ProMessenger 2

PROM NEWSLETTER

OCTOBER 2015

APROMORE

In this demo we illustrate a set of features of the Apromore process model repository for analyzing business process variants. Two types of analysis are provided: one is static and based on differences on the process control flow, the other is dynamic and based on differences in the process behavior between the variants. These features combine techniques for the management of large process model collections with those for mining process knowledge from process execution logs. The tool demonstration will be useful for researchers and practitioners working on large process model collections and process execution logs, and specifically for those with an interest in understanding, managing and consolidating business process variants both within and across organizational boundaries.

The full demo paper can be found on http://ceur-ws.org/Vol-1418/paper4.pdf.
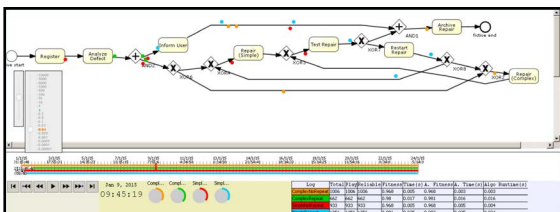
MPE
Explore event data
▸ P2

HADOOP
Connecting ProM
▸ P3

STREAMS
Generating with CPN Tools
▸ P4

Eric Verbeek   EDITOR

Welcome to the second ProMessenger, the newsletter on ProM. This newsletter focuses on the tool demos that were presented during the BPM Demo Session 2015 at the BPM Conference in Innsbruck. Of the 28 demos presented at this Session, six were implemented ProM:

1.   Operational Suppport Provider for Predictive Monitoring of Business Process (P3),
2.   Declarative Process Discovery with MINErful in ProM (P2),
3.   Differencegraph - A ProM Plugin for Calculating and Visualizing Differences between Processes (P4),
4.   Handling Big(ger) Logs: Connecting ProM 6 to Apache Hadoop (P3),
5.   Know What You Stream: Generating Event Streams from CPN Models in ProM 6 (P4), and
6.   The Multi-perspective Process Explorer (P2).

Furthermore, one demo was also related to ProM:

1.   Analysis of Business Process Variants in Apromore (P1).

Enjoy the demos in this newsletter! Please send your input for the following newsletter to me before **December 1, 2015**.

Eric Verbeek,

MPE

THE MULTI-PERSPECTIVE PROCESS EXPLORER.

The *Multi-perspective Process Explorer* is a new tool in ProM that integrates current multi-perspective process mining techniques for discovery and conformance checking. It aims to reduce the time needed to explore event data. Common tasks in multi-perspective process mining, such as data-aware conformance checking and data-aware discovery are supported. Moreover, it provides data-aware process exploration techniques such as a SQL-like filtering facility, trace variants visualization, and a process-aware chart view providing details on the distribution of attributes at certain states within the process. It requires a (possibly data-aware) Petri net along with an event log as input. The plug-in is available in the MultiPerspectiveExplorer package that needs to be installed manually.

A more detailed introduction to the plug-in and a screen cast is given under http://ceur-ws.org/Vol-1418/paper27.pdf.
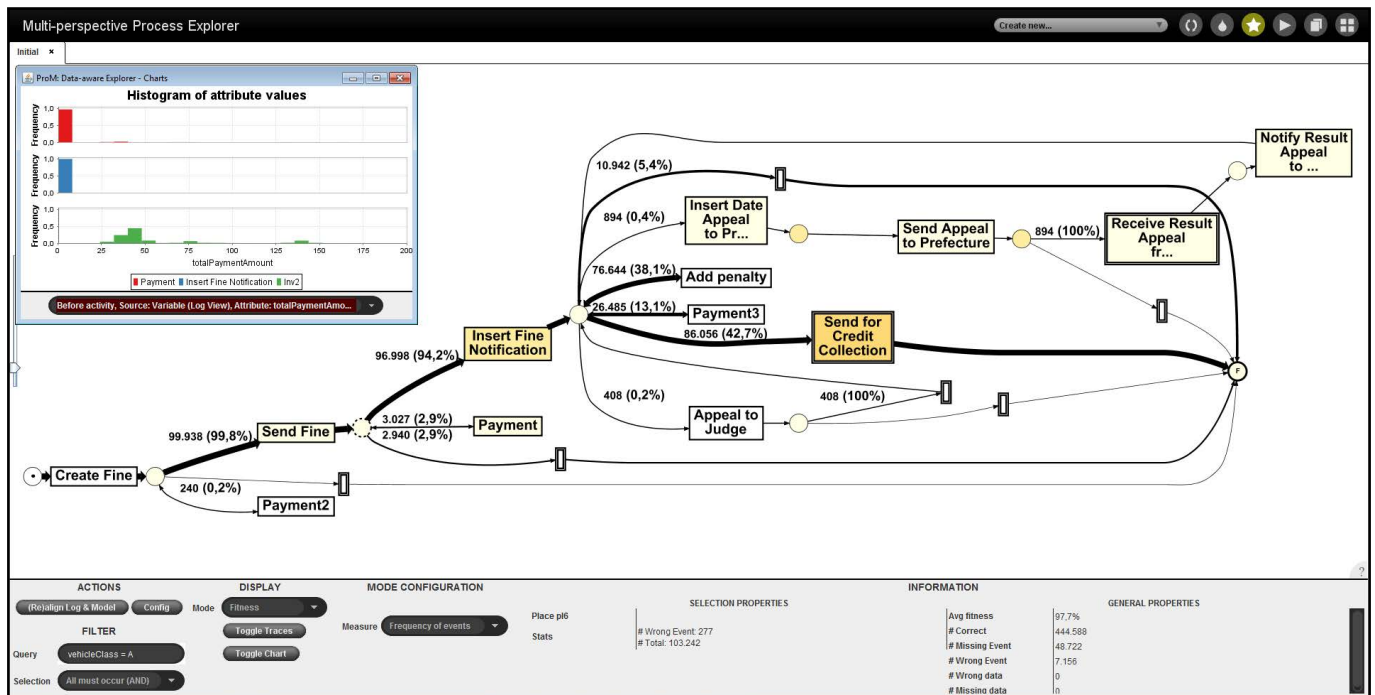
DECLARATIVE PROCESS DISCOVERY WITH MINERFUL

Declarative process models consist of a set of constraints exerted over the execution of process activities. DECLARE is a declarative process modelling language that specifies a set of constraint templates along with their graphical notation. The automated discovery of DECLARE models aims at finding those constraints that are verified throughout a given event log. With *MINERful*, we present a fast scalable tool for mining DECLARE models in ProM. Its usage is described with its application on a use case, based on a publicly available real-life benchmark.

The full demo paper can be found on http://ceur-ws.org/Vol-1418/paper13.pdf.
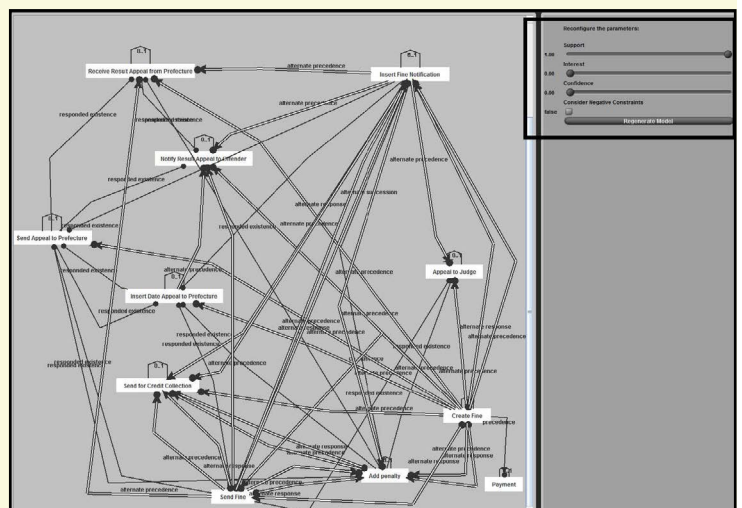
OS SUPPORT FOR PREDICTIVE MONITORING

Predictive process monitoring is concerned with exploiting event logs to predict how running (uncompleted) cases will unfold up to their completion. In this demo, we propose an implementation in the ProM toolset of a predictive process monitoring framework for estimating the probability that an ongoing case will lead to a certain outcome among a set of possible outcomes. An outcome refers to a label associated to completed cases, like, for example, a label indicating that a given case completed "on time" (with respect to a given desired duration) or "late", or a label indicating that a given case led to a customer complaint or not. The framework takes into account both the sequence of events observed in the current trace, as well as data attributes associated to these events. The prediction problem is approached in two phases. First, prefixes of previous traces are clustered according to control flow information. Secondly, a classifier is built for each cluster to discriminate among a set of possible outcomes. At runtime, a prediction is made on a running case by mapping it to a cluster and applying the corresponding classifier.

The full demo paper can be found on http://ceur-ws.org/Vol-1418/paper1.pdf.

HANDLING BIG LOGS

CONNECTING PROM 6 TO APACHE HADOOP.

Within process mining the main goal is to support the analysis, improvement and apprehension of business processes. Numerous process mining techniques have been developed with that purpose. The majority of these techniques use conventional computation models and do not apply novel scalable and distributed techniques. In this demo we present an integrative framework connecting the process mining framework ProM with the distributed computing environment Apache Hadoop. The integration allows for the execution of MapReduce jobs on any Apache Hadoop cluster enabling practitioners and researchers to explore and develop scalable and distributed process mining approaches. Thus, the new approach enables the application of different process mining techniques to events logs of several hundreds of gigabytes.

The full demo paper can be found on http://ceur-ws.org/Vol-1418/paper17.pdf.

PROM SUPPORT

In case you experience problems with ProM, be it with a release or with a nightly build, please contact our support team. You can do so by visiting the ProM forum at http://www.win.tue.nl/promforum or by sending a mail to prom-users@listserver.tue.nl.

If you contact us with a problem, please try to be specific. Please mention the version of ProM you are using and provide us with the necessary input to reproduce the problem, which includes the steps to take and the files to import.

KNOW WHAT YOU STREAM

GENERATING EVENT STREAMS FROM CPN MODELS

The field of process mining is concerned with supporting the analysis, improvement and understanding of business processes. A range of promising techniques have been proposed for process mining tasks such as process discovery and conformance checking. However there are challenges, originally stemming from the area of data mining, that have not been investigated extensively in context of process mining. In particular the incorporation of data stream mining techniques w.r.t. process mining has received little attention. In this demo, we present new developments that build on top of previous work related to the integration of data streams within the process mining framework ProM. We have developed means to use Coloured Petri Net (CPN) models as a basis for eventstream generation. The newly introduced functionality greatly enhances the use of eventstreams in context of process mining as it allows us to be actively aware of the originating model of the eventstream under analysis.

The full demo paper can be found on http://ceur-ws.org/Vol-1418/paper18.pdf.
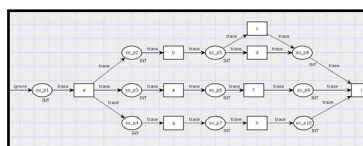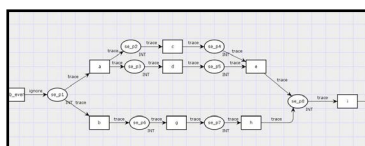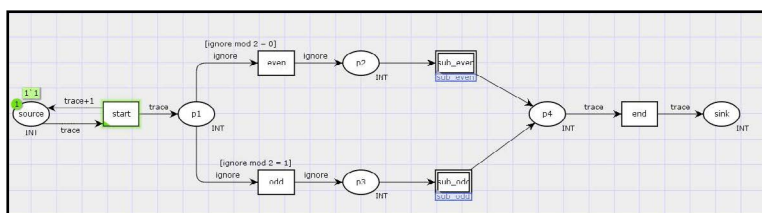
DIFFERENCEGRAPH

A ProM Plugin for Calculating and Visualizing Differences between Processes

The analysis of differences and commonalities between process models or between instances which progressed through the model (henceforth referred to as instance traffic) plays an important role in companies. For example, companies are often confronted with different versions or variants of a process model and hence need methods to identify redundancies or inconsistencies between them. *Differencegraph* is a plugin for ProM which supports the identification of differences and commonalities between process models as well as between their instance traffic. For this purpose a so-called difference graph between two process models and their instance trac is calculated and visualized. This generated difference graph supports decision making in various business cases such as finding deviations between processes.

The full demo paper can be found on http://ceur-ws.org/Vol-1418/paper14.pdf.
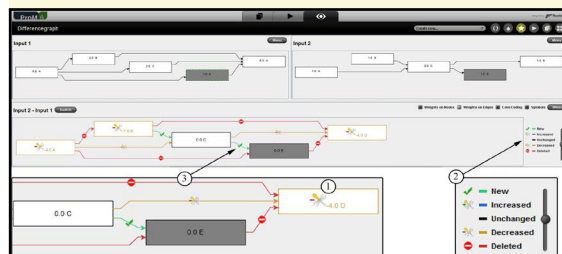
PROM DEVELOPMENT

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process mining workbench