

COLLECT: COLLABORATIVE ConTEXT-aware Service Oriented Architecture for Intelligent Decision-Making in the Internet of Things (Summary) *

¹Alfonso Garcia-de-Prado, ²Guadalupe Ortiz, ²Juan Boubeta-Puig

Grupo UCASE de Ingeniería del Software, Universidad de Cádiz

¹Departamento Ingeniería en Automática, Electrónica, Arquitectura y Redes de Computadores

²Departamento de Ingeniería Informática

{alfonso.garciadeprado, guadalupe.ortiz, juan.boubeta}@uca.es

Summary of the Contribution

Internet of Things (IoT) has radically transformed the world; currently, every device can be connected to the Internet and provide valuable information for decision-making. In spite of the fast evolution of technologies accompanying the growth of IoT, one of the remaining challenges in this scope is the design of a *Service Oriented Architecture* (SOA) for IoT, which facilitates the inclusion of data coming from several IoT devices as well the delivery of such data among system agents, real-time data processing and service provision to users. Furthermore, context-aware data processing and architectures still pose a challenge, regardless of being key requirements in order to get stronger IoT architectures. Besides, with the objective of sharing information across platforms, collaborative architectures for data sharing in the scope of the IoT are an essential requirement for giving additional value to any decision-making process. To sum up, IoT architectures should provide essential elements such as sensor devices, offered services, communication networks and event context processing; always promoting key features such as interoperability, reliability and scalability.

To face this challenge, we propose a *COLLABORATIVE ConTEXT Aware Service Oriented Architecture* (COLLECT), which facilitates: (1) Implementing reliable collaboration among several nodes through a collaborative Event Driven SOA. (2) Ensuring system scalability and interoperability through the opportunity of federating *Enterprise Service Buses* (ESB) in the cloud and through distributed *Complex Event Processing* (CEP). (3) Facilitating the task of processing information and publishing and subscribing to distributed complex events of interest in the context of the application.

Acknowledgments

The authors thank the support from MINECO/FEDER through grants TIN2015-65845-C3-3-R, TIN2016-81978-REDT and RTI2018-093608-B-C33.

* This work has been published in *Expert Systems with Applications* (ESWA), Volume 85: 231-248, 2017. Impact Factor: 3.768 (JCR-Q1). DOI: <https://doi.org/10.1016/j.eswa.2017.05.034>