

Simulation of collaborative product development knowledge diffusion using a new cellular automata approach

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ABSTRACT

In order to quantitatively examine the diffusion process and pattern of collaborative product development (CPD), this paper puts forward a quantitative research model of CPD knowledge diffusion based on improved cellular automata. In light of the idea of SIS epidemic model and the local knowledge interaction characteristic of CPD knowledge diffusion, the influencing factors of knowledge diffusion are abstracted into the parametric variables in the process of knowledge diffusion, and the knowledge-SIS (K-SIS) model is constructed based on improved cellular automata for CPD knowledge diffusion. Finally, the K-SIS model is simulated to study the diffusion process and pattern of CPD knowledge, revealing the influence mechanism of CPD knowledge diffusion influencing factors on the diffusion process. The research results provide valuable reference for improving the efficiency of CPD knowledge diffusion.

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