# Artifact-driven Process Monitoring: Challenges and Opportunities

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In multi-party business processes, each organizations controls only a portion of the process. Therefore, being able to fully monitor these processes becomes paramount to improve coordination among parties, and to promptly react to issues. To this aim, we proposed a novel technique to autonomously and continuously monitor inter-organizational business processes, named *artifact-driven process monitoring*[3].

This technique exploits the Internet of Things (IoT) paradigm to perform monitoring tasks directly on physical objects exchanged by organizations. In particular, physical objects are equipped with sensors, a computing device, and a communication interface, thus becoming *smart*. Based on sensor data collected and exchanged among them, smart objects can detect when activities are executed without requiring human interaction. Also, by relying on the Extended-GSM artifact-centric process modeling language[2], which does not enforce dependencies among activities, smart objects can continue monitoring the process even after an issue is detected. To prove the effectiveness of this technique, an artifact-driven monitoring platform was developed and tested against several processes from the logistics domain[1].

To be reliable, artifact-driven monitoring requires organizations to share with each other information on their processes and data collected by smart objects. However, organizations may want to share this information only partially, yet at the same time exploit artifact-driven monitoring to also monitor their private processes. Additionally, organizations may not fully trust monitoring information provided by the other organizations. This introduces the challenge of integrating artifact-driven monitoring with *data quality and privacy* frameworks, which would be beneficial to address such issues.

Secondly, artifact-driven monitoring currently focuses on detecting and reporting violations as soon as they occur. This gives the opportunity to introduce *reactive mechanisms* to automatically take corrective actions once a violation occurs. In particular, smart objects could be equipped with actuators to automate such actions. Similarly, artifact-driven monitoring could be applied to the robotics domain to autonomously execute activities that are currently manual.

## References

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