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Development of the Industrial IoT Competences in the Areas of Organization, Process, and Interaction based on the Learning Factory Concept

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Abstract

Lately, first implementation approaches of Internet of Things (IoT) technologies penetrate industrial value-adding processes. Within this, the competence requirements for employees are changing. Employees' organization, process, and interaction competences are of crucial importance in this new IoT environment, however, in students and vocational training not sufficiently considered yet. On the other hand, conventional learning factories evolve and transform to digital learning factories. Nevertheless, the integration of IoT technology and its usage for training in digital learning factories has been largely neglected thus far. Existing learning factories do not explicitly and properly consider IoT technology, which leads to deficiencies regarding an appropriate development of employees' Industrial IoT competences. The goal of this contribution is to point out a didactic concept that enables development and training of these new demanded competences by using an IoT laboratory. For this purpose, a design science approach is applied. The result of this contribution is a didactic concept for the development of Industrial IoT competences in an IoT laboratory.

1. Introduction

The usage of Internet of Things (IoT) technologies in manufacturing is referred to as Industrial Internet of Things (IIoT) [1]. Lately, first implementation approaches of IIoT technologies such as cyber-physical systems and concepts like smart production organization through entity cross-linking, information availability, or decentralized

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