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Impact of Industry 4.0 on decision-making in an operational context

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ABSTRACT

The implementation of Industry 4.0 technologies suggests significant impacts on production systems productivity and decision-making process improvements. However, many manufacturers have difficulty determining to what extent these various technologies can reinforce the autonomy of teams and operational systems. This article addresses this issue by proposing a model describing different types of autonomy and the contribution of 4.0 technologies in the various steps of the decision-making processes. The model was confronted with a set of application cases from the literature. It emerges that new technologies' improvements are significant from a decision-making point of view and may eventually favor implementing new modes of autonomy. Decision-makers can rely on the proposed model to better understand the opportunities linked to the fusion of cybernetic, physical, and social spaces made possible by Industry 4.0.

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Vpliv industrije 4.0 na odločanje v izvedbenem kontekstu

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POVZETEK

Vpeljava tehnologij industrije 4.0 izkazuje pomembne vplive na produktivnost proizvodnih sistemov in na izboljšave v procesih odločanja. Vendar imajo številni proizvajalci težave pri razumevanju, v kolikšni meri lahko te različne tehnologije okrepijo avtonomijo ekip in izvedbenih sistemov. Ta članek obravnava to vprašanje in predlaga model, ki opisuje različne vrste avtonomije in prispevek tehnologij 4.0 v različnih korakih procesov odločanja. Model je bil preverjen na številnih uporabnih primerih iz literature. Izkazalo se je, da so izboljšave z vpeljavo novih tehnologij pomembne z vidika odločanja in lahko sčasoma spodbujajo izvajanje novih načinov avtonomije. Odločevalci bodo lahko s pomočjo predlaganega modela bolje razumeli priložnosti, povezane z združitvijo kibernetičnih, fizičnih in socialnih prostorov, ki jih omogoča industrija 4.0.

PODATKI O ČLANKU

Ključne besede:
Industrija 4.0;
Odločanje;
Vrste odločitev;
Avtonomni proizvodni sistem;
Kibernetsko-fizični proizvodni sistem (CPPS);
Človek;
Človeški kibernetsko-fizični sistem (HCPS);
Vitkost;
Reševanje problemov

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