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# A Structuring and Classification Method for Assigning Application Areas to Suitable Digital Factory Models

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**Abstract :** The method of factory planning has changed a lot, especially when it is about planning the factory building itself. Factory planning has the task of designing products, plants, processes, organization, areas, and the building of a factory. Regular restructuring is becoming more important in order to maintain the competitiveness of a factory. Restrictions in new areas, shorter life cycles of product and production technology as well as a VUCA world (Volatility, Uncertainty, Complexity and Ambiguity) lead to more frequent restructuring measures within a factory. A digital factory model is the planning basis for rebuilding measures and becomes an indispensable tool. Furthermore, digital building models are increasingly being used in factories to support facility management and manufacturing processes. The main research question of this paper is, therefore: What kind of digital factory model is suitable for the different areas of application during the operation of a factory? First, different types of digital factory models are investigated, and their properties and usabilities for use cases are analysed. Within the scope of investigation are point cloud models, building information models, photogrammetry models, and these enriched with sensor data are examined. It is investigated which digital models allow a simple integration of sensor data and where the differences are. Subsequently, possible application areas of digital factory models are determined by means of a survey and the respective digital factory models are assigned to the application areas. Finally, an application case from maintenance is selected and implemented with the help of the appropriate digital factory model. It is shown how a completely digitalized maintenance process can be supported by a digital factory model by providing information. Among other purposes, the digital factory model is used for indoor navigation, information provision, and display of sensor data. In summary, the paper shows a structuring of digital factory models that concentrates on the geometric representation of a factory building and its technical facilities. A practical application case is shown and implemented. Thus, the systematic selection of digital factory models with the corresponding application cases is evaluated.

**Keywords :** building information modeling, digital factory model, factory planning, maintenance
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