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A new architecture model for smart manufacturing: A performance analysis and comparison with the RAMI 4.0 reference model

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ABSTRACT

In this paper we proposed a new architectural model of the smart factory to allow production experts to make easier and more exact planning of new, smart factories by using all the key technologies of Industry 4.0. The existing complex reference architectural model of Industry 4.0 (RAMI 4.0) offers a good overview of the smart-factory architecture, but it leads to some limitations and a lack of clarity for the users. To overcome these limitations, we have developed a simple model with the entire and very simple architecture of the smart factory, based on the concept of distributed systems with exact information and the data flows between them. The proposed architectural model enables more reliable and simple modelling of the smart factory than the existing RAMI 4.0 model. Our approach improves the existing methodology for planning the smart factory and makes all the necessary steps clearer. At the end of the paper a comparison of the proposed architectural model LASFA (LASIM Smart Factory) with the existing RAMI 4.0 model was made. The developed LASFA model was already successfully implemented in the laboratory environment for building the demo centre of a smart factory.

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