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ProM
process mining workbench

The Municipality's Problem

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The municipality of Alkmaar is one of the larger cities in the northern part of the Netherlands (90,000 citizens). One of their internal processes concerns the handling of invoices. This process concerns almost each civil servant, regardless of their exact work place at one of the 10 locations across the city, since anyone responsible for purchasing an item must check its related invoice. To unify and improve this highly distributed invoice handling process, the municipality of Alkmaar implemented the process using the Staffware workflow management system. Furthermore, it was interested in the various effects of introducing the system on the process. Process mining was used to investigate these effects.

Process Mining

The goal of process mining is to extract information (e.g., process models) from event logs produced by a wide variety of systems ranging from enterprise information systems (e.g., based on WFM, ERP, SOA technologies) to embedded systems (e.g., medical systems, high-end copiers, etc.). Process mining allows for the discovery of processes, e.g., it is possible to automatically generate process models based on event logs expressed in various languages. Moreover, process mining can also be used to discover other aspects such as social networks, organizational structures, decision rules, bottlenecks, etc. without the need for people to model things beforehand. However, if models are present, process mining can be used to check conformance. This way it is possible to see where the actual process deviates from the model and how severe these deviations are. Process mining has emerged as a new and innovative way to analyze processes and systems based on the event logs they produce. Unlike data mining techniques, the focus is on processes rather than data and unlike classical process analysis techniques such as simulation there is less need for modeling and there is a direct link with reality.

ProM

ProM is an open source framework for process mining supporting process discovery and conformance checking. It is the leading process mining tool supporting a wide variety of techniques and modeling notations. Using ProMimport it is possible to extract data from different systems. Moreover, ProM interfaces with many other process modeling and analysis tools. In different projects ProM has shown to be able to deal with large event logs and extract meaningful information.

Results

Using the events logs of the Municipality and ProM, the invoice process workflow was analyzed in detail. First of all, it was possible to discover the actual process model. The discovered model was used for a subsequent performance analysis of the process. This analysis clearly indicated that processing times of individual steps in the process were reduced after introducing the workflow management system. Also, the effect of having actors dispersed over different geographical locations was of particular interest in this study. Based on a mining analysis, quite interesting facts were revealed. For example, when people work at the same location they are more responsive to engage in work being transferred between them than when they work at different locations.

More information

About process mining: www.processmining.org
About ProM: prom.sf.net