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Collaborative Technologies in Automotive and Aerospace Industries towards Industry 4.0

Asia Ramzan
University of Manchester, asia.ramzan@manchester.ac.uk

Sonia Cisneros-Cabrera
University of Manchester, sonia.cisneroscabrera@manchester.ac.uk

Nikolai Kazantsev
University of Manchester, nikolai.kazantsev@manchester.ac.uk

Pedro Sampaio
University of Manchester, P.Sampaio@manchester.ac.uk

Nikolay Mehandjiev
University of Manchester, n.mehandjiev@manchester.ac.uk

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Asia Ramzan, Sonia Cisneros-Cabrera, Nikolai Kazantsev, Pedro Sampaio, Nikolay Mehandjiev

Alliance Manchester Business School, The University of Manchester, Manchester, United Kingdom
{asia.ramzan, sonia.cisneroscabrera, nikolai.kazantsev, P.Sampaio, n.mehandjiev}@manchester.ac.uk

Working in a virtual environment with several dispersed teams becomes an essential part of supply chains, especially for the automotive and aerospace being those industries requiring hundreds of different services and parts manufacturing and assembly. In such scenarios, collaborative technologies support the creation of virtual environments where dispersed teams can jointly respond to business opportunities, and time, cost and travel expenses are reduced. In Industry 4.0, where Information and Communication Technologies (ICT) merge with physical processes, collaborative networks might require additional functionalities. We aim to present an analysis on state-of-the-art tools, technologies and platforms towards assessing its utility for Industry 4.0 in the context of the European Commission Horizon 2020 (EU H2020) programme promoting smart collaborative supply chain systems research. As a first overview, we have identified that it seems to be a lack of a common definition of collaborative technologies and tools, where the concept, applications and characteristics of those is unclear among both industrial and academic fronts. Thus, to present a clear concept of collaborative technologies, this research proposes ontology to represent the formal structure of taxonomy to analyse and classify the collaborative technologies in appropriate categories. This formal structure is also intended to be used later to aid a gap analysis of collaborative technologies, assessing their support and readiness towards Industry 4.0 collaborative networks. The ontology developed is built upon the results of a systematic literature review aimed at finding the definition of collaborative technologies, its features and applications. The systematic review was conducted on extracting relevant articles from the journals proposed by the Association of Information System (AIS) basket of eight. Figure 1 presents the proposed ontology.

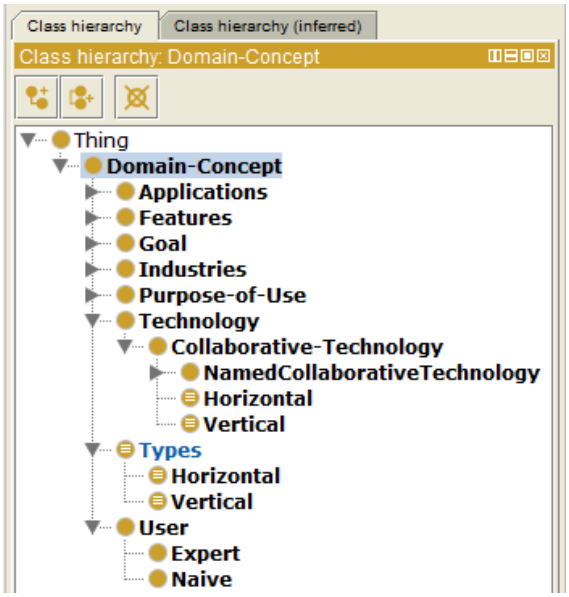

Figure 1: An overview of collaborative technology ontology

Keywords: Collaborative technologies, virtual environment, ontology, supply chains