

Integration of Business Process Management and Big Data Technologies

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Abstract

In largely autonomous process control ever-increasing amounts of data are generated and made available for specific analysis functions. This is especially important in the field of sensor-based process control and for predictive analysis of machine data, server logs and text messages. A key challenge is to provide appropriate data processing solutions for effective and efficient integration of data and process management and appropriate analysis tools. Despite considerable advances in Big Data and IOT technology useful solutions are hardly available. A study conducted since 2013 examines the integration capabilities of process management platforms and the most noted Big Data reference platform Hadoop. As a result of this research an easy-to-use Integration library has been developed and released. The library comprises software adapters that allow the seamless integration of Hadoop tools into existing or even new business processes. The work has been validated with the implementation of use cases for the application areas “Predictive maintenance through analysis of operational machine data” and “Failure prediction with analysis of log data in a cellular network”. Further research aims at outlining future applications resulting from the expected symbiosis of these technologies.

Keywords

Predictive maintenance, Big Data, Hadoop, Business Process management, BPMN

Biography

Alfred Wulff is a Professor, and Director of the Institute of Business Informatics in the Department of Management, Information and Technology at the University of Applied Sciences, Wilhelmshaven, Germany. He holds a German diploma in Mathematics. He worked for several years in large software development projects and was project manager of multinational R&D-IT projects subsidized by the European Commission. Within the scope of the European Spacecraft program COLUMBUS (European part of the ISS) he worked for the prime contractor and was responsible for the COLUMBUS Engineering Database and the Management and Technical Information System. He has published conference papers. His research interests include database management, business intelligence, Big Data, data mining, business process management and mobile solutions.

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