Knowledge Graphs for Total Supply Chain Visibility

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Abstract—**Most surveys of supply chain executives consistently rank supply chain visibility as one of their top priorities. Not only supply chain visibility can help to improve lead times and performance, but also to identify issues such as product shortages, quality issues and transportation issues, and hence reduce business and supply chain risks. Supply chain visibility is hampered by incompatibilities of the business processes, system and data of participants. New approaches like control towers help to alleviate such problems by making key data available to supply chain partners. However, we argue that shared data must be relevant, timely and help to provide context awareness to the supply chain planners. We propose a knowledge based approach to supply chain visibility, called the Knowledge Graph which provides the conceptual framework to model supply chains in terms of participants and upstream/downstream connections between them, including mode of transport of goods. Knowledge Graphs help decision makers to understand the cause, probability and impact of various types of risk as they propagate across the supply chain, for example, how events such as disruptions in a transport route impact estimated arrival times (ETA). We illustrate the application of the Knowledge Graph on the visibility analysis of a real, cross-continent supply chain.**

Key words—**supply chain visibility, supply chain control tower, supply chain risk management, knowledge graph.**

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