

Digital Twin - Seamless Engineering in the Industry 4.0 Era

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In the Industry 4.0 era, internet technologies build the backbone for cyber-physical engineering environments and a seamless value creation in a networked economy. Digital twins, described by structure and behaviour of connected “things” and generating real-time data, are rapidly becoming the technology of choice for virtualizing the physical world. The data is further analysed and combined with other data related to the running environment around it. It is then presented to users from different perspectives and in a variety of roles, so they can remotely understand its status, its history, its needs, and interact with it. The interfaces to external systems and validation environments with consideration of all relevant resources and processes ensure high-level connectivity and are decisive. Using digital twins via intuitive man-machine interfaces it is possible to validate operational concepts in real-time. This makes decisions based on up-to-date and transparent information easier. For example, by merging real and virtual environments, intelligent commissioning of production can be used to generate forecasts and speed-up start of production based on real-time data from the shop floor.