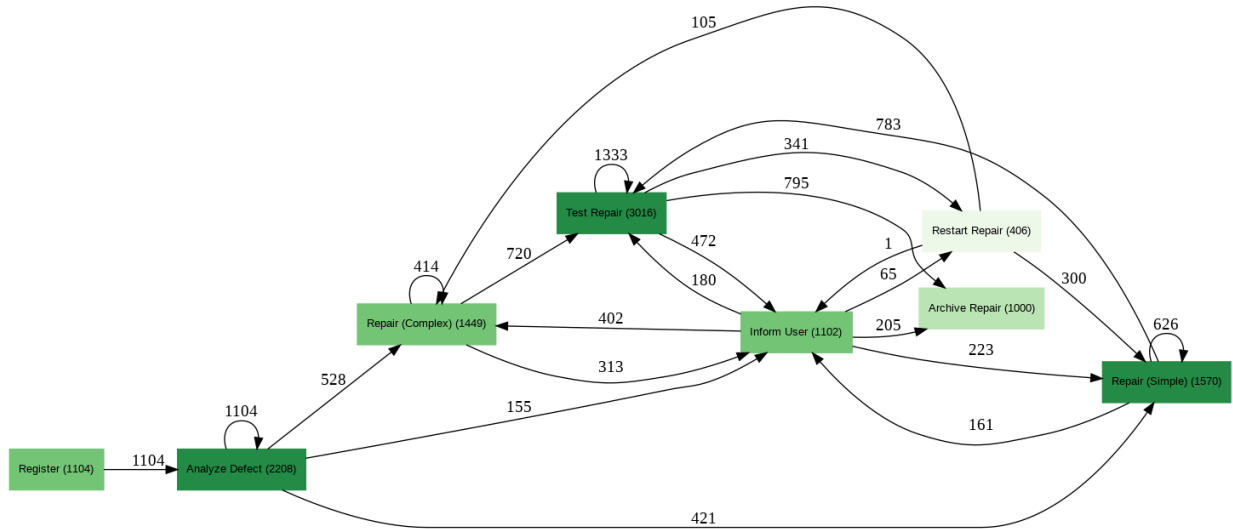
```
Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {}

Exporting and reimporting the log...

23043it [00:00, 228535.16it/s]Processing log...
210612it [00:00, 255495.48it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {}
```

IMPORT



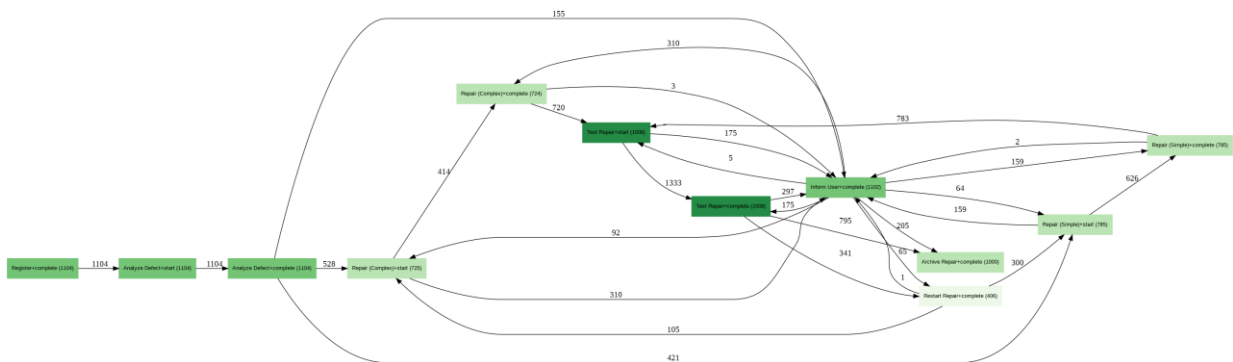
Level D2

Number of traces in the log: 1104
 Number of events in the log: 11855
 Classifiers in the log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Exporting and reimporting the log...

```
28144it [00:00, 275543.51it/s]Processing log...
210614it [00:00, 273197.31it/s]
```

Number of traces in the reimported log: 1104
 Number of events in the reimported log: 11855
 Classifiers in the reimported log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}



IMPORT

Flag X1

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {}

Exporting and reimporting the log...

29246it [00:00, 291357.17it/s]Processing log...
217828it [00:00, 265590.49it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {}

Note: No DFG image here, since the log neither contains activity attributes nor classifiers.

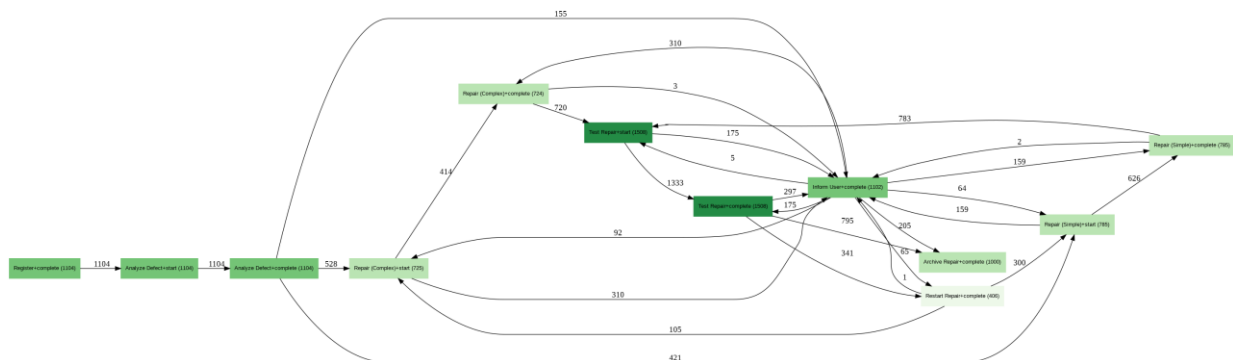
Flag X2

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {'(Name AND Transition)': ['Key 1', 'Key 6']}

Exporting and reimporting the log...

31745it [00:00, 317448.79it/s]Processing log...
217830it [00:00, 276324.70it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {'(Name AND Transition)': ['Key 1', 'Key 6']}



Export

Level A1

```
Number of traces in the log: 1104  
Number of events in the log: 11855  
Classifiers in the log: {}
```

```
Exporting and reimporting the log...
```

```
Processing log...  
75560it [00:00, 323293.73it/s]
```

```
Number of traces in the reimported log: 1104  
Number of events in the reimported log: 11855  
Classifiers in the reimported log: {}
```

Level A2

```
Number of traces in the log: 1104  
Number of events in the log: 11855  
Classifiers in the log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}
```

```
Exporting and reimporting the log...
```

```
Processing log...  
99276it [00:00, 227501.38it/s]
```

```
Number of traces in the reimported log: 1104  
Number of events in the reimported log: 11855  
Classifiers in the reimported log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}
```

Level B1

```
Number of traces in the log: 1104  
Number of events in the log: 11855  
Classifiers in the log: {}
```

```
Exporting and reimporting the log...
```

```
23676it [00:00, 234683.81it/s]Processing log...  
122988it [00:00, 184227.79it/s]
```

```
Number of traces in the reimported log: 1104  
Number of events in the reimported log: 11855  
Classifiers in the reimported log: {}
```

EXPORT

Level B2

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Exporting and reimporting the log...

21050it [00:00, 210073.47it/s]Processing log...
122990it [00:00, 262361.05it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Level C1

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {}

Exporting and reimporting the log...

28745it [00:00, 287448.90it/s]Processing log...
99274it [00:00, 196930.41it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {}

Level C2

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Exporting and reimporting the log...

25755it [00:00, 257549.02it/s]Processing log...
122990it [00:00, 189975.80it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

EXPORT

Level D1

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {}

Exporting and reimporting the log...

23043it [00:00, 228535.16it/s]Processing log...
210612it [00:00, 255495.48it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {}

Level D2

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Exporting and reimporting the log...

28144it [00:00, 275543.51it/s]Processing log...
210614it [00:00, 273197.31it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Flag X1

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {}

Exporting and reimporting the log...

29246it [00:00, 291357.17it/s]Processing log...
217828it [00:00, 265590.49it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {}

EXPORT

Flag X2

Number of traces in the log: 1104
Number of events in the log: 11855
Classifiers in the log: {'(Name AND Transition)': ['Key 1', 'Key 6']}

Exporting and reimporting the log...

31745it [00:00, 317448.79it/s]Processing log...
217830it [00:00, 276324.70it/s]

Number of traces in the reimported log: 1104
Number of events in the reimported log: 11855
Classifiers in the reimported log: {'(Name AND Transition)': ['Key 1', 'Key 6']}

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