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Design of a worldwide simulation system for distributed cyber-physical production networks

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Abstract

Modern production infrastructures of globally operating companies usually consist of multiple distributed production sites. While the organization of individual sites consisting of Industry 4.0 components itself is demanding, new questions regarding the organization and allocation of resources emerge considering the total production network. In an attempt to face the challenge of efficient distribution and processing both within and across sites, we aim to provide a hybrid simulation approach as a first step towards optimization. Using hybrid simulation allows us to include real and simulated concepts and thereby benchmark different approaches with reasonable effort. A simulation concept is conceptualized and demonstrated qualitatively using a global multi-site example.