IEEE Task Force on Process Mining

XES CERTIFICATION FOR PM4PY 0.1: LIBRARY
TABLE OF CONTENTS

Contents

Tool ___________________________________________________________ 1
Meta __________________________________________________________ 2
Import __________________________________________________________ 2
Export __________________________________________________________ 29
Contact Information _____________________________________________ 33
Tool

NAME
Pm4py Library

VENDOR
Fraunhofer FIT process mining group and RWTH Aachen University

VERSION
0.1 - https://github.com/pm4py/pm4py-source/releases/tag/0.1

REQUESTED CERTIFICATION LEVELS

Import
A-D, X

Export
A-D, X
Meta

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DATE
19/11/2018

HISTORY

CHANGES

<table>
<thead>
<tr>
<th>AUTHOR(S)</th>
<th>DATE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madhavi Shankar</td>
<td>06/11/2018</td>
<td>Initial recordings for the certification</td>
</tr>
<tr>
<td>Madhavi Shankar</td>
<td>19/11/2018</td>
<td>Fixed the import issue and revised as per the initial comments from Task Force team</td>
</tr>
</tbody>
</table>
REAL-LIFE LOGS

SANITIZED BPIC LOGS

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

BPIC12

log loaded
Number of traces - 13087
Number of events - 262200
Classifiers ['Activity classifier': ['concept:name', 'lifecycle:transition']]
exporting log xescert_exportlogs\exp_BPIC12.xes
exported log xescert_exportlogs\exp_BPIC12.xes
Reimporting log file just exported - xescert_exportlogs\exp_BPIC12.xes
log loaded xescert_exportlogs\exp_BPIC12.xes
Number of traces - 13087
Number of events - 262200
Classifiers ['Activity classifier': ['concept:name', 'lifecycle:transition']]
BPIC13_closed_problems

log loaded
Number of traces = 1487
Number of events = 6660
Classifiers ['Activity classifier': 'concept:name', 'lifecycle:transition', 'Resource classifier': 'org:resource']
exporting log mesecert_exportlogs\exp_BPIC13_closed_problems.xes
exported log mesecert_exportlogs\exp_BPIC13_closed_problems.xes
Reimporting log file just exported - mesecert_exportlogs\exp_BPIC13_closed_problems.xes
log loaded mesecert_exportlogs\exp_BPIC13_closed_problems.xes
Number of traces = 1487
Number of events = 6660
Classifiers ['Activity classifier': 'concept:name', 'lifecycle:transition', 'Resource classifier': 'org:resource']
BPIC13_incidents

log loaded
Number of traces - 7584
Number of events - 65533
Classifiers ['Activity classifier': ['concept:name', 'lifecycle:transition'], 'Resource classifier': ['org:resource']
exporting log ksercet_exportlogs\exp_BPIC13_incidents.xes
exported log ksercet_exportlogs\exp_BPIC13_incidents.xes
Reimporting log file just exported - ksercet_exportlogs\exp_BPIC13_incidents.xes
log loaded ksercet_exportlogs\exp_BPIC13_incidents.xes
Number of traces - 7584
Number of events - 65533
Classifiers ['Activity classifier': ['concept:name', 'lifecycle:transition'], 'Resource classifier': ['org:resource']}

Page 5
BPIC13_open_problems

log loaded
Number of traces - 819
Number of events - 2351
Classifiers [{'Activity classifier': ['concept:name', 'lifecycle:transition'], 'Resource classifier': ['org:resource']}
exporting log mesocert_exportlogs/exp_BPIC13_open_problems.xes
exported log mesocert_exportlogs\exp_BPIC13_open_problems.xes
Reimporting log file just exported - mesocert_exportlogs\exp_BPIC13_open_problems.xes
log loaded mesocert_exportlogs\exp_BPIC13_open_problems.xes
Number of traces - 819
Number of events - 2351
Classifiers [{'Activity classifier': ['concept:name', 'lifecycle:transition'], 'Resource classifier': ['org:resource']}

Page 6
BPIC15_4

log loaded
Number of traces = 1000
Number of events = 7348
exportlog log:Menlo_20150506_0014
exportlog log:Menlo_20150506_0014
Number of traces = 1000
Number of events = 7348

BPIC17 – Offer log

Log loaded
Number of traces: 42995
Number of events: 165046
Classifiers: ['Event Name', 'Model Legacy Classifier', 'Event transition', 'Resource', 'org:resource']

O_Create Offer+complete (42995)

O_Created+complete (42995)

O_Sent (online only)+complete (2026)

O_Sent (mail and online)+complete (39707)

O_Returned+complete (23305)

O_Cancelled+complete (20898)

O_Accepted+complete (17228)

O_Refused+complete (4695)
BPIC17

log loaded
Number of traces = 31599
Number of events = 1293267
Classifiers ['Event Name': 'concept:name', 'M3NHL Legacy Classifier': ['concept:name', 'lifecycle:transition'], 'Resource': 'org:resource']
exporting log mesecr_exportlogstep_BPIC17.xes
Reimporting log file just exported - mesecr_exportlogstep_BPIC17.xes
log loaded mesecr_exportlogstep_BPIC17.xes
Number of traces = 31599
Number of events = 1293267
Classifiers ['Event Name': 'concept:name', 'M3NHL Legacy Classifier': ['concept:name', 'lifecycle:transition'], 'Resource': 'org:resource']
### ARTIFICIAL LOGS

#### FILTERED REPAIR EXAMPLE LOGS

<table>
<thead>
<tr>
<th>NAME</th>
<th>LEVEL</th>
<th>EVENT ATTRIBUTE KEYS (IF BOLD THEN GLOBAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LevelA1</td>
<td>A1</td>
<td><code>concept:name</code></td>
</tr>
<tr>
<td>LevelA2</td>
<td>A2</td>
<td>Classifier (<code>concept:name</code> AND <code>lifecycle:transition</code>)</td>
</tr>
<tr>
<td>LevelB1</td>
<td>B1</td>
<td><code>concept:name</code>, <code>lifecycle:transition</code>, <code>time:timestamp</code></td>
</tr>
<tr>
<td>LevelB2</td>
<td>B2</td>
<td>Classifier (<code>concept:name</code> AND <code>lifecycle:transition</code>), <code>time:timestamp</code></td>
</tr>
<tr>
<td>LevelC1</td>
<td>C1</td>
<td><code>concept:name</code>, <code>org:resource</code></td>
</tr>
<tr>
<td>LevelC2</td>
<td>C2</td>
<td>Classifier (<code>concept:name</code> AND <code>lifecycle:transition</code>), <code>org:resource</code></td>
</tr>
<tr>
<td>LevelD1</td>
<td>D1</td>
<td><code>concept:name</code>, <code>concept:instance</code>, <code>lifecycle:transition</code>, <code>org:resource</code>, <code>org:group</code>, <code>org:role</code>, <code>time:timestamp</code></td>
</tr>
<tr>
<td>LevelD2</td>
<td>D2</td>
<td>Classifier (<code>concept:name</code> AND <code>lifecycle:transition</code>), <code>concept:instance</code>, <code>org:resource</code>, <code>org:group</code>, <code>org:role</code>, <code>time:timestamp</code></td>
</tr>
<tr>
<td>FlagX1</td>
<td>X1</td>
<td><code>defectFixed</code>, <code>defectType</code>, <code>Key 1</code>, <code>Key 2</code>, <code>Key 3</code>, <code>Key 4</code>, <code>Key 6</code>, <code>phoneType</code>, <code>numberRepairs</code>, <code>{0,1,2} 2Sa!! +1 &lt;x&gt;, ITEMS:41, #1, o.1.1</code></td>
</tr>
<tr>
<td>FlagX2</td>
<td>X2</td>
<td><code>defectFixed</code>, <code>defectType</code>, Classifier (<code>Key 1</code> AND <code>Key 6</code>)</td>
</tr>
</tbody>
</table>
### ATTRIBUTE TYPES AND VALUES

<table>
<thead>
<tr>
<th>KEYS</th>
<th>TYPE</th>
<th>VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>concept:instance</td>
<td>string</td>
<td>Key 2, Key 3, Key 4, phoneType, numberRepairs, {0,1,2} 2Sa!! +1 &lt;x&gt;, ITEMS:41, #1, o.1.1</td>
</tr>
<tr>
<td>concept:name (A1 and C1 logs)</td>
<td>string</td>
<td>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</td>
</tr>
<tr>
<td>concept:name (other logs)</td>
<td>string</td>
<td>Key 1, Analyze Defect, Archive Repair, Inform User, Register, Repair (Simple), Repair (Complex), Restart Repair, Test Repair</td>
</tr>
<tr>
<td>lifecycle:transition</td>
<td>string</td>
<td>Key 6, start, complete</td>
</tr>
<tr>
<td>org:group</td>
<td>string</td>
<td>{0,1,2} 2Sa!! +1 &lt;x&gt;, Group - Group 1, 3, and 5, Group 2 and 4</td>
</tr>
<tr>
<td>org:resource</td>
<td>string</td>
<td>Key 3, SolverC1, SolverC2, SolverC3, SolverS1, SolverS2, SolverS3</td>
</tr>
</tbody>
</table>
### org:role

| System Tester | Tester1 |
| Tester2 | Tester3 |
| Tester4 | Tester5 |
| Tester6 |

#### ITEMS:41, #1, o.1.1

- Role 1, 2, and 3
- Role 10
- Role 9

### time:timestamp

**Key 4**

| date | Like 1970-01-02T12:23:56.720+01:00 |

### defectFixed

- boolean true
- false

- 1
- 10
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

### defectType

- int

| 1 |
| 10 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |
| 9 |

### numberRepairs

- int

| 0 |
| 1 |
| 2 |
| 3 |

### phoneType

- String

| T1 |
| T2 |
| T3 |
Level A2

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers '{(Name AND Transition)'; ['concept:name', 'lifecycle:transition']}
exporting log keseert_exportlogs\exp_LevelA2xes
exported log keseert_exportlogs\exp_LevelA2xes
{'(Name AND Transition)'}
@Classifier
Reimporting log file just exported - keseert_exportlogs\exp_LevelA2xes
log loaded keseert_exportlogs\exp_LevelA2xes
Number of traces - 1104
Number of events - 11855
Classifiers '{(Name AND Transition)'; ['concept:name', 'lifecycle:transition']}

Page 19
Level B1

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {}
exporting log xescert_exportlogs\exp_LevelBl.xes
exported log xescert_exportlogs\exp_LevelBl.xes
Reimporting log file just exported - xescert_exportlogs\exp_LevelBl.xes
log loaded xescert_exportlogs\exp_LevelBl.xes
Number of traces - 1104
Number of events - 11855
Classifiers {}
Level B2

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}
exporting log kscert_exportlogs\exp_LevelB2.xes
exported log kscert_exportlogs\exp_LevelB2.xes
   {'(Name AND Transition)'}
@classifier
Reimporting log file just exported - kscert_exportlogs\exp_LevelB2.xes
log loaded kscert_exportlogs\exp_LevelB2.xes
Number of traces - 1104
Number of events - 11855
Classifiers {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}
Level C1

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {}
exporting log xescert_exportlogs\exp_LevelC1.exe
exported log xescert_exportlogs\exp_LevelC1.exe
Reimporting log file just exported - xescert_exportlogs\exp_LevelC1.exe
log loaded xescert_exportlogs\exp_LevelC1.exe
Number of traces - 1104
Number of events - 11855
Classifiers { }
Level C2

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers ['(Name AND Transition)': ['concept:name', 'lifecycle:transition']]
exporting log xescert_exportlogs\exp_LevelC2.xes
exported log xescert_exportlogs\exp_LevelC2.xes
['(Name AND Transition)']

#classifier
Reimporting log file just exported - xescert_exportlogs\exp_LevelC2.xes
log loaded xescert_exportlogs\exp_LevelC2.xes
Number of traces - 1104
Number of events - 11855
Classifiers ['(Name AND Transition)': ['concept:name', 'lifecycle:transition']]

Page 23
Level D1

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {}
exporting log xescert_exportlogs\exp_LevelD1.xes
exported log xescert_exportlogs\exp_LevelD1.xes
Reimporting log file just exported - xescert_exportlogs\exp_LevelD1.xes
log loaded xescert_exportlogs\exp_LevelD1.xes
Number of traces - 1104
Number of events - 11855
Classifiers {}
Level D2

log loaded
Number of traces - 1104
Number of events - 11055
Classifiers ['(Name AND Transition)': ['concept:name', 'lifecycle:transition']]
exporting log xescert_exportlogs\exp_LevelD2.xes
exported log xescert_exportlogs\exp_LevelD2.xes
['(Name AND Transition)']
@@classifier
Reimporting log file just exported - xescert_exportlogs\exp_LevelD2.xes
log loaded xescert_exportlogs\exp_LevelD2.xes
Number of traces - 1104
Number of events - 11855
Classifiers ['(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Page 25
Flag X1

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {}
exporting log xescert_exportlogs\exp_FlagX1.xes
exported log xescert_exportlogs\exp_FlagX1.xes
Reimporting log file just exported - xescert_exportlogs\exp_FlagX1.xes
log loaded xescert_exportlogs\exp_FlagX1.xes
Number of traces - 1104
Number of events - 11855
Classifiers {}
Note – Since, there is no classifier and no activity attributes, we cannot have a DFG visualization for this log.

Flag X2

log loaded
Number of traces - 1104
Number of events - 11355
Classifiers {} exporting log xescert_exportlogs\exp_LevelA1.xes
exported log xescert_exportlogs\exp_levelA1.xes
Reimporting log file just exported - xescert_exportlogs\exp_levelA1.xes
log loaded xescert_exportlogs\exp_levelA1.xes
Number of traces - 1104
Number of events - 11355
Classifiers {}
Export

Level A1

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {}
exporting log xescert_exportlogs\exp_LevelA1.xes
exported log xescert_exportlogs\exp_LevelA1.xes
Reimporting log file just exported - xescert_exportlogs\exp_LevelA1.xes
log loaded xescert_exportlogs\exp_LevelA1.xes
Number of traces - 1104
Number of events - 11855
Classifiers {}

Level A2

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers ['(Name AND Transition): ['concept:name', 'lifecycle:transition']]
exporting log xescert_exportlogs\exp_LevelA2.xes
exported log xescert_exportlogs\exp_LevelA2.xes
['(Name AND Transition)']
@Classifier
Reimporting log file just exported - xescert_exportlogs\exp_LevelA2.xes
log loaded xescert_exportlogs\exp_LevelA2.xes
Number of traces - 1104
Number of events - 11855
Classifiers ['(Name AND Transition): ['concept:name', 'lifecycle:transition']]}

Level B1

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {}
exporting log xescert_exportlogs\exp_LevelB1.xes
exported log xescert_exportlogs\exp_LevelB1.xes
Reimporting log file just exported - xescert_exportlogs\exp_LevelB1.xes
log loaded xescert_exportlogs\exp_LevelB1.xes
Number of traces - 1104
Number of events - 11855
Classifiers {}/
Level B2

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}
exporting log xescert_exportlogs\exp_LevelB2.xes
exported log xescert_exportlogs\exp_LevelB2.xes
{'(Name AND Transition)'}
@classifier
Reimporting log file just exported - xescert_exportlogs\exp_LevelB2.xes
log loaded xescert_exportlogs\exp_LevelB2.xes
Number of traces - 1104
Number of events - 11855
Classifiers {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Level C1

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {}
exporting log xescert_exportlogs\exp_LevelC1.xes
exported log xescert_exportlogs\exp_LevelC1.xes
Reimporting log file just exported - xescert_exportlogs\exp_LevelC1.xes
log loaded xescert_exportlogs\exp_LevelC1.xes
Number of traces - 1104
Number of events - 11855
Classifiers {}

Level C2

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}
exporting log xescert_exportlogs\exp_LevelC2.xes
exported log xescert_exportlogs\exp_LevelC2.xes
{'(Name AND Transition)'}
@classifier
Reimporting log file just exported - xescert_exportlogs\exp_LevelC2.xes
log loaded xescert_exportlogs\exp_LevelC2.xes
Number of traces - 1104
Number of events - 11855
Classifiers {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}
Level D1

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {}
exporting log xescert_exportlogs\exp_LevelD1.xes
exported log xescert_exportlogs\exp_LevelD1.xes
Reimporting log file just exported - xescert_exportlogs\exp_LevelD1.xes
log loaded xescert_exportlogs\exp_LevelD1.xes
Number of traces - 1104
Number of events - 11855
Classifiers {}

Level D2

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}
exporting log xescert_exportlogs\exp_LevelD2.xes
exported log xescert_exportlogs\exp_LevelD2.xes
['(Name AND Transition)']
@classifier
Reimporting log file just exported - xescert_exportlogs\exp_LevelD2.xes
log loaded xescert_exportlogs\exp_LevelD2.xes
Number of traces - 1104
Number of events - 11855
Classifiers {'(Name AND Transition)': ['concept:name', 'lifecycle:transition']}

Flag X1

log loaded
Number of traces - 1104
Number of events - 11855
Classifiers {}
exporting log xescert_exportlogs\exp_FlagX1.xes
exported log xescert_exportlogs\exp_FlagX1.xes
Reimporting log file just exported - xescert_exportlogs\exp_FlagX1.xes
log loaded xescert_exportlogs\exp_FlagX1.xes
Number of traces - 1104
Number of events - 11855
Classifiers {}
Flag X2

log loaded
Number of traces - 1104
Number of events - 11385
Classifiers {}
exporting log xescert_exportlogs\exp_LevelAl.xes
exported log xescert_exportlogs\exp_LevelAl.xes
Reimporting log file just exported - xescert_exportlogs\exp_LevelAl.xes
log loaded xescert_exportlogs\exp_LevelAl.xes
Number of traces - 1104
Number of events - 11385
Classifiers {}/
Contact Information

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