

Tackling Non-transparency - Identification of Hidden Problems in Component-Based Supply Chains

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ABSTRACT

Component-based supply chains, e.g., in sensor industry, can be very complex and non-transparent, with multiple tiers of suppliers involved. This leads to hidden problems (e.g., component shortages) that propagate and reinforce in supply chains before popping up as crisis situation at tier-1 with significant consequences as production delays. To tackle non-transparency in supply chains, it is crucial to detect and localize those hidden problems for supporting users in conducting pro-active measures (e.g., search of missing parts at spot-market) and creating more resilient supply chains. With the Hidden Problem Detector, we present a prototype (Flask, Python, Neo4j, Octopart), that uses multiple graph-theoretic centrality measures for determining critical components in the supply chain. Bill-of-Materials data are automatically transformed into a knowledge graph, semantically enriched, and fed with historical and actual market data (e.g., prices). Within the demonstration, we show the detection of hidden problems in the supply chain of a sensor manufacturer.

Keywords

Supply chain disruptions, non-transparency, hidden problems, critical components, knowledge graph

References are available on request