

# Detecting Workarounds Using Domain Knowledge-driven Process Mining

*TREO Talk*

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## Abstract

Deviations from a prescribed procedure, *workarounds*, have traditionally been viewed negatively, especially in terms of non-compliance to safety procedures. A more positive perspective is to consider the existence of workarounds as a sign that a dysfunctional process may need improvement. Regardless of the chosen viewpoint, most studies focusing on workarounds in relation to information systems make use of qualitative methods -such as interviews and observations- for the detection of deviations. A weakness of such methods is that they are labor-intensive and rely on the willingness of participants to expose their work practices to an observer.

Recently, studies have attempted to detect workarounds using quantitative techniques, such as process mining. Process mining uses the administration of an IT system, the so-called event log, as a starting point. Studies that have used process mining demonstrate that some types of workarounds can indeed be detected from an analysis of the event log, while others may be more difficult to spot. An inherent characteristic of workarounds is that they ‘work around’ the information system, meaning that the representation of the process may not be very well reflected in the event log of the information system. Indeed, an event log may present a trace that corresponds exactly with the prescribed process, although reality may be different. For example, in the sales industry, employees have been known to split purchase requests to bypass an information system’s error message. In the healthcare domain, fictitious patient records may be created to assign medication to, so the department has spares in times of emergency. Domain knowledge is necessary to distinguish the split purchase requests from the normal ones and the fictitious patient records from the others.

With this study, we aim to enable the automatic detection of these types of workarounds. Our approach relies on the derivation of clues from workarounds as identified during observations and interviews. In earlier qualitative studies, we already detected 81 workarounds in five healthcare organizations through interviews and observations. We categorize them into workaround types that can be detected using existing process mining techniques, and workaround types that can only be identified through knowledge-driven process mining. For each workaround type, we investigate whether we are able to trace it in the event logs extracted from the hospital information system.

Using insights from the observed workarounds, we strengthen existing process mining techniques with domain knowledge in order to better detect workarounds. In this way, we combine the strengths of both qualitative and quantitative techniques for the identification of workarounds.